

# INTERNATIONAL CONFERENCE ON RESEARCH IN MULTIDISCIPLINARY STUDIES

## ICRMS-2022



CONFERENCE  
PROCEEDINGS



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# INTERNATIONAL CONFERENCE ON RESEARCH IN MULTIDISCIPLINARY STUDIES (ICRMS-2022)

**Conference Proceedings**

**20<sup>th</sup> February 2022**

**Jointly Organized By:**

**Sahakarmaharshi Shankarrao Mohite Patil Institute of Technology and Research,  
Shankarnagar, Akulj, Solapur, Maharashtra, India**

**&**

**ICConference  
New Delhi, India**

Committee of ICRMS-2022

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## ABOUT SMSMPITR

Hon. Shri. Vijaysinh Mohite-Patil the founder of SMSMP Hospital Trust is a man of vision. Realizing the increasing need of engineering in the society and industry, he SMSMP Institute of Technology & Research established, Akluj in 2011 having 18 acre lush green campus with 2.5 lac sq.ft. build up area. Since its establishment the institute has grown to become one of the leading Engineering Education Institution in Solapur, Maharashtra.

In a span of ten years the Institute has gained appreciation under visionary person Hon. Shri. Jaysingh Shankarrao Mohite Patil, Chairman, SMPCHT because of excellent infrastructure, well equipped laboratory facilities, qualified faculty and hence the outstanding results of students. The College is affiliated to PAH Solapur University; the courses are approved by All India Council for Technical Education, New Delhi, which is apex body controlling technical education in the country. The College offers four years Undergraduate Programmes leading to

five Bachelor of Technology (B. Tech.) in Computer, Civil, Mechanical, Electrical, Electronic Engineering & two diploma courses Computer, Mechanical Engineering.

Recently Institute accredited by NAAC, NBA as well as ranked in NIRF,IIC.

The SMSMPITR has been opened to provide engineering education to rural students. The institute runs under Shankarrao Mohite-Patil Charitable Hospital Trust. The Institute is situated in the heart of the city and it is just 1 km away from local ST bus depot. The Institute is sister concern of Sahakar Maharshi Shankarrao Mohite-Patil Sahkari Sakhar Karkhana Ltd. Akluj, which is one of the largest sugar factories of Maharashtra state. The industry has 7500 TCD sugar crushing capacity and has 33 MW Bagasse based cogeneration plant also 1 LPD distillery plant and many more. The Institute has well equipped laboratories and consultancy services in energy, water, access, structural audit enhances their practical knowledge. The institute takes due care of students' academic side and has appointed well qualified faculty from IIT, NIT etc.

Due to academic & infrastructure excellence institute awarded best institute in 2014 by Lokmat Group, Mumbai, 2020 by MNGRE, Govt of India & Begin-up Research, Hyderabad & 2021 by CEGR, New Delhi & Rashtrya Shikshan Puraskar, New Delhi. Institute also member of renowned bodies like ISTE,DELNET,OPAC,ELTAI.

## ABOUT ICONFERENCE

IConference is one of the leading organizations in organizing conferences and seminars, based in the New Delhi. IConference had been established with the commitment to promote research and education through national and international conferences, webinars, workshops. Our seminars are related to academics and research subjects, such as, Engineering, Technology, Humanities, Medical Science, General Science and Business Management. We provide international scientific forum for exchange of new ideas in a number of multidisciplinary fields that interact in-depth through discussion with the colleagues from around the world. We provide the ideal opportunity to bring together professors, researchers, graduates, post-graduates students of different disciplines, discuss new issues, and discover the most recent development in the relevant fields. Being one of the best organizations, we work on a global level and are associated with many renowned universities and journal publishers.

IConference is one of the leading organization that offers complete end to end integrated conference services and solutions. It is a one stop platform of providing an integrated platform



to organize various conferences, seminars both at the national as well as at international levels. IConference has expertise on managing and organizing world class Conferences, Seminars, Symposiums, Summits and Workshops around the globe by creating opportunities for the Scientists, Researchers, Academics and Professionals to enhance their careers through its international events.

IConference also publish research articles in all disciplines under different publishing house. It is committed to bring out the highest excellence by publishing unique, novel research articles of upcoming authors as well as renowned scholars. It belongs to an intellectual group of Researchers, Scholars, Industry Experts, Academicians, Scientists reflecting ethos of plumbing the deepest details and unexplored region of fields.

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# PATRON MESSAGE



**Hon. Shri. Vijaysinh Shankarrao Mohite-Patil**

**(Ex. Dy.Chief Minister, Maharashtra State)**

**(MP, Madha Legislative Constituency)**

*Dear Colleagues,*

*On behalf of the ICRMS Conferences, it is my pleasure to invite all the great scientists, academicians, young researchers, Business delegates and students from all over the world to attend the **International Conference on Research in Multidisciplinary Studies** on February 20, 2022, as Virtual platform.*

*Multidisciplinary studies conference shares an insight into the recent research and cutting-edge technologies, which gains immense interest with the colossal and exuberant presence of adepts, young and brilliant researchers, business delegates and talented student communities.*

*A multi-disciplinary group of scientists from all over the world to present and exchange breakthrough ideas relating to the multidisciplinary subjects. It promotes top level research and to globalize the quality research in general, thus making discussions, presentations more internationally competitive and focusing attention on the recent outstanding achievements in the all fields.*

*Since this conference covers very global aspects on multidisciplinary studies from very fundamental issue to Recent Outbreaks, Advanced Technologies & Research*

*We're looking forward to an excellent interaction with great scientists from different countries around the world and sharing new and exciting research, which will be held as Webinar, on February 20, 2022*

## CO-PATRON MESSAGE



**Hon. Shri. Jaysinh Shankarrao Mohite-Patil**

**(President, SMPCHT)**

**(Chairman, Sahakar Maharshi Shankarrao Mohite-Patil Sahakari Sakhar  
Karkhana Ltd., Shankarnagar-Akluj)**

*Dear Colleague and Friends,*

*On behalf of Conference, it is my pleasure to invite all the great scientists, academic people, industrialists as well as researchers from all over the world to attend the “International Conference on Research in Multidisciplinary Studies” which is going to take place in Akluj, Maharashtra on February 20, 2022*

*SMSMPITR making the conference a perfect platform to share experience, foster collaborations across industry and academia, and evaluate emerging technologies across the globe. The topics of the Conference truly reflect the current trends, recent advances and new approaches. The Conference offers unique scope for young scientists starting their research activity in the different area across the world to present and recognize their achievements. I am cordially inviting the eminent scientists, Doctors and Professors from all fields platform to participate in this prestigious event.*

*We are looking forward to another excellent meeting with great scientists from different countries around the world and sharing new and exciting results in various fields.*



## GUEST OF HONOR MESSAGE



**Hon. Shri. Swaruparani Jaysinh Mohite-Patil**

**(Senate Member, PAH Solapur University)**

*Dear Colleagues,*

*It is a great pleasure for me to declare open the International Conference on Research in Multidisciplinary Studies 2022 and to welcome the participants from all over the world that they join here to exchange experience and work together for a day on the exciting field in science, engineering, technology, management and so on.*

*I first wish to extend to you the greetings of the SMSMPITR & IConference, New Delhi team. Both teams, being responsible for administratively. We have the privilege of holding our conference on online platform. In these times calling for social relevance of scientific activities it is very fortunate to see the important part taken in this conference. There are opportunities for rural area students to be part of global people who are being interacting in this conference.*

*Let me wishing you a delightful and stimulating conference.*

# CHIEF GUEST MESSAGE



**Hon. Shri. Rajendra Kerba Chougule**

**(Managing Director, Sahakar Maharshi Shankarrao Mohite-Patil  
Sahakari Sakhar Karkhana Ltd, Shankarnagar-Akluj )**

*Dear Colleagues,*

*On Behalf of the Organizing Committee, I welcome all the professionals to this signature event of the year International Conference on Research in Multidisciplinary Studies on February 20, 2022.*

*Building on the success of conference, I look forward to learning the latest results from top industrial, government, and academic scientists on these topics and everything else that is presented. We are indeed in a time of great innovation in multidisciplinary studies, so come and enjoy the research, and report your results!*

*The program has already shaped up to be excellent, and the networking opportunities will be indeed outstanding.*

*I add my best wishes for a successful and fruitful conference and my thanks to all organizers*

*We're looking forward to an excellent meeting with great scientists from different countries around the world and sharing new and exciting results.*



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Dear Delegates

Warm greetings!!!

On behalf of IConference and the organizing committee, I would like to cordially welcome you to the “International Conference on Research in Multidisciplinary Research” to be held on 20<sup>th</sup> February, 2022

It will feature highly respected internationally renowned speakers who will share, discuss, debate and dissect significant new developments and advancements that will impact the future of students.



I have no doubt that the scientific presentations and deliberations during this conference will be quite useful to all the participants and will inspire them to strive for excellence in their respective departments.

The organizing committee has left no stone unturned to ensure that the conference turns out to be an occasion from which all of you carry back long-lasting memories of scientific excellence.

I welcome you, your family and friends again to the wonderful gathering and make the maximum out of it.

I thank each and every one of you who are contributing to the success of the conference and looking forward to see you all soon.

JAI HIND

Best Wishes

Dr Gunjan Bansal  
CEO, IConference  
Conference Chairman

# SECRETARY MESSAGE



Dear delegates

Hearty greetings!!!

On behalf of the Sahakarmaharshi Shankarrao Mohite Patil Institute of Technology, iConference and the organizing committee, I would like to cordially welcome you all to the International Conference on Research in Multidisciplinary Studies to be held on 20<sup>th</sup> February, 2022 through Google meet.

The conference with the theme "Research on Multidisciplinary Studies" is the right platform to bring together various multidisciplinary scientists, research scholars and young researchers under one roof to discuss and exchange their expertise for the welfare of the human being and their lives in total.

We are proud to welcome so many young and energetic scientists and researchers to this iConference. By the end of the conference, you will have a better understanding about various avenues of Multidisciplinary research.

I am sure that this conference will spark your interest in making these goals a reality. I admire your commitment and wish you all great success in the discussions that lie ahead.

I thank each and every one of you who are contributing to the success of the conference and looking forward to seeing you all soon.

Best wishes

A handwritten signature in blue ink, appearing to read 'A.T. Ravichandran', written in a cursive style.

Dr.A.T.Ravichandran



# JOINT SECRETARY MESSAGE



**Dr. Indrajit Nivasrao Yadav-Patil**

**PhD (Env. Engg), D.Litt.**

*Dear Researchers,*

*It is with great pleasure that I extend a warm welcome to all the participants of International Conference on Research in Multidisciplinary Studies to be held in the historical city of Akulj, Maharashtra, on February 20, 2022. The quest for knowledge has been from the beginning of time but knowledge only becomes valuable when it is disseminated and applied to benefit humankind. It is hoped that ICRMS will be a platform to gather and disseminate the latest knowledge in recent advancements in emerging areas of diversified research fields covered during this conference. Academicians, Scientist, Researchers will be able to share and discuss new findings and applications of engineering and science. I hope that participants enjoy the conference and have memorable experience. It is envisaged that the intellectual discourse will result in future collaborations between universities, research institutions and industry both locally and internationally. To achieve this goal, a multidisciplinary approach is necessary to be able to revise critically the existing literature and develop new idea and collaborations focused to open new scientific courses. From this point of view ICRMS 22 represent an exciting opportunity to meet different competences and establish contacts focused to develop new research collaborations, thus, welcome and enjoy the Conference!*



**Dr Gunjan Bansal,  
Conference Chairman**



**Prof Dr Bushra S Al-Noori,  
Conference Co-Chair**



**Prof A T Ravichandran,  
Conference Secretary**



**Dr Indrajit N Yadav Patil,  
Conference Joint Secretary**

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# Tabulated Survey on Cyber Security

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## ABSTRACT

Cyber Security plays an vital part within the field of data innovation .Securing the information have ended up one of the greatest challenges within the show day. When ever we think approximately the cyber security the primary thing that comes to our intellect is ‘cyber crimes’ which are expanding colossally day by day. Different Governments and companies are taking numerous measures in order to avoid these cyber crimes. Other than different measures cyber security is still a really huge concern to numerous. This paper mainly focuses on challenges confronted by cyber security on the most recent innovations .It too centers on most recent about the cyber security methods, morals and the patterns changing the confront of cyber security.

**Keywords:** *cyber security, cyber wrongdoing, cyber morals, social media, cloud computing, android apps.*

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## INTRODUCTION

Now a days man is able to send and get any form of information may be an e-mail or a sound or video just by the tap of a button but did he ever think how safely his information id being transmitted or sent to the other individual securely without any leakage of data?? The reply lies in cyber security. Nowadays Web is the fastest growing foundation in each day life. In today’s specialized environment numerous latest technologies are changing the confront of the mankind. But due to these rising technologies we are incapable to defend our private information in an awfully successful way and hence these days cyber violations are expanding day by day. Nowadays more than 60 percent of total commercial exchanges are done online, so this field required a tall quality of security for transparent and best exchanges. Consequently, cyber security has ended up a most recent issue. The scope of cyber security isn’t fair constrained to securing the information in IT industry but moreover to various other areas like cyber space etc.

wrongdoing may be characterized as wrongdoing committed using a computer and the web to steel a person’s personality or offer booty or stalk victims or disturb operations with malevolent programs. As day by day innovation is playing in major part in a person’s life the cyber crimes also will increment beside the technological advances.

## CYBER SECURITY

Security and security of the information will continuously be top security measures that any organization takes care. We are by and by living in a world where all the data is kept up in a digital or a cyber frame. Social organizing sites provide a space where clients feel secure as they interact with companions and family. Within the case of home clients, cyber-criminals would proceed to target social media destinations to take individual data. Not as it were social organizing but moreover amid bank transactions a individual must take all the required security measures.

## CYBER CRIME

Cyber crime could be a term for any illicit movement that uses a computer as its essential implies of commission and burglary. The U.S. Division of Justice extends the definition of cyber wrongdoing to include any illicit movement that employments a computer for the capacity of prove. The developing list of cyber wrongdoings incorporates wrongdoings that have been made conceivable by computers, such as network intrusions and the dispersal of computer viruses, as well as computer-based varieties of existing wrongdoings, such as identity theft, stalking, bullying and fear mongering which have gotten to be as major issue to individuals and nations. More often than not in common man’s language cyber

Incidents	Jan-June 2012	Jan-June 2013	% Increase/ (decrease)
Fraud	2439	2490	2
Intrusion	2203	1726	(22)
Spam	291	614	111
Malicious code	353	442	25
Cyber Harassment	173	233	35
Content related	10	42	320
Intrusion Attempts	55	24	(56)
Denial of services	12	10	(17)
Vulnerability reports	45	11	(76)
Total	5581	5592	

The over Comparison of Cyber Security Incidents detailed to Cyber999 in Malaysia from January–June 2012 and 2013 clearly exhibits the cyber security dangers. As wrongdoing is increasing indeed the security measures are also increasing. Concurring to the study of U.S. technology and healthcare executives nationwide, Silicon Valley Bank found that companies accept cyber assaults are a serious threat to both their information and their business continuity. 98% of companies are keeping up or increasing their cyber security resources and of those, half are increasing assets committed to online attacks this year. The lion's share of companies are preparing for when, not on the off chance that, cyber attacks occur. As it were one-third are completely confident within the security of their information and indeed less confident about the security measures of their business partners. There will be modern assaults on Android operating system based gadgets, but it'll not be on massive scale. The truth tablets share the same operating framework

## TRENDS CHANGING CYBER SECURITY

Here said below are a few of the trends that are having a tremendous affect on cyber security.

### 1. Web servers

The risk of assaults on web applications to extract information or to disperse noxious code persists. Cyber hoodlums disperse their malicious code by means of authentic web servers they've compromised. But data-stealing attacks, many of which get the consideration of media, are also a huge risk. Presently, we require a greater emphasis on ensuring web servers and web applications. Web servers are particularly the best platform for these cyber offenders to take the data. Consequently, one must continuously utilize a safer browser particularly amid vital

transactions in arrange not to drop as a prey for these wrong doings.

### 2 Cloud computing and its services

These days all little, medium and large companies are gradually embracing cloud services. In other words, the world is gradually moving towards the clouds. This most recent slant presents a big challenge for cyber security, as activity can go around conventional focuses of inspection. Additionally, as the number of applications available within the cloud develops, approach controls for web applications and cloud administrations will also need to advance in arrange to avoid the misfortune of valuable data. In spite of the fact that cloud administrations are developing their claim models still a part of issues are being brought up around their security. Cloud may give monstrous openings but it should continuously be famous that as the cloud evolves so as its security concerns increment

### 3 APT's and focused on attacks

APT (Progressed Tireless Danger) could be a whole new level of cyber wrongdoing product. For years network security capabilities such as web filtering or IPS have played a key portion in identifying such focused on assaults (for the most part after the introductory compromise). As assailants grow bolder and utilize more unclear techniques, network security must coordinate with other security administrations in arrange to distinguish attacks. Hence one must progress our security techniques in arrange to anticipate more dangers coming in the future.

### 4 IPv6: Unused web protocol

IPv6 is the modern Web convention which is replacing IPv4 (the more seasoned adaptation), which has been a spine of our systems in common and the Web at expansive. Securing IPv6 isn't fair a question of porting IPv4 capabilities. While IPv6 could be a discount substitution in making more IP addresses accessible, there are a few very fundamental changes to the convention which need to be considered in security arrangement. Consequently, it is always way better to switch to IPv6 as before long as possible in arrange to diminish the dangers regarding cyber crime.

### 5 Encryption of the code

Encryption is the method of encoding messages (or data) in such a way that eavesdroppers or programmers cannot studied it. In an encryption conspire, the message or information is scrambled utilizing an encryption algorithm, turning it into a garbled cipher content. This is usually done with the utilize of an encryption key, which indicates how the message is to be encoded. Encryption at an awfully starting level protects information protection and its judgment. But more use of encryption brings more challenges in cyber security. Encryption is additionally utilized to protect data in travel, for case information being transferred by means of systems (e.g., the Web, ecommerce), versatile telephones, wireless microphones,

remote intercoms etc. Thus, by encrypting the code one can know on the off chance that there's any leakage of data.

## **PART OF SOCIAL MEDIA IN CYBER SECURITY**

As we gotten to be more social in an increasingly connected world, companies must discover new ways to ensure individual data. Social media plays a gigantic part in cyber security and will contribute a part to individual cyber threats. Social media selection among work force is skyrocketing and so is the risk of assault. Since social media or social organizing destinations are almost utilized by most of them each day it has become a colossal stage for the cyber criminals for hacking private data and stealing valuable data. In a world where we're speedy to donate up our personal data, companies ought to ensure they're fair as speedy in distinguishing threats, responding in genuine time, and maintaining a strategic distance from a breach of any kind. Since individuals are effortlessly pulled in by these social media the programmers utilize them as a bait to get the data and the information they require. Hence individuals must take suitable measures especially in managing with social media in order to avoid the lose

## **CYBER SECURITY TECHNIQUES**

### **1 Get to control and watchword security**

The concept of client title and secret word has been crucial way of securing our information. This may be one of the first measures with respect to cyber security.

### **2 Verification of data**

The reports that we get must continuously be authenticated be some time recently downloading that's it should be checked on the off chance that it has begun from a trusted and a reliable source which they are not changed. Confirming of these documents is more often than not done by the against infection program present in the gadgets. In this way a great against infection computer program is also basic to ensure the gadgets from viruses.

### **3 Malware scanners**

This is computer program that ordinarily filters all the files and records show within the framework for malicious code or destructive infections. Viruses, worms, and Trojan steeds are cases of malicious program that are frequently grouped together and alluded to as malware.

### **4 Firewalls**

A firewall may be a program program or piece of hardware that makes a difference screen out programmers, viruses, and worms that attempt to reach your computer over the Web. All messages entering or leaving the web pass through the firewall present, which examines each message and pieces those that don't meet the desired security criteria. Hence firewalls play a vital part in detecting the malware.

## **5 Anti-virus software**

Antivirus computer program may be a computer program that detects, avoids, and takes activity to incapacitate or remove noxious computer program programs, such as viruses and worms. Most antivirus programs include an auto-update highlight that empowers the program to download profiles of modern infections so that it can check for the modern infections as before long as they are found. A hostile to infection program is a must and fundamental need for each framework.

## **CYBER ETHICS**

Cyber morals are nothing but the code of the internet. When we hone these cyber ethics there are great chances of us utilizing the internet in a legitimate and more secure way. The underneath are a few of them:

- DO utilize the Web to communicate and connected with other individuals. Email and moment informing make it simple to stay in touch with companions and family members, communicate with work colleagues, and share thoughts and information with individuals over town or halfway around the world
- Don't be a bully on the Web. Do not call individuals names, lie almost them, send embarrassing pictures of them, or do anything else to undertake to harmed them.
- Web is considered as world's largest library with data on any subject in any subject region, so utilizing this information in a adjust and legitimate way is continuously basic.
- Don't work others accounts using their passwords.
- Never attempt to send any kind of malware to other's frameworks and make them corrupt.
- Never share your individual information to anyone as there's a great chance of others abusing it and at last you would conclusion up in a trouble.
- When you're online never imagine to the other individual, and never attempt to create fake accounts on somebody else as it would arrive you as well as the other person into trouble.
- Continuously follow to copyrighted information and download diversions or videos as it were in the event that they are permissible.

The over are a couple of cyber morals one must follow whereas utilizing the web. We are always thought legitimate rules from out exceptionally early stages the same here we apply in cyber space.

## **CONCLUSION**

Computer security could be a endless theme that is becoming more vital since the world is becoming exceedingly interconnected, with networks being utilized to carry out basic transactions. Cyber wrongdoing proceeds to wander down different paths with each Modern Year that passes and so does the security of the information. The latest and troublesome advances, in conjunction with the new cyber devices and dangers that come to light each day, are challenging organizations with not only how they

secure their foundation, but how they require unused stages and insights to do so. There's no idealize arrangement for cyber crimes but we ought to attempt our level best to minimize them in arrange to have a secure and secure future in cyber space.

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## Java Editor

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### ABSTRACT

Java Editor is the easy-to-use its miles advanced with many effective functions to enhance your productiveness and programming capability. Ideal for each the amateur and greater skilled programmer. The purpose of the proposed mechanism is to supplied ease of writing, compiling, and running program. The environments of the software program are consumer pleasant so consumer can effortlessly have interaction and cope with the machine. We are offering most useful functions like create, edit, compiler, debug. Write, Run & Share Java code is one of the sturdy and wealthy functions of compilers for Java language. Getting commenced with Java editor is simple and fast. The editor suggests pattern code while you pick out applet or utility or servlet or JDBC packages to get commenced. This utility is not anything however mixture of notepad and Command Prompt. The prolonged technique our utility saves all times, right here consumer simply want to create new record store it and execute it via way of process of clicking on run button. This is the very best method of programming usually for freshers. The utility essential functions are providing workspace to get into, execute and construct the supply code.

**Keywords:** *Compiling program, java ,workspace, Implement*

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### INTRODUCTION

IDEs commonly offer a code editor, a compiler or translator and a debugger that the developer accesses through a integrated graphical consumer interface (GUI) Java is general-purpose. Simultaneous class-primarily based totally, object-orientated programming language, this is particularly aimed to have as few implementation dependencies as possible. this is meant to allow utility builders "write once, run anywhere" (WORA), that indicates that code that runs on one platform does now no longer want to be recompiled to run on another JAVA is a gadget independent and running device independent language. A software system written in JAVA may be run on any appliance or in any platform supplied the translator of that platform. A Java IDE (for Integrated Development Environment) is a software program utility which allows customers to add-on without problems write and debug Java programs. Many IDEs offer functions like syntax highlighting and code completion, which assist the consumer to code extra without difficulties. Java is an Object-Oriented Programming Language. The supply code documents (documents with a java extension) compiled right into a layout known as byte code (Documents with a category extension), which could then be achieved with the aid of using a Java translator. This utility may be provided extra capability through create, open, and keep any java document to make our editor gear applied in efficaciously in windows-primarily totally based systems. Eclipse, a lava-primarily based totally open supply platform that allows the introduction of especially custom designed IDEs from plug-in additives constructed with the aid of using Eclipse members.

The platform is consumer-pleasant for novices and appropriate for the introduction of extra state-of-the-art applications. Eclipse consists of a lot of plug ins that permit builders to increase and look at code written in different languages. IntelliJ IDEA, a business Java IDE with a loose and open-supply network version. The light-weight IDE gives JUnit and TestNG, code completion, help for a couple of refactoring's. Maven and Ant construct gear, a visible GUI builder and a code editor for XML in addition to Java. Java is an object-orientated programming language with its run time environment. It is an aggregate of functions of C and C++ with a few vital extra concepts. Java is properly applicable for each standalone and internet utility improvement and is designed to offer answers to maximum of the issues confronted with the aid of using customers of the net era.

### LITERATURE REVIEW

In addition to many editors created over the years. A massive quantity of studies has been committed to knowledge effectiveness of editors. We examine some of the literature in this section.

In this paper authors present an Automatic C code generator which generates the syntactically correct code in C language, which is used for the performance evaluation and analysis of parallel programs. In recent research scenario it is observed that on parallel processing and compilation the automatic source code generation is essential which generates benchmark programs to check the practical performance of variety of parallel compilation algorithms. An automatic source code generator tools

generate the source code from given specifications. These tools can be implemented by using various methods like model-based code generation, simulation-model.[1]

In this paper the authors have explored the emergence of Unified Modeling Language (UML) as a standard for modeling systems which has encouraged the use of automated software tools that facilitate the development process from system analysis through coding. In the proposed approach, the UML class diagram is used to generate XML schema and generated XML schema is used for code generation. The system is implemented for XML Schema generation using .NET platform. An open-source tool named JIBX which is developed by IBM is used for code generation.[2]

In this paper, the authors have described a software architecture supporting code generation from within Ptolemy II. Ptolemy II, a component-based design tool, is intended for embedded and real-time system design. The proposed infrastructure provides a platform for experimentation with synthesis of embedded software or hardware designs from high-level, Java-based specifications. A specification to be given consists of a set of interconnected actors whose functionality is defined in Java. The infrastructure parses the existing Java code for the actors and presents a simple API, using the Visitor pattern (UML) which will be transformed into the Abstract Syntax Tree (AST) and this AST will be used for writing code transformers and backend code generators. A code transformer performs generic optimizations, such as specialization of polymorphic data types, and domain-particular optimizations, such as static buffer allocation for communication between dataflow actors. The back end Java code which is converted from AST.[3]

In this paper authors have proposed an approach to code generation from UML diagrams with focus on the UML sequence diagram as the model. The conversion of UML diagram to XMI is done with help of some pre-existing tool. The meta-components like class, attributes and methods are mined from the XMI file. After extraction of Meta information java files are generated having code which is consistent and redundancy free code equivalent to the given sequence diagram.[4]

In this paper authors have proposed an approach to code generation from UML diagrams with focus on the UML sequence diagram as the model. The alteration of UML diagram to XMI is done with help of a variety of pre-existing tool. The meta-elements like class, attributes and methods are extracted from the XMI file. After extraction of meta information java files are generated having code which is consistent and redundancy free code equivalent to the given sequence diagram.[5]

## EXISTING SYSTEM

Java integrated development environments, or Java IDEs, are software platforms that provide

programmers and developers with a comprehensive set of tools for software development in a single product, specifically in the Java programming language. Java IDEs are built to work with specific application platforms and remove barriers involved in the lifecycle of software development. Java IDEs are used by development teams to develop new software, apps, web pages, and services, delivering a single tool with all the features needed to accomplish these tasks and removing the need for integrations. Java IDEs are used to program code for a particular stage or platforms and have integrated features specifically designed for use within these platforms including capabilities to compile, debug, or intelligently complete code routinely.

**Visual Studio:** Microsoft Visual Studio is an integrated development environment (IDE) for creating console and graphical user interface applications along with Windows Forms or WPF applications, web sites, web applications, and web services.

**IntelliJ IDEA:** JetBrains IntelliJ IDEA is a efficient and ergonomic IDE for web, project, and mobile Java development. It provides high-class support and productivity boosts for enterprise, mobile and web development in Java, Scala and Groovy, with all the latest technologies and frameworks supported out of the box.

**XCode:** XCode6 introduces a essentially new way to design and build software. Swift is an innovative new programming language for Cocoa and Cocoa Touch and, when combined with XCode tools, makes programming a delightfully live understanding. Live rendering within Interface Builder displays your hand-written UI code within the design canvas, instantly reflecting changes you type in code.

**Eclipse:** The Eclipse Foundation offers global community of individuals and organizations with a mature, scalable, and enterprise-responsive environment for open-source software alliance and modernization.

**NetBeans:** NetBeans IDE. The Smarter and Faster Way to Code. Quickly and easily develop desktop, mobile and web applications with Java, PHP, C/C++ and more. NetBeans IDE is Available, open source, and has a worldwide community of users and developers.

**AWS Cloud9:** AWS Cloud9 is a cloud-based integrated development environment (IDE) that lets you write, run, and debug your code with just a browser

**Oracle JDeveloper:** Oracle JDeveloper is a free integrated development environment that simplifies the development of Java-based SOA and Java EE applications. JDeveloper offers complete end-to-end development to Oracle Fusion Middleware and Oracle Fusion Applications with support for the full development life cycle.

## PROPOSED SYSTEM

In Java applications, the elements that comprise a GUI (Graphical User Interface) are stored in containers called forms.

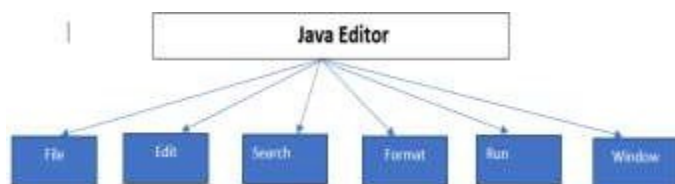


Figure 1: Component of editor

The Java language provides a set of user interface components from which GUI structures can be built. In addition, the IDE gives support for the Beans Binding specification which provides a way to coordinate the values of different bean properties.

This support also simplifies the creation of desktop database applications. The GUI Builder is a tool for designing GUIs visually. As you create and modify your GUI, the IDE necessarily generates the Java code to implement the interface. GUI forms are indicated by form nodes in the Projects, Files, and Favorites windows.

In this our application We provide all the services to the user which are needed to create, Compile and Execute a java program.

Services are:

**File:** In this section new (used to create a new file.), Open (used to open a previously existing file.), rename, save, save as, close (used to close the currently active file), exit this option are available for user.

**Edit:** Cut (used to cut the text from the text area), Paste (used to paste the text to the text area), Undo (used to perform the undo operation), undo, clear, Select all.

**Search:** find (user can search a word /letter within the page), Find next.

**Format:** Font and Color.

**RUN:** In java programming language the java translator produces machine code in the form the bytecode and run the program (as application, applet, servlet).

The above figure shows how programmer/ User create program, what are the options are available such as application, applet, servlet, jdbc .After editing code user can compile and execute program if any error is present

then it displayed on the output window and if code is correct then it shows the output as per user request

## PROS

1. Platform Independent.
2. Simpler and convenient to use.
3. Obtain less space.

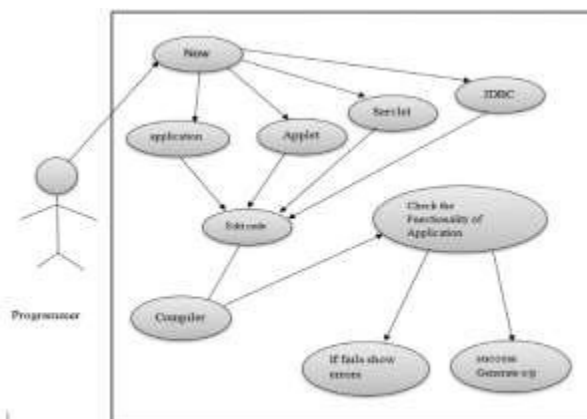


Fig Flow diagram

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## Investigational Study on Jupiter Auroras

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### ABSTRACT

Planet Jupiter is also referred to as a gas giant which comprises gaseous and liquid matter. It produces highly energetic blue auroras mainly influenced by ions produced from volcanic eruptions of the IO moon. The X-ray auroras on Jupiter can form on the poleward of the main auroral belt and it can be formed inconsistently at north and south poles. The XMM-Newton and Juno spacecraft observing the disturbances of the Jupiter atmosphere can provide better insight in understanding the abnormalities. This paper examined the various models and data to study the abnormalities in Jupiter auroras. This paper also presented the possible reason for the temperature variation into the polar regions of Jupiter. A deep analysis of data provided by the Juno spacecraft is presented by carefully examining the contribution of volcanic eruption of IO. A comparative study of the earth and Jupiter aurora has been also presented.

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### INTRODUCTION

Aurora formation in planets is heavily influenced by the solar winds and a coupling process between the atmosphere and the neighboring space environment. On planet earth, this aurora is formed by the interaction of earth's magnetic field caused by the magnetosphere and the high velocity solar winds originating from the sun. The solar winds collide with nitrogen and oxygen molecules in the ionosphere of the earth and produce planetary auroras. Therefore, solar wind has a great impact in the formation of earth's magnetic field but it is not the same for other planetary aurora's formation.

The auroras on planet Jupiter are somewhat different from other planetary auroras. Jupiter does not receive much solar winds as it is very far away from the sun. The formation of the aurora on Jupiter's polar region has been a vital concern while dealing with planet morphology. The soft x-ray auroras in Jupiter are formed by heavy ions such as sulfur and oxygen and energetic particles (~ mega electron volts MeV). The extensive observation on planet Jupiter for decades revealed various intriguing properties such as auroral formation, volcanic eruption on its moons. However, the accurate reason and mechanism for the formation of auroras on Jupiter is still unknown.

In earlier days, due to the lack of data about the Jupiter magnetosphere, it was quite difficult to study the properties of Jupiter. However, in recent decades, the advancement in technologies have provided various alternate methods to study the Jupiter. The data from

voyager was not enough and accurate for any kind of analysis but spacecrafts such as the JUNO, Hubble telescope are significantly useful for studying the planet's morphology. The XMM-Newton telescope provides the remote spectroscopic imaging which can help to study the constituents of ions and energy of particles in Jupiter ionosphere. The JUNO spacecraft is orbiting around planet Jupiter and can also provide the in-situ data and help us to map Jupiter's atmosphere. The observation from JUNO spacecraft found some abnormalities in Jupiter's magnetic field as it found fluctuation in planet Jupiter's magnetic field caused the pulsating X-ray aurora. Jupiter is the only planet which emits the X-ray aurora.

In this paper, the data from the JUNO spacecraft has been used to perform a rigorous analysis on Jupiter aurora. Various analyses based on the constituents and influence of Jupiter moons have been presented.

A comparative study of earth aurora and Jupiter aurora has been presented. The footprints of moon IO on planet Jupiter have been studied.

### DISCUSSION

The aurora formation of planet earth is greatly different from the planet Jupiter. The auroras on earth are generally produced between the 60 to 80 degrees and beyond 80 degrees the magnetic field reconnects from the earth and join the magnetic field in the solar wind but auroras formation can appear at the polar region with high energetic emission. The aurora on earth is created when the energized particles from the

sun are outburst towards the sun and that further collide with earth magnetic field lines. The magnetic field lines make the ions to collide with different molecules such as nitrogen and oxygen and hence forming auroras. However, the auroral formation on Jupiter is caused by the ions of moon IO when it discharges its ions towards the Jupiter atmosphere.

The complete mechanism behind the formation of auroras involves, when high energetic particles precipitate along the planet's magnetic field lines and transfer its energy to the ionosphere of Jupiter. The high rotation of planet Jupiter drags the magnetic field and makes it rotate too with the same rate. The high velocity solar wind particles collide with this high spinning field and cause the compression of particles. This confined heated particle caused by the compression within the field triggers a mechanism

called electromagnetic ion cyclotron waves (EMIC). In other words, the compressed mode waves trigger the ion anisotropy that produces the quasi- periodic EMIC waves ,which guides the atmospheric precipitation of the high energized ions of sulfur and oxygen along the magnetic field by a process called pitch angle diffusion process and helps to generate the X-ray auroral on polar regions. The schematic mechanism of the EMIC is shown in fig1. The trapped particles follow along the field lines and the ions which are guided by the field surf the EMIC waves and enter into the atmosphere of Jupiter influencing the gasses and triggering the auroras. The proton aurora on planet earth is generated by the interaction of ions and EMIC waves. Thus, strong rotating magnetic field of Jupiter is responsible for the formation of Jupiter auroras when the heated particles travel along with EMIC waves over longer distance and slammed into its ionosphere and forming X-auroras.

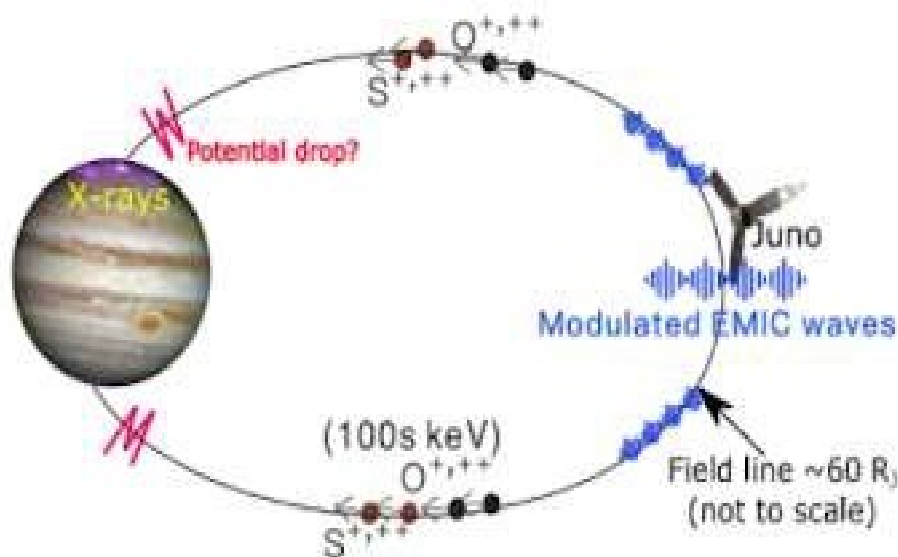


Figure 1. The schematic to illustrate the wave-particle interaction and the consequent x-ray emissions.

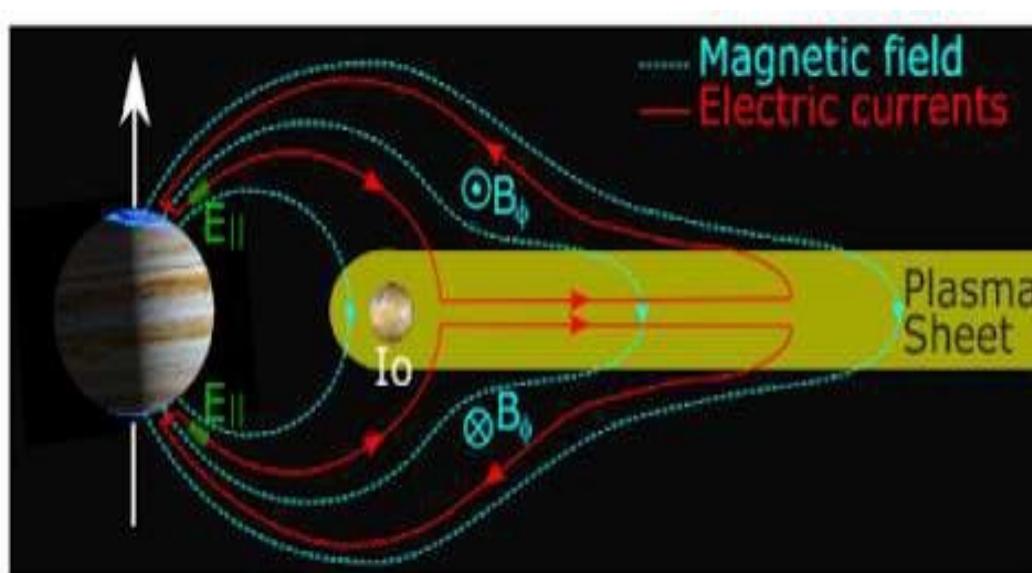


Figure2. The representation of magnetic field and electric current in the jupiter aurora formation

In the above figure 2, the momentum is transferred from the ionosphere to the plasma sheet with the help of the current system. The current flows radially outward and the  $\mathbf{J} \times \mathbf{B}$  force accelerates the magnetospheric plasma toward corotation with the planet that means plasma will go to corotate with the planet. Pedersen current slows down the charged particles in the ionosphere and then charged particles interact with the upper atmosphere by ion-neutral collision.

The moons of Jupiter play a significant role in formation of colorful X-ray auroras on planet Jupiter. The moon IO, innermost moon of Jupiter discharges the sulfur and oxygen into Jupiter's magnetic field which helps in formation of aurora. The footprints of IO on Jupiter influence various properties. Ions flowing through the magnetic field collide with the neutral atmosphere of Jupiter and exchange the charge which results in precipitation of heavy ions on Jupiter's polar region. The spectral data from the XMM newton telescope suggest that the ions are more likely to be sulfur or oxygen.

## RESULTS

The dip in the intensity of magnetic field in figure 3A , and the power spectrum of magnetic transverse wave figure 3B , shows the increase near the frequency of heavy ion gyro-periods ,suggesting that it can be EMIC waves as they are associated with these ion

species. Moreover, the previous studies on footprints of IO on Jupiter suggested that the major ions involved in the formation of auroras are sulfur and oxygen, which is getting produced from the volcanic eruption on moon IO. One of the characteristics of EMIC waves is ,the electromagnetic ion cyclotron waves (EMIC) phase speed is generally smaller than alfvén velocity. The formation of EMIC waves generally happens in the central plasma sheet and from there it travels along the magnetic field to the ionosphere of the Jupiter.

The EMIC waves are generally observed in the Pc1-Pc2 band (0.1-5 Hz) and these waves are strongly responsible for heavy ion heating. Inside the magnetosphere , which can be considered as dipolar and according to the studies the major source region can be considered near to the equator region. The strength of the magnetic field near the equator inside the magnetosphere. In figure 3 , the gray region represents the strong magnetic field area and figure 3 suggests the formation of EMIC waves generally take place in the central plasma sheet. At higher energies (5 Mev/nucleon) ,oxygen and sulfur charge states show uncertainty and from figure 1F the maximum energy observed is 1 KeV. This shows that the central plasma sheet on 16th and 17th July 2017 was the region of formation for EMIC waves. The study of Garrard et al. (1996) suggests that the ions which are having higher charge states possess greater rate of absorption due to smaller gyro-radii. These data predict the ion depletion from IO into the Jupiter radiation belt.

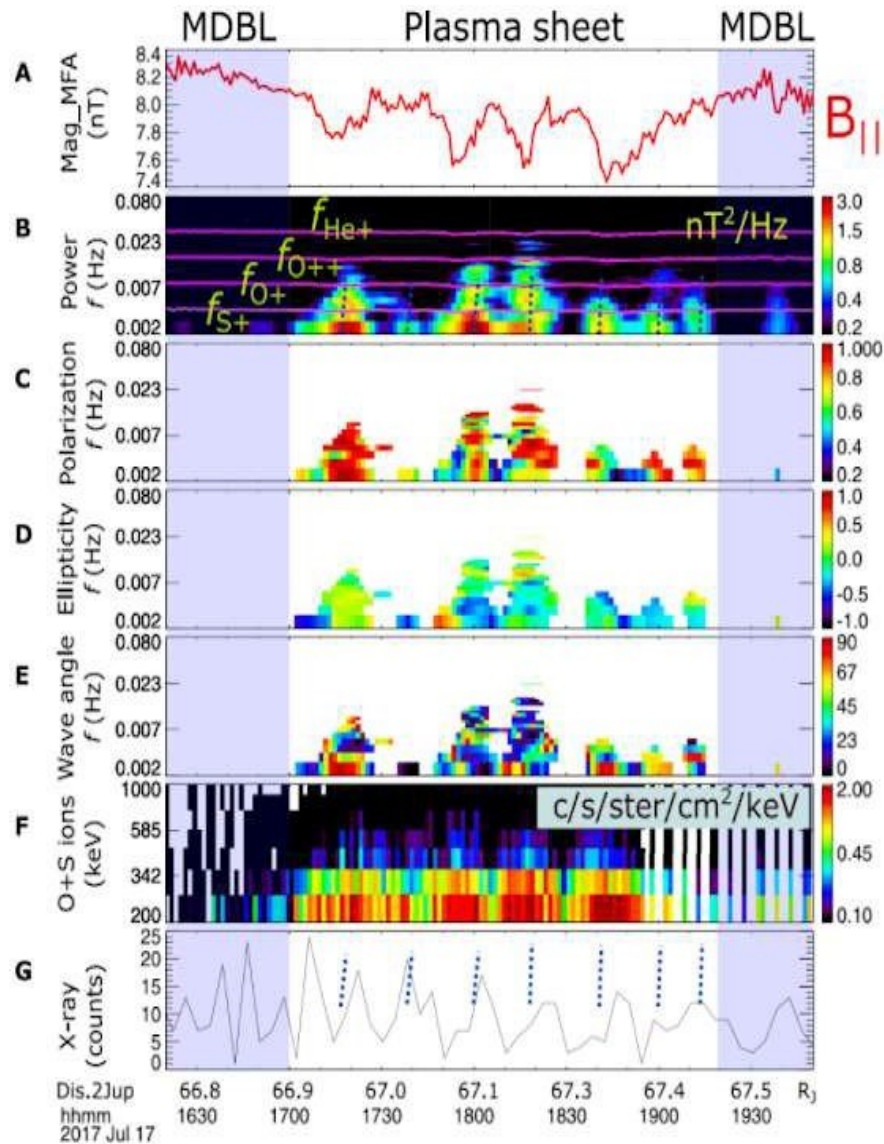


Figure 3. Juno and XMM measurement comparison. (A) Juno MAG measurements of the field-aligned magnetic component ( $B_{||}$ ) in mean field-aligned coordinates (coordinates obtained over a 60-min window). (B) Power spectral density of the magnetic field perturbations with the gyrofrequencies of various charge states of ions ( $\text{He}^+$ ,  $\text{O}^{++}$ ,  $\text{O}^+$ , and  $\text{S}^+$ ) overlaid. (C) Degree of polarization of the waves. (D) Wave ellipticity. (E) Wave normal angle. (F) Juno JEDI measurements of the sulfur and oxygen energy and intensity. (G) XMM EPIC-pn and MOS light curves (binned to a resolution of 4 min) from the north x-ray aurora, which was observable at this time. The x-ray light curve has been shifted to account for the light travel time from Jupiter to XMM. Blue dashed lines show the times of EMIC waves. The time taken to precipitate along

The magnetic field lines from the outer magnetosphere are expected to be tens of minutes or more so that it is not possible to directly connect a single EMIC wave with an x-ray pulse; however, they both exhibit similar quasi-periodicity.

The representation of magnetic field data collected from JUNO magnetometer data for 16th July 2017 is shown in figure 4 and figure 5. Figure 4 represents the payloadcentric magnetic field in x and y direction and

figure 5 represents the payloadcentric magnetic field in the z direction. The magnetic field from the figure 6 suggests the maximum magnetic field was observed around 13.2 nT. The representation of the net magnetic field is shown in the figure 6 for the better understanding of magnetic activity inside the Jupiter auroras. As suggested in previous studies the dip in the magnetic field and compared with the power data from figure 3, predicts the activity and formation of EMIC waves near to the central plasma sheet.

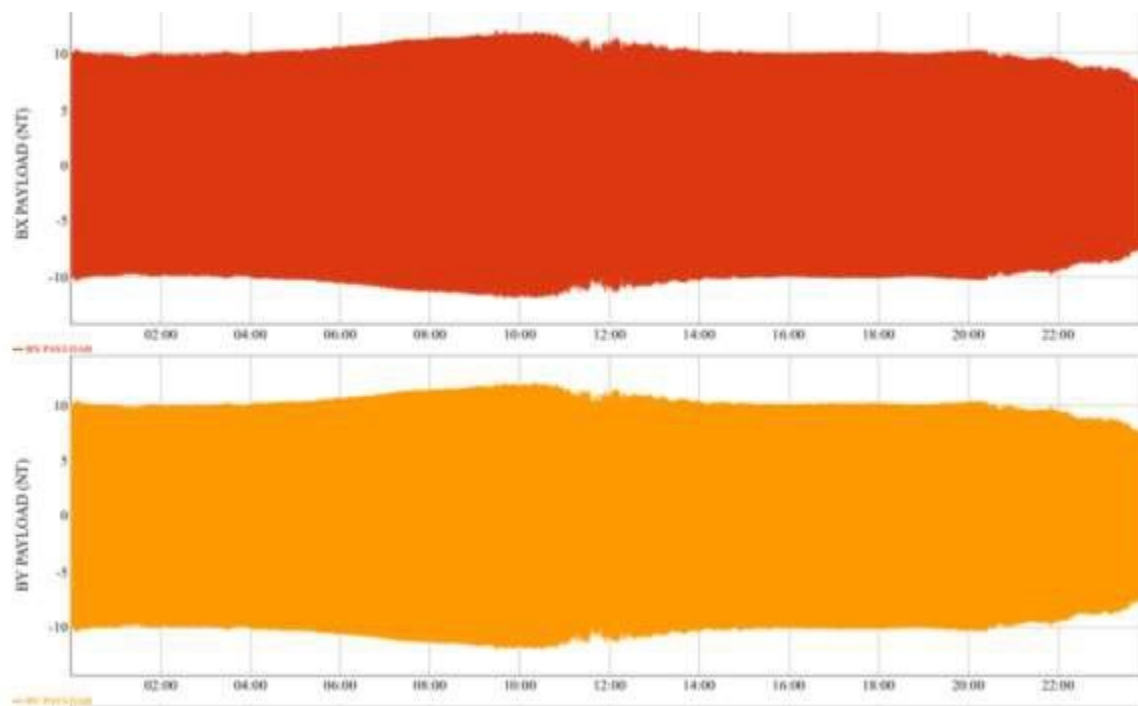


Figure 4. Payloadcentric Magnetic field(nT) in X and Y directions of date 16th July,2017collected from JUNO MAG data.

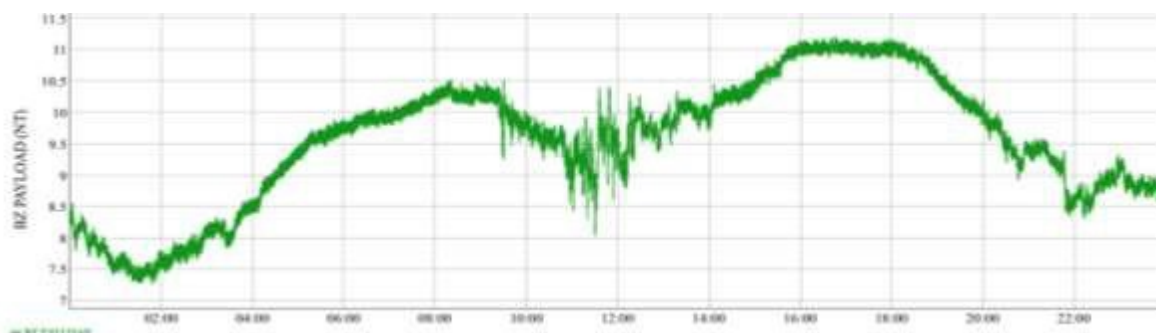


Figure 5. Payloadcentric Magnetic field(nT) in Z direction of date 16th July,2017 collected from JUNO MAG data.

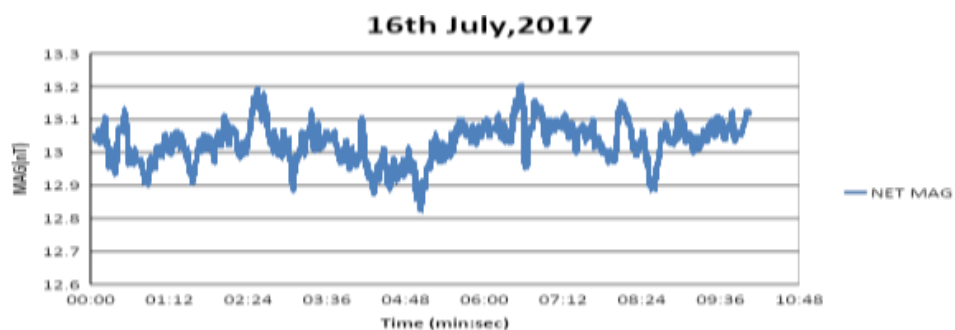


Figure 6. Payloadcentric Net Magnetic field(nT) of date 16th July,2017 for the first 10 min of the day collected from JUNO MAG data.



## CONCLUSION

In this paper, the footprints of IO on Jupiter suggested that the sulfur and oxygen contribution is quite high in the formation of Jupiter auroras. The analysis of compressional mode from figure 3, predicts the presence of EMIC waves. However, the energy of ions was less than 5 MeV, power data from figure 3 B predicts the formation of EMIC waves and also the contribution of different ions. This paper agrees with the result of previous works which suggest the presence of higher energetic ions such as  $O^{++}$  in the IO atmosphere. In figure 6, representation of net magnetic field activity has been presented.

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# Coronal Mass Ejection Using PFSS Model and Coronagraph for the 24th Solar Cycle

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## ABSTRACT

The sun's solar cycle generally happens for 11 years when the sun magnetic field completely flips. During the solar cycle, sun's solar prominence and sunspot are repeated with some significant changes in the magnetic field of the sun. The 24th solar cycle began from January 2008 with nearly 2 sunspots when sun shown the reversed polarity and it ended on December 2019. A detailed study of the 24th solar cycle has been proposed in this paper with the help of data provided by SOHO/LASCO, Global oscillation network organisation (GONG), Wilcox Solar Observatory and Solar Dynamic Observatory (SDO). A deep study on the coronal mass ejection has been discussed with the help of synoptic coronal plot and magnetographs. The geomagnetic storm and the solar flux have also been studied which can influence the earth magnetic fields and other spacecrafts.

**Keywords** *Coronal Mass Ejection, Photosphere, Geomagnetic Storms, solar prominences*

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## INTRODUCTION

The solar system consists of solar winds, solar storms, coronal mass ejection which is substantially getting originated from sun atmosphere. The sun atmosphere is surely a great point of concern while dealing with phenomena like solar wind, solar storms and coronal mass ejection. Sun's atmosphere has been constantly getting observed from different apparatuses and probes. The data's provided by these probes are very useful as they get extensively used to study the different properties of sun and the influence of solar atmosphere. There are many proposed methods and models to study the evolution of sun atmosphere and its influence in the solar system. In this paper, PFSS model have been used to study the dynamic changes in the sun's atmosphere.

Over the years, it has been observed that sun's magnetic field influences not only the earth but also the solar system in many ways. The sun's magnetic field is responsible for many coronal features such as helmet streamers, coronal holes, coronal loops, and it also controls the solar wind outflow. However, studying the sun's magnetic field is very troublesome and different probes such as SOHO,

LASCO has been placed in outer space to observe the different properties of suns. Organization such as SDO, GONG NSO is continuously taking the data's which are provided by the probes and with the help of those data's they have created different models to study the sun's magnetic field. Potential Field Source Surface (PFSS) model is a new approach which was proposed by Schatten, Wilcox, and Ness (1969) Altschuler and Newkirk (1969) is getting extensively used to study the global coronal magnetic field using the synoptic maps derived from solar magnetograms. The PFSS model neglects the existence of coronal currents and it also considers the assumption that in the lower steady state corona the magnetic pressure  $P_B$  dominates over the plasma thermal pressure  $P_{th}$ , i.e.,  $\beta = P_{th}/P_B \ll 1$ . The PFSS model also assumes existence of spherical surface which called as source-surface. The source-surface serves as an "open" magnetic field boundary. The source surface divides the regions of solar corona into two regions. The first region is between source and photosphere where coronal loops exist and the second region is beyond the source surface where only open magnetic field lines exist. Due to



magnetic field intensity and coronal heating, the solar wind flow moves away at some heights from the sun and drags the magnetic field into interplanetary space. Due to the outflow of magnetic field lines, the magnetic field at the source surface is purely radial. Different observations of the location of source surface have suggested the different radii for the surface such as 1.3, 2.6, 1.6  $R_0$  (Levine, Altschuler, & Harvey, 1977) (Schatten, 1971; Schatten et al., 1969) where  $R_0$  is the radius of the sun. The current PFSS model uses the 2.5  $R_0$  as the radius for the source surface as it was suggested by Altschuler and Newkirk (1969). The Global Oscillation Network Group (GONG) is a community-based program to conduct a detailed study of solar internal structure and dynamics using helioseismology. GONG has six station network of extremely sensitive, and stable velocity imagers located around the earth to obtain nearly continuous sensitive, and stable velocity imagers located around the earth to obtain nearly continuous observations of the Sun's "five-minute" oscillations, or pulsations. In this paper, solutions of the PFSS model for various heights of the source-surface are investigated for 2008-2019, using global Oscillation Network Group (GONG) synoptic maps of the photospheric field. The detailed study of the coronal holes, open magnetic flux, sunspots and magnetic field of sun has been examined in the paper. A solar cycle is a period of sun, when its magnetic field completely flips that means sun's north and south poles switch places and it generally takes the 11 years for one

cycle. The sun's current solar cycle is 25th and it will continue until year 2030. The previous solar cycle began from 4 January 2008 and ended in December 2019. The solar cycle greatly influences the sun's activity such as sunspots, coronal mass ejection and magnetic fields.

## DISCUSSION

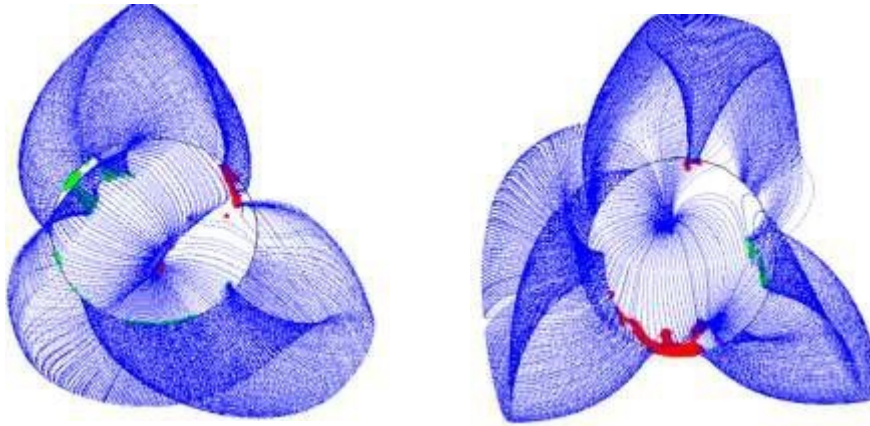
The most commonly used PFSS model of the coronal magnetic field  $B(r, \theta, \phi)$  which is widely used to study the physical changes in sun's magnetic field is based on a current-free approximation of the solar corona in the region  $R_0 \leq r \leq R_{ss}$  (Altschuler, Levine, Stix, Harvey, 1977; Altschuler & Newkirk, 1969; Schatten et al., 1969), where  $r$  is the radius,  $\theta$  is the colatitude ( $\theta \in [0, \pi]$ ),  $\phi$  is the longitude ( $\phi \in [0, 2\pi]$ ), and  $R_{ss}$  is the radius of the source-surface which surrounds the Sun. The current-free assumption which is  $\nabla \times B = 0$ , means that the magnetic field  $B$  can be expressed as the gradient of a scalar potential  $\Psi$ , i.e.,  $B = -\nabla \Psi$ . Combined with Gauss's law  $\nabla \cdot B = 0$ , it gives the Laplace equation for the potential,  $\nabla^2 \Psi = 0$ . The solutions of the Laplace equation can also be represented in the form of spherical harmonics. Taking the assumption that at the source-surface ( $r = R_{ss}$ ) the magnetic field is purely radial and using the solution for the scalar potential, i.e.,  $B_\theta(R_{ss}) = B_\phi(R_{ss}) = 0$  and  $B(R_{ss}) = B_r(R_{ss})$  hence we obtain the magnetic field components,

$$\begin{aligned}
 B_r &= -\frac{\partial \Psi}{\partial r} = \sum_{n=1}^{\infty} \left[ (n+1) \left( \frac{R_0}{r} \right)^{n+2} + n \left( \frac{R_0}{R_{ss}} \right)^{n+2} \left( \frac{r}{R_{ss}} \right)^{n-1} \right] \\
 &\times \sum_{m=0}^n P_n^m(\theta) (g_{nm} \cos m\phi + h_{nm} \sin m\phi), \\
 B_\theta &= -\frac{1}{r} \frac{\partial \Psi}{\partial \theta} = -\sum_{n=1}^{\infty} \left[ \left( \frac{R_0}{r} \right)^{n+2} - \left( \frac{R_0}{R_{ss}} \right)^{n+2} \left( \frac{r}{R_{ss}} \right)^{n-1} \right] \\
 &\times \sum_{m=0}^n \frac{dP_n^m(\theta)}{d\theta} (g_{nm} \cos m\phi + h_{nm} \sin m\phi),
 \end{aligned}$$

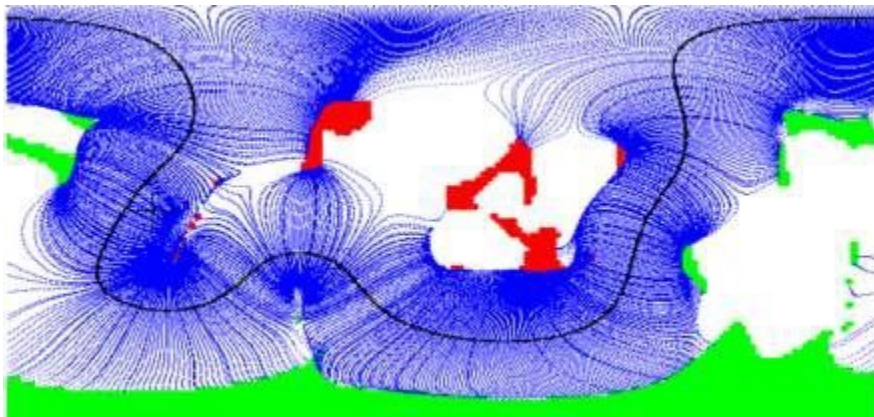
$$B_\phi = -\frac{1}{r \sin \theta} \frac{\partial \Psi}{\partial \phi} = \sum_{n=1}^{\infty} \left[ \left( \frac{R_0}{r} \right)^{n+2} - \left( \frac{R_0}{R_{ss}} \right)^{n+2} \left( \frac{r}{R_{ss}} \right)^{n-1} \right] \\ \times \sum_{m=0}^n P_n^m(\theta) \frac{m}{\sin \theta} (g_{nm} \sin m\phi - h_{nm} \cos m\phi),$$

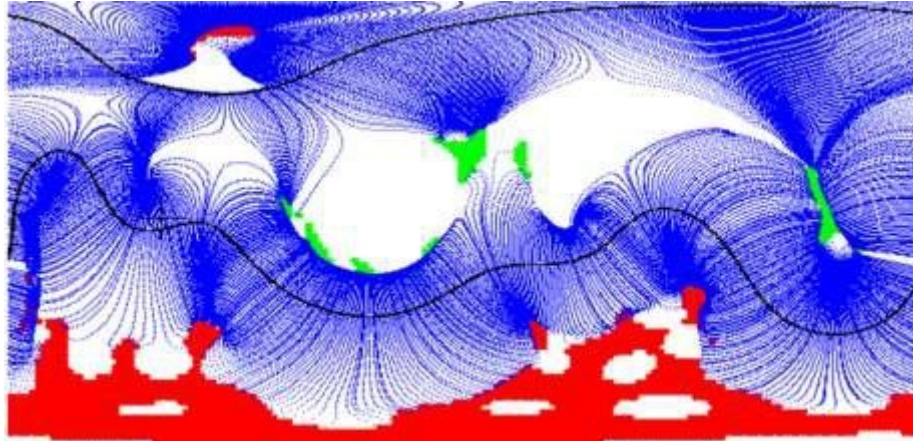
$P_n^m(\theta)$  are associated Legendre polynomials with Schmidt normalization. The coefficients  $g_{nm}$  and  $h_{nm}$  of the above equation can be derived using orthogonality of the associated Legendre polynomials

$$\begin{Bmatrix} g_{nm} \\ h_{nm} \end{Bmatrix} = \frac{2n+1}{4\pi \left( n+1 + n \left( \frac{R_0}{R_{ss}} \right)^{2n+1} \right)} \\ \times \int_0^\pi d\theta \sin \theta P_n^m(\theta) \int_0^{2\pi} d\phi B_r(R_0, \theta, \phi) \begin{Bmatrix} \cos m\phi \\ \sin m\phi \end{Bmatrix}.$$



1. The line-of-sight coronal hole plot for the year (a) 2011 and (b) 2014



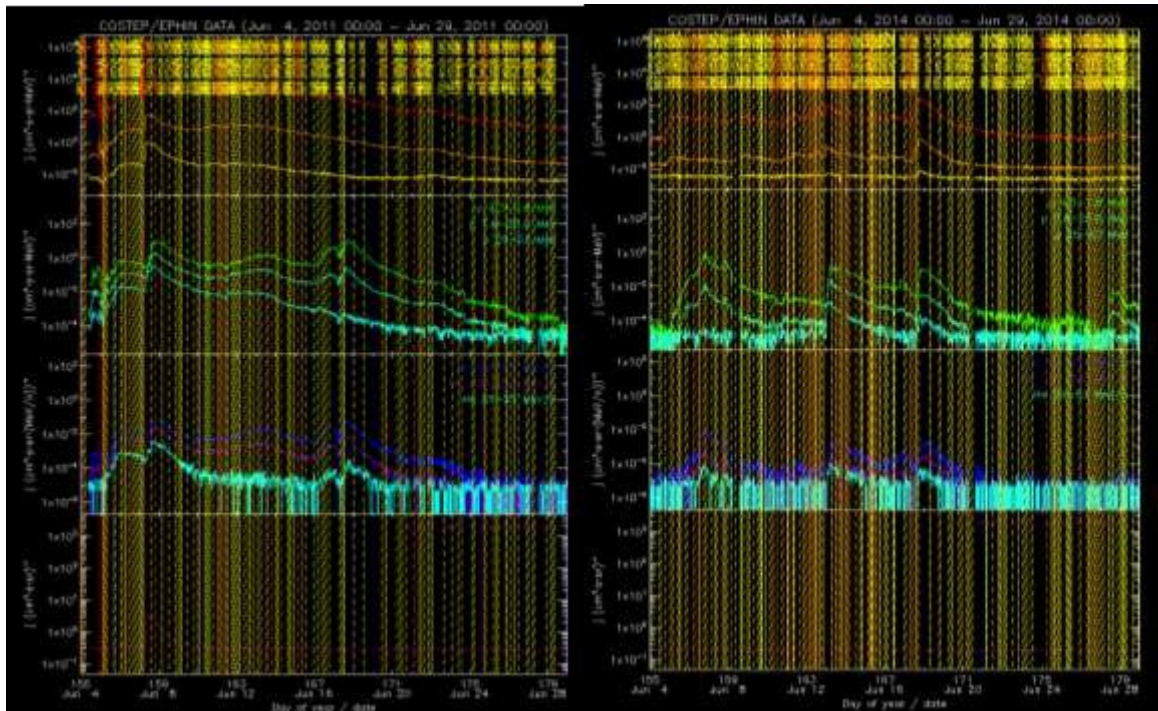


2. The synoptic coronal hole plot for the year (a)2011 and (b) 2014

The observations from the synoptic coronal hole plot and line-of-sight coronal hole plot gives a better insight into the changes and evolution of magnetic field properties over the years for sun's atmosphere. The 24th solar cycle started from January 2008 and it ended in December 2019. The observations from the synoptic coronal hole plot predicts that year 2011 and year 2014 had the solar maxima with maximum number of coronal holes and coronal mass ejection. The data's taken from SOHO/EPHIN of the proton density, electron density clearly predicts the duration of solar maxima and the year 2014 shows the abrupt increase in coronal mass ejection. The coronal mass ejection is an abrupt outflow of high energetic plasma at speeds ranges from 10 to about 2,000 km s<sup>-1</sup> moving through solar corona. When CME's moves away from the field of view of coronagraph, it is often termed as interplanetary coronal mass ejection. The following studies([Akmal et al., 2001](#); [Raymond, 2002](#);

[Ciaravella et al., 2003](#); [Kohl et al., 2006](#); [Bemporad and Mancuso, 2010](#)). suggests that there is an accumulation of thermal energy into CMEs in the inner corona where they are having a greater temperature than the ambient solar wind. Corona mass ejection is basically caused by the magnetic pressure inside the sun's photosphere. Coronal mass ejection (CME) originating from the Sun are the major drivers of space weather disturbances. However, the dynamic properties of coronal mass ejection have not been understood completely yet but the data from different space devices can provide a good intuition about the working of CME's. To study the properties of coronal mass ejection (CME's), we have examined the evolution and changes in the proton and electron density for different years. It is observed that the maximum electron density in the year 2011 was more than  $1 \times 10^2 \text{ (cm}^2 \cdot \text{s} \cdot \text{sr} \cdot \text{MeV})^{-1}$  whereas for the year 2014 it was lower than  $1 \times 10^2 \text{ (cm}^2 \cdot \text{s} \cdot \text{sr} \cdot \text{MeV})^{-1}$ .

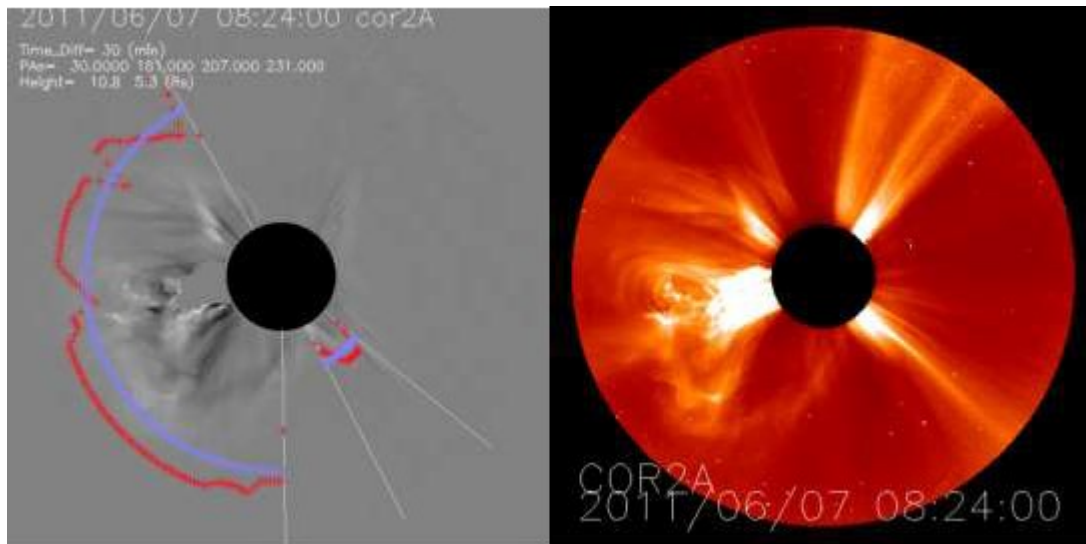




3. The proton density graph for the year (a) 2011 and (b)2014

The data's from soho spacecraft predicted the year 2014 was having maximum coronal mass ejection. The PFSS model also predicts that year 2014 was having the maximum number of coronal holes and encountered maximum number of sunspots. In the figure 3, the vertical lines show the coronal mass ejection (CME) and it is clearly visible that year 2014 encountered maximum rate of coronal mass ejection and thus it behaves like a solar maximum. The year 2011 was the most active year in the 24th solar cycle as the sun produced the most energetic flares and coronal mass ejection. The three categories of solar flares emanating from the sun are C, M and X. out of all these three categories X class

flares are the most powerful and it is influencing the space weather significantly. The month November of year 2011 was the most violent and active for the 24th solar cycle as it was having the maximum number of sunspots. The SOHO spacecraft also observed one of the most violent prominence eruptions happened on 7 June 2011 and spouted off in the interplanetary space. The coronagraph of coronal mass ejection of 7th June has been shown in the figure 4 with the help of solar eruptive event detection system (SEEDS) The STEREO spacecraft also witnessed the violent coronal mass ejection at the far side of sun in opposite direction from the earth on February 26,2011.



4. The solar disk model representing the violent coronal mass ejection on 7 June 2011

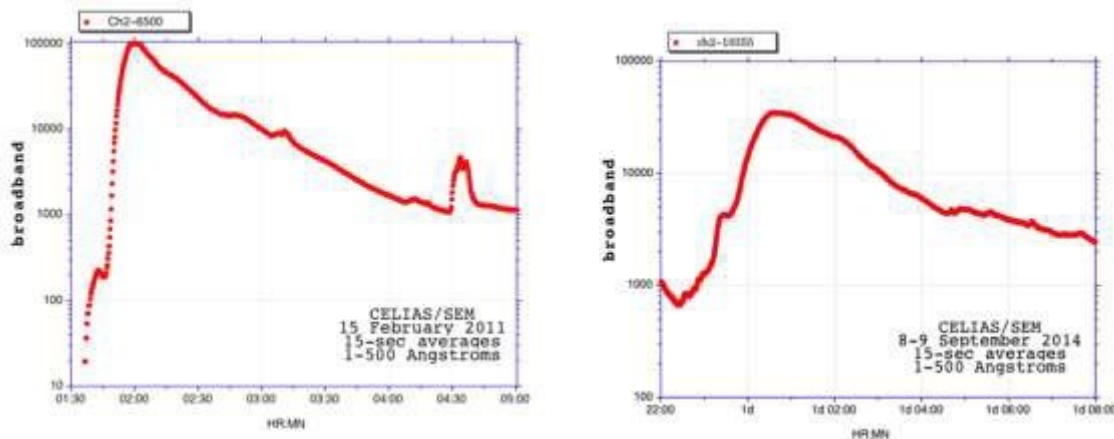
The observation from SOHO spacecraft predicted the M4.5 x-ray flare in AR2158 with an impulsive flare at N14E31 leading to a shock 72 hours later on 11 Sep 2014 (DOY 254) at 2302 UT. The shocks which caused from CME's can generate type II radio burst. The CME-driven shock can accelerate nonthermal electrons, and the accelerated electrons produce Langmuir waves in the surrounding areas of shock. Afterwards the Langmuir waves gets converted into radio emission at the second and fundamental harmonic of the local plasma frequency [Melrose, 1980; Bale et al., 1999; Gopalswamy, 2010]. The emission frequencies of type II radio bursts decrease with time, when the CME-driven shocks moves from solar corona to interplanetary space because they are proportional to the square root of local electron densities, which decreases with heliocentric distance. The type II radio burst frequency ( $f_p$ ) of the fundamental lane is directly related to the electron densities( $n_e$ ):

$$f_p = 0.009 \sqrt{n_e}$$

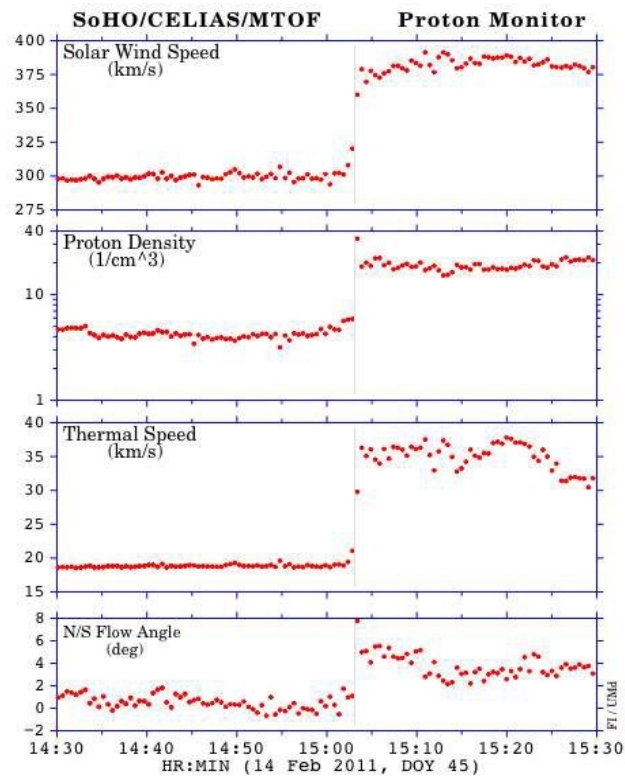
$n_e$  is expressed in  $\text{cm}^{-3}$  and  $f_p$  is expressed in megahertz (MHz). Hence, the local electron densities can be deduced from type II radio observations.

The solar wind speed for year 2014 was more than 450 km/s and the the proton density was lower than  $40(1/\text{cm}^3)$ . The X2.2 x-ray flare in AR1158 with a halo CME, leading to a shock 70.7 hours later on 18 Feb 2011 (DOY 049) at 0040 UT.

The CME-driven shock noticed on 7 June 2011 by the SOHO/LASCO coronagraphs and its connected two DH type II radio bursts by Wind/WAVES instrument was studied by Susino et al. [2015] [Bougeret et al., 1995] and after a comparison of Wind/WAVES dynamic spectrum data based on equation  $f_p$  with DH type II source regions observed from SOHO/LASCO pB measurements, they proved that the DH type II radio bursts are getting originated from two different locations: one is near the front of a CME and the other is at the flank of a CME. Observations from the SEEDS also SOHO LASCO also suggest that the solar cycle 24 has attained its solar maxima in the year 2014. The solar dynamics observatory observed the very powerful class X2 solar flare on 15 feb,2011 and the figure 5(a) represents the intensity of the flare and the data's from SOHO/CELIAS/MTOF presents the maximum solar wind speed for this month. The maximum solar speed wind for month feb 2011 was nearly 400 with very high proton density that greatly influences the interplanetary space and the earth geomagnetic fields.



5. Solar flares for year (a) 2011 and (b) 2014



6. plot of solar wind speed and proton density for the year 14 February 2011

A geomagnetic storm occurs when there is significant exchange of energy into the space environment surrounding earth from the solar winds. A geomagnetic storm can affect the satellites, magnetospheres of earth and it can also influence the radio communication.

The SOHO spacecraft witnessed the first geomagnetic storm having distance less than  $-73\text{nT}$  which is associated with a coronal mass ejection (CME) and that produces the shock which occurred on 6 April 2010. This geomagnetic storm was associated with a CME event of 3 April 2010 (e.g., Mostly et al. 2010; Liu et al. 2011; Wood et al.

2011). Geomagnetic storm can be induced from various factors such as the magnetic cloud sheath, the leading and trailing part of magnetic cloud sheath (e.g., Wu and Lepping 2002a). The figure 7 represents the height of CME and ions involved for the event. The height of CME was not much big but it actually triggered the geomagnetic storm on 6 April 2010. The geomagnetic storm on 15 March 2015 was associated with a CME event. SOHO/LASCO C3 observed the partial halo CME and it was connected with C9.1/1F flare (S22 W25). The observed storm was a series of type II/IV radio bursts and it was a two-step storm.



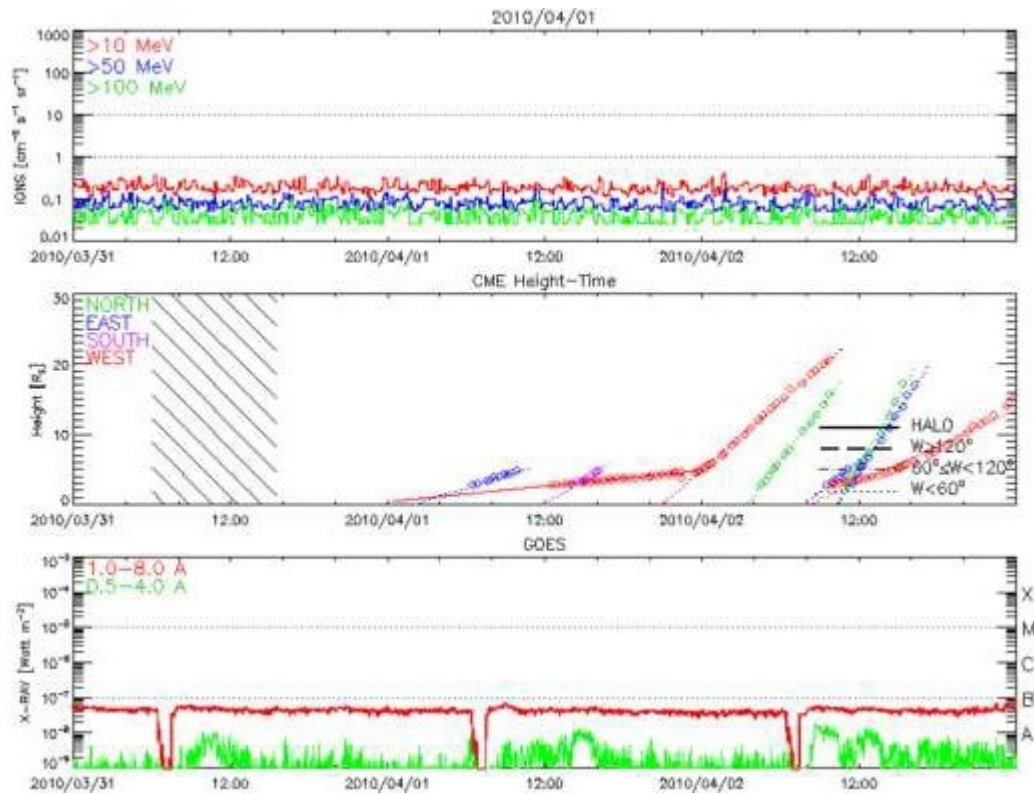


Fig 7. representation of proton ions density and height of CME on 4 april, 2010.

## CONCLUSION

The 24th solar cycle has been examined with the help of PFSS model, synoptic charts and coronagraphs derived from SOHO/LASCO spacecraft. The abnormalities in each year including the solar maxima have been examined. Using the data provided by the SOHO/LASCO, SEEDS, Wilcox Solar Observatory and NSO GONG, the detailed study of solar maxima has been proposed. The maximum sunspots have been observed in the year 2014 and also the M4.5 X-ray flare in AR2158 with an impulsive flare at N14E31 that created the shock in year 2014 has been studied after comparing with the coronagraphs of SEEDS. From the figure 2, synoptic coronal hole plot, we found that November 2011 was the most active month for the 24th solar cycle. Data's from magnetogram, suggested that November 2011 have more than 95 sunspot and maximum number of coronal holes observed in the year 2011. It is observed from the data of magnetograph provided by global oscillation network organisation GONG that there is decrease in number of sunspots from April 2014 and after 2014, there is not much sunspot has observed which predicted the year 2014 was the solar maxima. The observation of 7 June 2011 from SOHO/LASCO coronagraph witnessed the strong outflow of coronal mass ejection as shown in figure 4 which created the

shock waves and produced the type II radio burst.

The geomagnetic storm which can significantly disturb the magnetosphere of earth was witnessed by the SOHO spacecraft and the data from the figure 7 helped us to find the ions and proton density associated with the storm.

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# Object Detection for Blind Peoples Using AI & IOT

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## ABSTRACT

Vision is one of the veritably essential mortal senses and it plays the most important part in human perception about girding terrain. Hence, over thousands of papers are published on these subjects that propose a spread of computer vision products and services by developing new electronic aids for the blind. This paper aims to introduce a proposed system that restores a central function of the sensitive system which is that the identification of girding objects. This system is rested on the original features birth conception. The simulation results using SFIT algorithm and crucial- points matching showed good delicacy for detecting objects. Therefore, our donation is to present the idea of a visual negotiation system grounded on features lines and matching to honor and detect objects in images.

**Keywords**—*Video processing; pattern recognition; audio connectivity.*

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## INTRODUCTION

We The Technology for navigation of the eyeless isn't sufficiently accessible bias calculate heavily on structure conditions. Without vision it can be challenging for visually im- paired persons to navigate through apartments or different road paths. The mainend to develop the design is to help the visually disabled people and to descry the obstacles to descry the road business signs. The eyeless person's life come easier and they can go anywhere where they want without anyone helps. They can walk alone through road they don't need anyone to help them they can handle their tone rightly. The precluding druggies from dangerous position our end is to collected from terrain (cameras, detectors, scanners, etc.) and transmitted to the druggies to the audio format. When detectors identify objects, it shoots the data to the audio module and get converted into audio clip. A handicap as close as 4 cm can be detected by these modules. The ideal of this design is to give cost effective way to allow path planning for eyeless people. With the help of object discovery system and navigation system the eyeless person can fluently descry the object through cameras or through some detectors. For illustration, it's veritably delicate for to find a particular room in a strange terrain. The eyeless and visually disabled people find it delicate to know a person is talking to them or someone differently during a discussion. The Computer vision technologies, especially neural network, have been fleetly developed.

The end of to guide the eyeless people through the

affair of processor or regulator to navigate them. The purpose of the design is to a system to help eyeless people in their life. With the help of these system the eyeless person does their work more effectively. They don't depend on any others to perform any exertion. With the help of these system, they can walk alone on the road or business areas or the demesne anywhere they want. They're veritably curious about the beauty of the world, what passing in front so with the help of these system they can enjoy their life. The movable device, designed for visually disabled people to help them with getting around. Utmost commercially available bias, these devices should give direction to position and alert the eyeless people of handicap in their path one of the most important effects is to warn the eyeless peoples to any handicap in their path and navigate the road or different areas to the eyeless persons through the voice backing. It converts the communication and these communication shoot to the druggies through the audio signal, it also describes the road business signs, with all of these module the eyeless person's lives come easier. In this way we're try to developing the design to help the eyeless people and they can enjoy their life.

## LITERATURE REVIEW

Eyeless backing is promoting an extensively challenge in computer vision similar as navigation and path finding. In this paper, two cameras placed on eyeless person's spectacles, GPS free service, and ultra-sonic detector are employed to give the necessary information about the girding terrain. A dataset of objects gathered from diurnal scenes is created to apply the needed recognition. Objects

discovery is used to find objects in the real world from an image of the world similar as faces, bikes, chairpersons, doors, or tables that are common in the scenes of a eyeless.

The two cameras are necessary to induce the depth by creating the difference chart of the scene, GPS service is used to produce groups of objects grounded on their locales, and the detector is used to describe any handicap at a medium to long distance.

The descriptor of the Speeded-Up Robust Features system is optimized to perform the recognition. The proposed system for the eyeless points at expanding possibilities to people with vision loss to achieve their full eventuality. The experimental results reveal the performance of the proposed work in about real time system. (1)

This design is a vision cover system designed to help eyeless people for independent navigation. Its working conception is grounded on 'image to sound' conversion. The vision detector captures the image in front of eyeless stoner. This image is also fed to MATLAB for processing. Process intuit processes the captured image and enhances the significant vision data. This reused image is also compared with the data base kept in microcontroller. The reused information is also presented as a structured form of aural signal and it's conveyed to the eyeless stoner using set of observance phones. Color information from the interested object is estimated to

determine the color of the object. The color affair is informed to the eyeless stoner through headphones. (2)

We present a new dataset with the thing of advancing the state of the art in object recognition by placing the question of object recognition in the environment of the broader question of scene understanding. This is achieved by gathering images of complex everyday scenes containing common objects in their natural environment. Objects are labeled using per-case segmentations to prop in precise object localization. Our dataset contains prints of 91 objects types that would be fluently recognizable by a 4- time-old. With a aggregate of 2.5 million labeled cases in 328k images, the creation of our dataset drew upon expansive crowd worker involvement via novel stoner interfaces for order discovery, case finding and case segmentation. We present a detailed statistical analysis of the dataset in comparison to PASCAL, ImageNet, and SUN. Eventually, we give birth performance analysis for bounding box and segmentation detection results using a Deformable Parts Model. (3)

#### HARDWARE COMPONENTS USED

The camera modules specified for image processing; the recognition algorithm is color-based filtering. The main purpose of this camera is recognition objects and name them as a familiar object.



*Figure Raspberry Pi Camera module*

The Raspberry Pi is a low cost, credit- cardsized computer that entrapments into a computer examiner or Television, and uses a standard keyboard and mouse. It's a able little device that enables people of all periods to explore computing, and to learn how to program in languages like Scratch and Python.



*Figure Raspberry Pi 4*

Obviously, wire will be used to connect the components.

To interface Raspberry pi cam with Raspberry pi module, we will be using an additional long flex cable.



*Figure Jumper Wire*

The headphones are used in the to help theblind person to detect the object. And the headphone is connected to the Raspberry Pi circuit. And to help the blind person are easy to detect the object and the voice.



*Figure Bluetooth Earphone*

Lipo Rechargeable Battery is also known as Lipo or Lipoly batteries are thin, light, and powerful. This battery has a capacity of 3000mAH.



*Figure Lithium ion battery*

- Voltage: 3.7V
- Capacity: 3000mAh
- Approx. Size: 70mm x 60mm

## WORKING

In the proposed system, 360° camera are used for object detection. This module uses camera to detect objects in the left, right, front and ground or knee level objects. These cameras are capable to detect objects in the range of 400 cm. The proposed system detects any obstacle in the path of the blind via a camera and sends back vibrotactile feedback to inform the blind about its localization via wireless Bluetooth device.

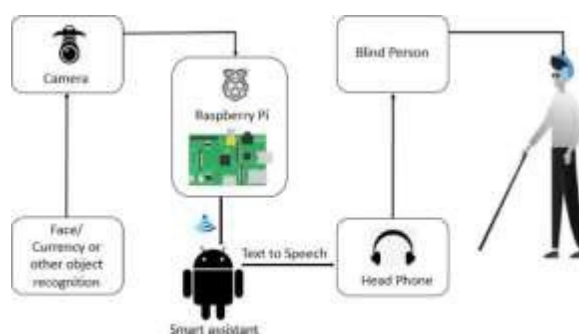


Figure Architectural diagram of real time object detector

## CONCLUSION

Our projects aim at being an aid for a blind person and act as their eyes to the world where even though they cannot see but could identify the objects in their immediate environment. This project is a real-time object detection system that monitors the environment and provides audio information about the environment making the blind person's navigation indoors more safe and secure and helps them in their daily chores. The project has a simple architecture that transforms the visual information captured using a camera to voice information using Raspberry Pi in which object detection and recognition will take place in real time within a small fraction of time with minimum loss.

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# Hostel Management System

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## ABSTRACT

As we move into the twenty-first century, there are lot changes seen in our daily life. While everything was becoming digital, the story of Digital India came to fruition. As part of this, we are working on a small project called Hostel Management System. The numbers of students being far from home for their higher studies. living far from home is always risky and stressful .so this software gives us better option for them. For this project we are taking lots of surveys and also check out other option available for that has much efficient and how they costing to hosteller.

Managing hostel has huge responsibility, we need strong security for that. By this project we can handle and make sure better feasibility to all Hosteller's. If all the management of the hostel is done online, then everything can be handled easily and simply. In this application we can manage hostel's hole Data securely. There are two main modules are present in this project. This project is much more user friendly and provide better option in market.

**Keywords**— *Fruition, friendly, century, feasibility, responsible.*

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## INTRODUCTION

We introduced the hostel management system for to facilitate the hostel administrator in hostel management systems. our project is much more user-friendly software that is why we not require specialized person to handle this software.

Our "HOSTEL MANAGEMENT SYSTEM" provide much-needed facilities to hostel admin like keeping hostel records in an efficient manner and other things that related to the hostel.

The manual way of hostel record management is very difficult to find the records of all students their mess bills and the information about the old students (hostelers) who had left the hostel many years ago. This is very easily handled by our software.

## LITERATURE SURVEY

In existing time, the hostel management is very lengthy and complicated because we need lot of effort for workload management in hostel. Also, we have to keep data records in files which is itself lengthy process. Storing data records with the help of files are very difficult in search and also have very time consuming process. We have kept no of files for longer time so if we want any previous hostellers' details, we got lot of trouble with them.so we introduced this "HOSTEL MANagements SYSTEM" to overcome of these problems. By using hostel management system, we can divide work load from hostel administrators and easily access to all hosteler records.

This system overcomes some other drawback from last generation as follows:

- Reduce human power .
- Avoids repetition of same procedure.
- High security.
- Reduce data redundancy.
- Easy to handle.
- Very simple to update data.
- Record keeping is simple.
- Backup data can be easily generated.
- The records are stored for long time so data of hosteller is cannot be lost or does not damage.

## I] ADMINISTRATOR MODULE

The Administrator can allot rooms for students to the different hostel wings also he can vacate the students for the hostels. He can give instructions on status of the fee payment. He can make changes in the details of the students. He can change student rooms, edit their information and delete the student records. He can edit the news board. He can check the complaints The Hostel Secretary can :Make the Mess menu and Make the mess bill & hostel bill.

## II) STUDENTS MODULE

As administrator module contains different operations and the has different operating module

As them we have the student module which is only accessible by hosteller (student's) . they have different id and password for this . students can a be change their password , they can check their attendance ,pending hostel fees , also notice for administrator and much more things.

Also, there is separate option of complaints and other help where students can discuss about their problems . which help to bring hostel safe and excellence management.

## METHODS AND PROCESS

### 1) System Analysis and Design

In this phase we have generated reports of collecting factual data, understanding the processes involved, identifying problems and recommending better suggestions for improving the hostel management system. In system analysis we are studying business processes, entity relationships, gathering optimal data, better understanding of the information flow and evolving solutions for overcoming the drawback of the system so as to achieve the desired organizational goals.

System design is a process of creation of a new system. In this phase we are focus on the detailed implementation of the system. System design has two phases as follows:

- 1) logical design and
- 2) physical design

### 2) Existing System

As we know there is large number of students living in hostels. Therefore, many complications are occurring to handle their responsibility. By this project method we countered numerous drawbacks, some of which are human error, low security, data redundancy, difficulty in management, difficulty in data update, difficulty in record keeping, difficulty in data recovery in case of natural disaster and accidental situations etc.

Thus, to avoid such problems of hostel facilities, there is need for application of effective optimization methods and scheduling algorithms on the part of the hostel management facilities. The given system addresses the drawbacks of the existing system and ensures data integrity with their problem handling capabilities. The given system is more user-friendly and GUI- oriented.

### 3) Software Tool (Programming Language)

For this project we are used java language with JFrame, Php, Neatbeans, MySQL database etc.

## 4) Process Design

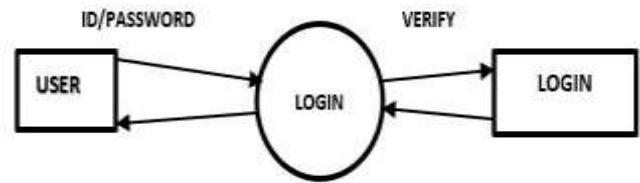
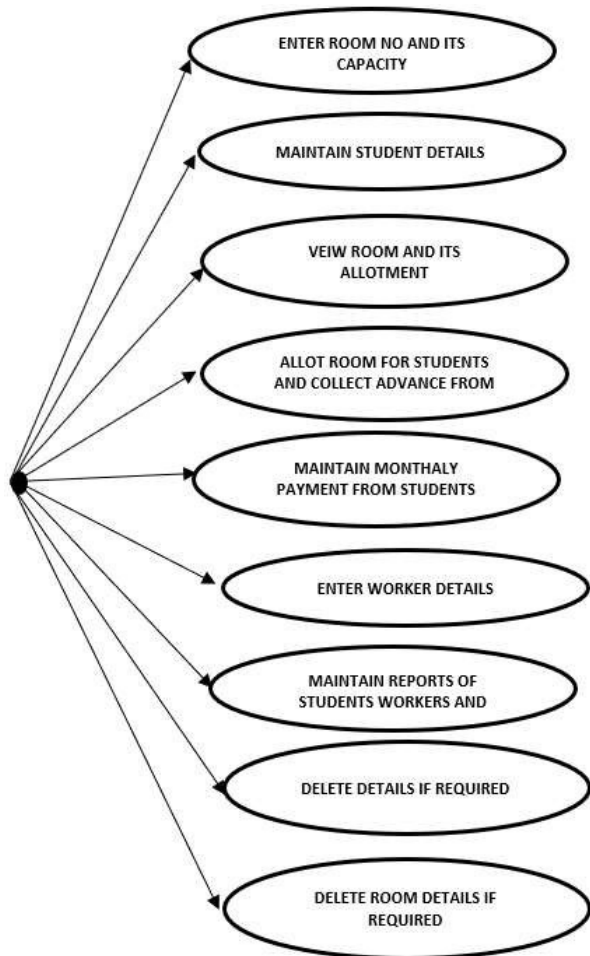


Fig.Students login



As shown in above figure, whole process of students' registration is present.

## 5) Modular Design

Here, we have used three modules as Administrator, Supervisor, Student. These three modules can interact with each other as per required purposes. No any module can change or delete other's data.

*Administrator module:* Administrator holds all the data of hostel. He manages supervisor and student both. He gives



instructions to supervisor for fulfilling the hostel management. He can verify students' data, Students fees details also.

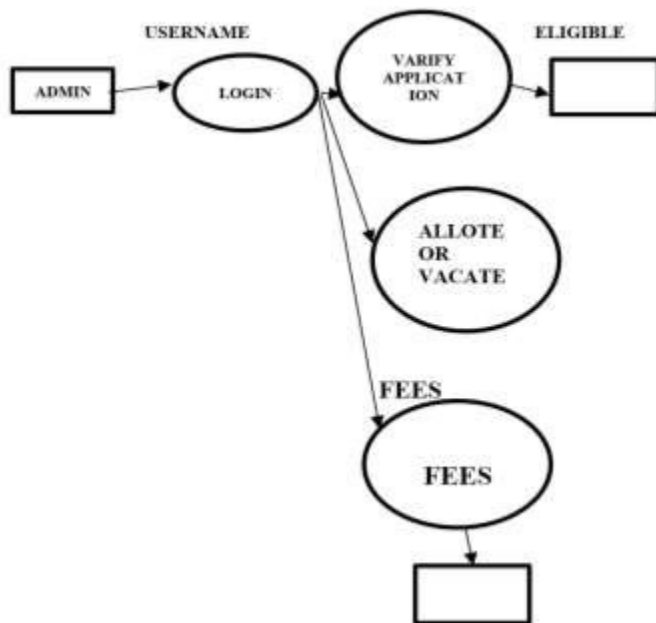


Fig. Administrator work

**Supervisor Module:** Supervisor had great job as he has to deals with all instructions by administrator. Supervisor can allocate rooms for students, daily cleaning by Peon, students' regular attendance, their mess schedule is also under supervisor. Also, he can give notice on notice board also deals with students. Problems. After students' course completion & leaving hostel room, supervisor can vacant room also.



Fig: Allotment process

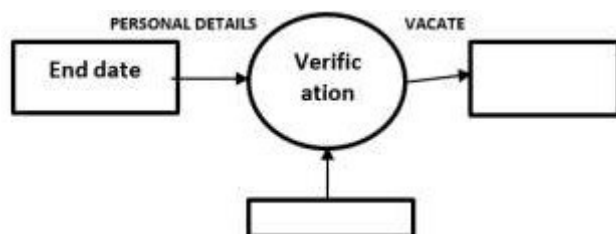


Fig . Allotment process.

**Students Module:** Students can register, login and full-fill their details. After verification can go to next process. If they are eligible, they are allocated to desired room. Using desired

unique id & password student can access to their admission process. Students can change their password when sever required. Students can check their attendance, their pending fee details, notices on notice board. Also, if they have any issue, they can write in complaint box, so that supervisor or administrator can find solution.

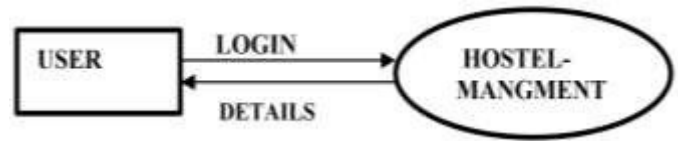


Fig. Students Registration Process

## FEATURES OF SOFTWARE

The features of this project are to customizing technology, proper management. This software is considered as very cheap as reduces the hole cost of managing hostel, effective and easy to operate for a hostel Administrator .

One of most significant and key features of this project is atomization in every field such as room allocation, saving of inmates' particulars for use at any time, financial management, students mess management and all other benefits are provided.

It is also capable of managing inquiry details, student details, details of faculty members, payment details and the like this The special features of this project is that has user-friendly user experience because of customizations and also we does not have any specialized person to handle this. Anyone who has knowledge of computers are capable of handling this project (software).

## CONCLUSION

The Project Hostel Management System is for computerizing the working in Hostel. This Software is Capable to provide easy and effective storage of information related to students that come up to the hostel. Hostel Management System is a user-friendly project for managing hostel facilities in institutions. It is designed to automate in students' hostels management and it diagnostic the overall records of students residing in a hostel. This project is able to manage Enquiry detail, Student Detail, Payment Detail etc of residing student. This system provides solution to all basic hostel management problems and also provides information regarding to hostel, hostel room and hostel accounts.

The software offers stability, cost-effectiveness and usability. This project is flexible and adaptable in hostel management system for better solutions of hostel. This project is able of managing hostel rooms, student record and room allocation process etc. Hostel management system is a user friendly and customized software for providing support for hostel admin.

## ACKNOWLEDGMENT

Here we gladly present this project report on “HOSTEL MANAGEMENT SYSTEM” as part of the 5th semester B. TECH in Computer Science and Engineering. At this time of submitting this report we use this opportunity to mention those people who with us along the work. We take this occasion to thank our guide, almighty for guiding us with his grace and taking our endeavour to a successful culmination.

We extend our sincere and heartfelt thanks to our esteemed guide, PROF. S. D. PANDHARE for providing us with the right guidance and advice at the crucial junctures and for showing us the right way. We would like to thank the other faculty members also, at this occasion.

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# A Review on Sugarcane Bagasse, Fibre Reinforced Epoxy Composite

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## ABSTRACT

India is one of the major sources of waste production. Whereas now a day's many countries are putting hands in recycling of such wastes. In this paper, the composite material has taken as alternatives in many of the applications. This paper focuses on preparation of composite material by using Epoxy Resin, Bagasse and Waste Plastic particles. As of the previous researcher (V. Vidyashri, 2019) did work on composite material of Epoxy Resin and Bagasse, the chemically treated bagasse with KMnO<sub>4</sub> has more adhesion properties and improved strengths. This paper proposed to addition of plastic particles as of the 20%, 35%, and 50% of the total weight of bagasse and epoxy resin. In this composite material, epoxy resin is the base material and other two materials are additives. During all these three compositions, weight percentages of bagasse and epoxy resin are kept constant. This is to be done for the purpose to obtain comparative study between referred composite material and prepared composite materials with the addition of plastic particles. The purpose of addition of plastic particles is to obtain better thermal and mechanical properties. The prepared specimens are undergoing variety of mechanical testing like compressive strength, tensile strength, bending strength and other thermal tests like Thermo Gravimetric Test and Differential Scanning Calorimetry. It might be the result obtained from addition of plastic particles seems better in thermal considerations and mechanical properties.

**Keywords:** *composite material, plastic recycling, epoxy resin, thermal testing, mechanical testing*

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## INTRODUCTION

On this cutting edge age the composite materials are turned into the essential material for any designing creation since composite materials have a few explicit properties, for example, high solidarity to weight proportion, minimal expense, and simplicity of manufacture, rigidity, compressive strength, and effect strength, high protection from warm which doesn't understand in unadulterated material or non-composite material. On account of its immense application, a Mechanical Engineer should know how to manufacture and tried a composite material.

In this venture, the composite of synthetically treated bagasse fiber by utilizing KMnO<sub>4</sub> with epoxy sap has been taken in to contemplations [1]. Notwithstanding this endorsed work, squander plastic has been proposed to include different extent. Motivation behind expansion of plastic is to progress of warm properties of acquiring material. Traditionally, bagasse has been utilized as a natural substance for paper and board creation, power creation, and utilized as fuel for boilers in sugar processing plants. The low warming worth of bagasse makes consuming them as fuel as a wasteful interaction. Right now, around 85% of bagasse is scorched as fuel yet, there is an abundance of bagasse, thus the requirement for new applications by using this result and diminish as landfill squander are alluring. Just around 9% of bagasse is consumed in ethanol creation however the effectiveness of this cycle is low. Consequently, it is crucial for support the monetary upsides of sugarcane bagasse [3].

Composite Material will be Material having at least two particular constituent unrefined components are considered as a composite material. Such materials comprise of at least one intermittent stage which is implanted in a persistent stage. The irregular stage is more enthusiastically and more grounded than the consistent stage which is known as the support stage and the ceaseless stage is called grid [14]. This stage in the composite is the fundamental construction that gives strength and steadiness. The reason for the support in a composite material is to increment mechanical properties of the slick sap framework. Each of the various strands utilized in composites have various properties thus influence the properties of composite in various ways. For the vast majority of the applications the strands should be organized into some type of sheet, known as a texture, to make dealing with conceivable [4].

Bagasse is an agro-modern buildup delivered in the sugar and liquor industry after the extraction of juice. It is one of the biggest normal fiber assets. It has high cellulose content, high return and yearly recovery limit [8]. Expectedly, bagasse has been utilized as an unrefined substance for paper and board creation, power creation, and utilized as fuel for boilers in sugar industrial facilities. The low warming worth of bagasse makes consuming them as fuel as a wasteful cycle. Presently, About 85% of bagasse is singed as fuel regardless, there is an abundance of bagasse, henceforth the requirement for new applications by using this side-effect and decrease as landfill squander are alluring.

Three kinds of plastic squanders were utilized in this review to supplant a small portion (by volume) of regular sand and medium total in the blends, to set up the substantial examples fusing plastic totals [2]. The plastic waste totals, for example polyvinyl chloride (PVC), high-thickness polyethylene (HDPE) and polypropylene (PP). PVC plastic squanders came from the ITP plant in Oran (Algeria); this kind of plastic is for the most part utilized in the creation of cylinders planned for the assurance of underground media transmission, caution, remote checking lines and punctured (channels) or non-authority PVC-U lines for rural, street waste frameworks [7]. The HDPE plastic squanders came from the Top Recycle Plant in Oran (Algeria); HDPE is for the most part utilized in the development of plastic containers. With respect to PP plastic squanders, they were brought from the Transplant Plant in Algiers (Algeria); PP is by and large utilized in the development of nursery seats. The plastic squanders were first divided into little granules; they were then delegated fine or medium totals, with size ranges 0-3 mm and 3-8 mm, separately [2].

Epoxy refers to any of the basic components or cured end products of epoxy resins, as well as a colloquial name for the epoxide functional group. Epoxy resins, also known as poly-epoxides, are a class of reactive pre-polymers and polymers which contain epoxide groups. Epoxy resins may be reacted (cross-linked) either with themselves through catalytic homo- polymerization, or with a wide range of co-reactants including poly functional amines, acids (and acid anhydrides), phenols, alcohols and thiols (usually called mercaptans) [1]. These co- reactants are often referred to as hardeners or curatives, and the cross-linking reaction is commonly referred to as curing. Reaction of poly-epoxides with themselves or with poly functional hardeners forms a thermosetting polymer, often with favourable mechanical properties and high thermal and chemical resistance. Fibre reinforced composites have been widely successful in hundreds of applications where there was a need for high strength materials. There are thousands of custom formulations which offer FRPs a wide variety of tensile and flexural strengths [8]. When compared with traditional materials such as metals, the combination of high strength and lower weight has made FRC an extremely popular choice for improving a product's design and performance.

Also, we are going to use variety of percentages of materials in composition to get better results and perfect composition with higher reliability of properties. This will result in the formation of various composites with different properties.

## LITERATURE REVIEW

V. Vidyashri, Henrita Lewis, P. Narayanasamy, G T Mahesha & K. Subrahmanya Bhat [1] Investigated study on composite material made up of epoxy resin with chemically treated and non-treated bagasse. During this study, the raw fibres were treated chemically to improve

compatibility and adhesion with the epoxy polymer. Treated and untreated fibres were subjected to analysis such as Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD) and Thermo-gravimetric Analysis (TGA) to understand the structural changes and to determine thermal stability. The mechanical properties of fibres and the composites were evaluated by conducting tensile tests. The results reveal KMnO<sub>4</sub> treated fibres show improved mechanical and thermal properties.

Mohammed Belmokaddem, Abdelkader Mahi, Yassine Senhadji, Bekir Yilmaz Pekmezci [2] has been examined, the consolidation of PA in concrete as a halfway substitution for regular totals prompted a decrease in the thickness of new and solidified cement because of the lower thickness of plastic com-pared to that of normal totals. For high PP substitution levels, cement can be up to 46% lighter. There was a drop in the compressive strength of concrete as the plastic total substance went up. This was ascribed to the frail connection between the cementation's framework and PA. For high HDPE substitution levels, the compressive strength of cement was 88% more modest than that of the control blend. Regardless of this compressive strength decrease, a few composites can in any case be named underlying lightweight cement as indicated by the proposals of standard ASTM C330/C330M-17a. In any case, the mechanical strength misfortune isn't significant assuming that these composites are utilized in primary applications where low thickness and moderate strength are required.

Biraj Dhibar, Siddharth Vikram Singh, Shueb Anwar, Abhineet Singh [3] investigated and found result that, as of the percentage of bagasse fibre goes on increasing; the tensile strength of the material goes on decreases. Also, the increased percentage of bagasse fibre results in increase of water absorption. This absorption led to decrease in mechanical properties and material get weaker. 10% of bagasse fibre composite has the highest tensile and bending strength compared to 20% and 30%.

Chockalingam, Sundarraj [4] Bagasse fibre is obtained from a source which is known for its renewability in terms of fast growth and better mechanical properties. The utilization of bagasse fibres for fabrication of bio-composites by using advance technology transforms future of coming generation. The well designed and engineered products from the bagasse fibres can help in making new revolution to sustain our natural resources. Thereby, based on this brief review the bagasse fibres can be utilized for advance and engineered product development for different applications.

Huang, Z., Wang, N., Zhang, Y., Huayu, H., & Luo, Y [5] has investigated the pre-treatment of SCB by mechanical activation (MA) using a self-designed stirring ball mill and surface modification of SCB using aluminates coupling agent (ACA). The untreated and differently treated SCBs were used to produce composites with poly (vinyl chloride) (PVC) as polymer matrix. The activation

grade (Ag) measurement and FTIR analysis of SCB showed that MA enhanced the condensation reaction between ACA and hydroxyl groups of the SCB fibres, which obviously increased the hydrophobicity of SCB. It was found that the mechanical properties of both the PVC composites reinforced by SCB with and without ACA modification increased with increasing milling time (tM). SEM analysis showed that MA pre-treatment significantly improved the dispersion of SCB in the composites and interfacial adhesion between SCB and PVC matrix, resulting in better mechanical properties of the composites.

Cerqueira E. F., Baptistab C. A. R. P., Mulinaria D. R. [6] has investigated recently the interest in composite materials reinforced with natural fibres has considerably increased due to the new environmental legislation as well as consumer pressure that forced manufacturing industries to search substitutes for the conventional materials, e.g., glass fibres. This way, the objective of paper was evaluating the effect of chemical modification on mechanical properties of sugarcane bagasse fibre/PP composites. Fibres were pre-treated with 10% sulphuric acid solution, followed by delignification with 1% sodium hydroxide solution. These fibres were mixed with the polypropylene in a thermo-kinetic mixer, and compositions with 5 to 20 wt % of fibres were obtained. The mechanical properties were evaluated by means of tensile, 3-point bending and impact tests. In addition, fracture analysis via SEM (secondary electrons mode) was performed. Results showed improve the tensile, flexural and impact strength of the composites in comparison to the polymer pure.

Punyapriya Mishra & Acharya S. K. [7] determined the abrasive wear behaviour of bagasse fibre reinforced epoxy composite in different directions, namely parallel orientation (PO), anti-parallel orientation (APO) and normal orientation (NO) by using a two-body abrasion wear tester. Three different types of abrasives wear behaviour have been observed in the composite in three orientations and follow the following trends:  $WNO < WAPO$  where WNO, WAPO and WPO are the wear in normal, anti-parallel and parallel directions of fibres orientation, respectively. The fibre bundles present in the composite provide unique directional abrasive wear properties. Wear anisotropy magnitude of the composite is found to be a function of load and abrasive grit size. The worn surfaces were observed by using a SEM after the wear test. It has been found that in PO type samples the abrasion takes place due micro ploughing, where as in APO and NO type samples micro cutting found to be responsible for the wear process.

Punyapriya Mishra and Acharya S. K. [8] has completed to concentrate on the impacts of impingement point and molecule speed on the strong molecule disintegration conduct of Bagasse Fiber Reinforced Polymer Composites (BFRPCs). The erosive wear is assessed at various impingement points from  $30^\circ$  to  $90^\circ$  at four unique speeds of 48, 70, 82 and 109 m/s. The erodent utilized is silica sand with the size range 150 - 250  $\mu\text{m}$  of unpredictable shape. The outcome shows fragile conduct with most extreme

disintegration rate at  $90^\circ$  impingement point. The morphology of the disintegrated surfaces was inspected by utilizing SEM.

Aigbodion V.S., Hassan S.B., Dauda E.T., Mohammed R.A. [9] has fostered the warm maturing conduct model of Al-Cu-Mg/Bagasse debris particulate composites with 2-10 wt % bagasse debris particles created by twofold mix projecting technique as far as weight part of bagasse debris, maturing temperature and time. Hardness values estimation was utilized in deciding the maturing conduct, after arrangement and age-solidified hotness treatment. The exploratory outcomes show that the bagasse debris was the significant boundary in the maturing conduct, trailed by maturing temperature. The hardness values diminished as the maturing time increments. Besides, the ideal blend of the testing boundaries could be anticipated. The anticipated hardness values were found to lie near that of the tentatively noticed ones. The created numerical model can be utilized for advancement of the cycle boundaries of the maturing conduct of Al-Cu-Mg/Bagasse debris particulate composites regarding hardness values.

Daniella R. Mulinari, Herman J.C. Voorwald, Maria Odila H. Cioffi, Maria Lúcia C.P. da Silva, Sandra M. Luz. [10] Has assessed the high thickness polyethylene/pre-treated and changed build-ups from SCB cellulose composites were broke down. Composites were created by a thermo dynamic blender. The miniature primary examinations of crack surface from composites can be effortlessly assessed by minuscule procedures. Results showed that the change of SCB cellulose with zirconium oxy-chloride was effectively achieved and that this support material with high thickness polyethylene showed elasticity higher than non-adjusted SCB cellulose.

Luz S.M., Goncalves A.R., Del'Arco Jr A.P. [11] affirmed the pressure and infusion forming processes were acted to assess the better blender strategy for fiber (sugarcane bagasse, bagasse cellulose and benzyl ted bagasse) and grid (polypropylene). The examples (composites and polypropylene plates) were sliced and submitted to morphological, microstructural investigations and mechanical tests. The better tried technique for composites acquisition was the infusion forming under vacuum process, by which composites were acquired with homogeneous conveyance of filaments and without rankles. The mechanical properties show that the composites didn't have great grip among fiber and lattice; then again, the fiber inclusion worked on the flexural modulus and the material unbending nature.

Cao Y., Shibata S., Fukumoto I. [12] explored Biodegradable composites built up with bagasse fiber when salt medicines were ready, and mechanical properties were researched. Mechanical properties of the composites produced using soluble base treated strands were better than the untreated filaments. Composites of 1% NaOH arrangement treated strands showed most extreme improvement. Roughly 13% improvement in rigidity, 14%

in flexural strength, and 30% in sway strength had been found. Individually, after antacid treatment, expansion in strength and viewpoint proportion of the fiber added to the improvement in the mechanical properties of the composites. Filtering Electron Microscopy (SEM) perceptions on the break surface of composites showed that the surface adjustment of the fiber happened and further developed fiber-grid attachment.

Gope P. C., Verma, Deepak [13] has created bagasse-glass fiber built up composite material with 15 wt%, 20 wt%, 25 wt% and 30 wt% of bagasse fiber with 5 wt % glass fiber blended in gum. SEM shows that bagasse strands 13.0  $\mu\text{m}$  in distance across and 61.0  $\mu\text{m}$  long are very much scattered in the tar grid. Expansion of fiber expands the modulus of versatility of the epoxy. Blending of bagasse with glass fiber additionally works on the modulus of versatility. Expansion of bagasse filaments diminishes a definitive rigidity. Yet, expansion of glass fiber further expands a definitive rigidity in contrast with monetarily accessible bagasse-based composite. Bagasse-glass supported strands further develop the effect strength of epoxy materials because of fiber has greater flexibility in contrast with framework material. Expansion of strands builds the limit of water ingestion. This test is essential where composites are utilized in dampness impacted regions. Expansion of bagasse fiber decreases twisting strength. However, expansion of glass fiber further builds the twisting strength in contrast with financially accessible bagasse-based composite.

Julien Bras [14] detailed cellulose bristles were disengaged from faded sugar stick bagasse Kraft mash. The length of the secluded hairs was in the reach 84-102nm while the width was in the reach 4-12 nm. They were utilized as building up components in regular elastic grid. The impact of hairs stacking on elastic properties, warm properties, dampness sorption, water fume saturation, and soil biodegradation was contemplated. Huge improvement of Young's modulus and elasticity was seen because of expansion of stubbles to the elastic network particularly at high bristles' stacking. Dynamic mechanical warm examination (DMA) and DSC results showed no adjustment of the glass change temperature ( $T_g$ ) of the elastic grid upon expansion of cellulose stubbles yet at mellowing of elastic, cellulose bristles have supporting impact on the elastic. Presence of bagasse hairs brought about an expansion in dampness sorption of elastic movies up to 5% stubbles stacking while at higher bristles' stacking the dampness sorption would in general diminish. Boundary properties to water fume diminished on expanding cellulose hairs up to 7.5% bristles loadings then, at that point, expanded with additional increment in stubbles stacking. Presence of cellulose stubbles expanded the pace of debasement of elastic in soil.

## GAP IDENTIFICATION

Several papers were committed to analyze the various Properties of the composite made up of waste bagasse with

epoxy resin. The bagasse and epoxy resin composite is effective within the particular range for thermal applications. To improve the properties of the composite, it is suggested to add another material having excellent properties in the composition. There is scope to analyze the stresses by using experimental method and suggest modification in existing composition to enhance the both thermal and mechanical properties.

## CONCLUSION

As discussed in the result section, mechanical properties of developed specimen were found much better than that of the reference material prepared by using  $\text{KMnO}_4$  treated bagasse having 10 mm size. It has been found that in case of Mechanical properties, aid of plastic material has been effectively enhanced tensile properties in comparison with Compressive Strength.

In case of thermal properties, the prepared material can withstand easily up to the  $600^\circ\text{C}$  without melting or getting evaporated. This is enough for domestic as well as many industrial applications. Whereas addition of plastic may improve more properties further.

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# A Survey on Cloud Security Issues and Techniques

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## ABSTRACT

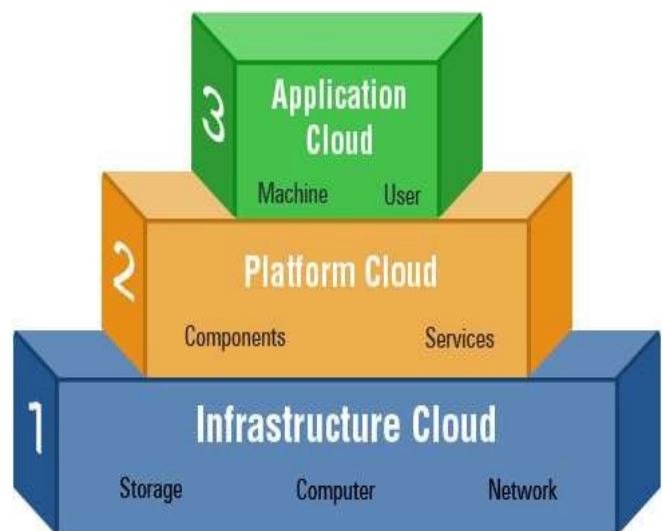
Nowadays, cloud computing is a developing way of computing in computer science. Cloud computing could be a set of assets and administrations that are advertised by the arrange or web. Cloud computing amplifies different computing methods like network computing, conveyed computing. Nowadays cloud computing is utilized in both mechanical field and scholarly field. As the field of cloud computing is spreading the modern procedures are creating. This increment in cloud computing environment too increments security challenges for cloud developers. Users of cloud spare their information within the cloud thus the need of security in cloud can lose the user's trust. In this paper we'll talk about a few of the cloud security issues in different perspectives like multi-tenancy, flexibility, accessibility etc. the paper too talks about existing security methods and approaches for a secure cloud. This paper will empower analysts and experts to know almost difference.

**Keyword :-** *Cloud Computing , Cloud Security, Security Dangers, Security Methods, Cloud Security Guidelines.*

## INTRODUCTION

Cloud computing is another title for Web computing. The definition of cloud computing given by National Organized of Guidelines and Innovation (NIST) says that: "Cloud computing could be a show for empowering on-demand and helpful organize get to to a shared pool of configurable computing assets (e.g., systems, servers, capacity applications and administrations) that can be quickly provisioned and discharged with negligible administration exertion or service provider interaction[9]. For a few it may be a worldview that gives computing assets and capacity whereas for others it is fair a way to get to program and information from the cloud. Cloud computing is well known in organization and scholastic nowadays since it gives its clients versatility, adaptability and accessibility of information. Too cloud computing diminishes the fetched by empowering the sharing of information to the organization. Organization can harbour their information on the cloud so that their shareholders can utilize their information. Google apps is an illustration of cloud computing. Be that as it may Cloud gives different office and benefits but still it has a few issues with respect to secure get to and capacity of information. A few issues are there related to cloud security as: seller lock-in, multi-tenancy, misfortune of control, benefit disturbance, information misfortune etc. are a few of the investigate issues in cloud computing . In this paper we analyze the security issues related to cloud computing show. The most objective

is to think about diverse sorts of assaults and methods to secure the cloud demonstrate.



## CLOUD SECURITY ISSUES

Organization employments different cloud administrations as IaaS, PaaS, SaaS and the models like open, private, cross breed. These models and administrations have different cloud security issues. Each benefit show is related with a few issues. Security issues are considered in two sees to begin with within the see of benefit supplier who uprising those administrations given by them should be secure

conjointly oversees the customer's character. Other see is client see that guarantees that benefit that they are utilizing is secure enough.

#### 1. Multi-tenancy

A cloud show is built for reasons like sharing of assets, memory, capacity and shared computing . Multi-tenancy gives proficient utilization of assets, keeping fetched lower. It infers sharing of computational assets, administrations capacity and application with other inhabitants dwelling on same physical/logical stage at provider's premises. Hence it abuses the privacy of information and comes about in spillage of data and encryption and increment the plausibility of attacks.

#### 2. Insider attacks

Cloud demonstrate could be a multitenant based demonstrate that's beneath the provider's single administration space. Typically, a risk that emerges inside the organization. There are no contracting measures and suppliers for cloud representatives. So, a third party seller can effectively hack the information of one organization and may degenerate or offer that information to other organization.

#### 3. Outsider attacks

This can be the one of the major concerning issues in an organization since it discharges the secret data of an organization in open. Clouds are not like a private arrange, they have more interfacing than private organize. So, programmers and assailants have advantage of misusing the API, shortcoming and may do an association breaking .These assaults are less harmful than the insider assaults since within the afterward we in some cases incapable to distinguish the assault.

#### 4. Elasticity

Versatility is characterized as the degree to which a framework is able to adjust to workload changes by provisioning and unhinged assets in an autonomic way, such that the accessible assets coordinate the current request at any time as closely as conceivable. Flexibility suggests adaptability. It says that buyers are able to scale up and down as required. This scaling empowers inhabitants to utilize a asset that's doled out already to other inhabitant. Be that as it may this may lead to privacy issues.

#### 5. Loss of control

Cloud employments an area straightforwardness show by which it empowers organizations to ignorant approximately the area of their administrations and information. Thus, supplier can have their administrations from anyplace within the cloud. In this case organization may lose their information and conceivably they are not mindful almost security component put in put of the supplier.

#### 6. Data Loss

As in cloud, there are numerous occupants, information keenness and security may not be given. Information misfortune can come about in budgetary, client check misfortune for an organization. A critical case of this may be overhauling and cancellation of information without having any reinforcement of that information.

#### 7. Protecting the network

##### 7.1 Man in center assault:-

In this assault, aggressor makes an autonomous association and communicates with the cloud client on its private arrange where all control is within the hand of assailant.

##### 7.2 Distributed dissent of benefit assaults: -

In DDOS assault, servers and systems are brought down by a colossal sum of arrange activity and clients are denied the get to to a certain Web based Benefit.

##### 7.3 Port scanning:-

Port could be put from where data trade takes put. Harbour checking is taking put when endorser designs the group. Harbour checking is done consequently after you arrange the web so this damages the security concerns [3]

##### Malware Infusion Assault Problem

In cloud computing, a parcel of information is exchanged between cloud supplier and customer, there's a require of client verification and authorization [10]. When the information is exchanged between cloud supplier and client, assailant can present malevolent code into it. As a result, the initial client may have to be hold up until the completion of the work that was perniciously introduced.

#### 9. Flooding Assault Problem

In cloud, there's a no. of servers that communicate with one another and exchange information. The demands is handled, the asked occupations are verified to begin with, but this verification requires a part of CPU utilization, memory and at long last due to these server is over-burden and it passes its offload to other server[10]. By all this the normal handling of framework is hindered, and the framework is flooded.

#### TECHNIQUES TO SECURE INFORMATION IN CLOUD

##### Authentication and Identity Authentication of clients and indeed

of communicating frameworks is performed by different strategies, but the foremost common is cryptography [8]. Verification of clients takes put in various ways like within the form of passwords that's known independently, within the shape of a security

token, or within the frame a quantifiable amount like unique finger impression. One issue with utilizing conventional character approaches in a cloud environment is confronted when the enterprise employments numerous cloud benefit suppliers (CSPs)[8]. In such a utilize case, synchronizing personality data with the endeavor isn't adaptable. Other issues emerge with conventional personality approaches when moving foundation toward a cloud-based solution.

### Data Encryption

If you're arranging to store delicate data on a huge data store at that point you wish to use information encryption strategies. Having passwords and firewalls is sweet, but individuals can bypass them to get to your information. When information is scrambled it is in a shape that cannot be read without an encryption key. The information is completely futile to the interloper. It may be a procedure of interpretation of data into mystery code. On the off chance that you need to studied the scrambled information, you ought to have the mystery key or watchword that's moreover called encryption key.

### Information keenness and Privacy Cloud computing

gives data and assets to substantial clients. Assets can be gotten to through web browsers and can too be gotten to by pernicious aggressors [2]. A helpful arrangement to the issue of data judgment is to supply common believe between supplier and client. Another arrangement can be giving appropriate verification, authorization and accounting controls so the method of getting to data ought to go through different multi levels of checking to guarantee authorized utilize of assets [2]. A few secured get to components ought to be given like RSA certificates, SSH based tunnels.

### Availability of Information(SLA)

Non accessibility of data or information could be a major issue with respect to cloud computing services. Benefit Level assertion is utilized to supply the data around whether the network assets are accessible for clients or not. It could be a believe bond between shopper and supplier [2]. A way to supply accessibility of assets is to have a reinforcement arrange for nearby assets as well as for most pivotal data. This empowers the client to have the data around the assets indeed after their unavailability

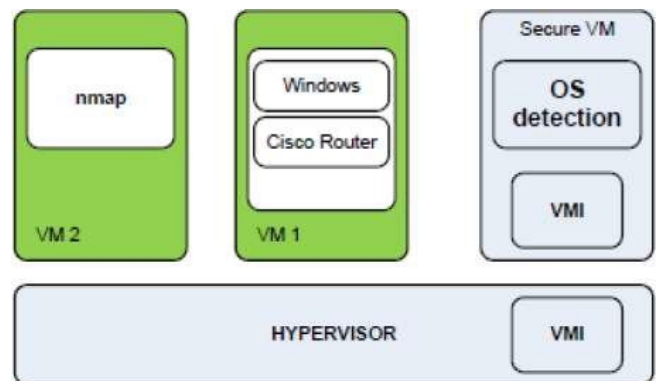
### Secure Data Management

It may be a method of data security for a collection of information into central store. It is comprised of specialists running on systems that are to be observed and after that sends data to a server that's called

“Security Console”. The security support is overseen by admin who may be a human being who audits the data and takes activities in reaction to any cautions. As the cloud client base, dependency stack increment, the cloud security instruments to fathom security issues moreover increment, this makes cloud security administration much more complicated. It is additionally alluded as a Log Administration. Cloud suppliers too give a few security guidelines like PCI DSS, SAS 70[2]. Data Security Administration Development is another demonstrate of Data Security Administration System.

### Malware-injection assault solution

This arrangement makes a no. of client virtual machines and stores all of them in a central capacity. It utilizes FAT (Record Allotment Table) comprising of virtual working systems[10]. The application that's run by a client can be found in FAT table. All the occasions are overseen and planned by Hypervisor. IDT (Hinder Descriptor Table) is utilized for judgment checking.



### Flooding Assault Solution

All the servers in cloud are considered as a armada of servers. One armada of server is considered for framework sort demands, one for memory administration and final one for center computation related employments. All the servers in armada can communicate with one another. When one of the servers is over-burden, a unused server is brought and utilized within the put of that server and an another server that's called title server has all the record of current states of servers and will be utilized to overhaul goals and states. Hypervisor can be utilized for overseeing jobs[10]. Hypervisor moreover do the authorization and confirmation of employments. An authorized customer's ask can be distinguished by PID. RSA can too be utilized to scramble the PID.

### CLOUD COMPUTING SECURITY STANDARDS

Standards for security characterize method and forms for actualizing a security program. To preserve a secure environment, that gives protection and security a few particular steps are performed by applying cloud

related exercises by these benchmarks. A concept called "Defense in Depth" is used in cloud to supply security [3]. This concept has layers of resistance. In this way, in the event that one of the systems falls flat, overlapping technique can be utilized to supply security because it has no single point of disappointment. Customarily, endpoints have the method to preserve security, where get to is controlled by user.

### Security Statement Markup Dialect (SAML)

SAML is essentially utilized in trade bargains for secure communication between online accomplices. It is an XML based standard utilized for verification, authorization among the accomplices. SAML characterizes three parts: the central (a client), a benefit supplier (SP) and an personality supplier (IDP) [3]. SAML gives questions and reactions to indicate client traits authorization and verification data in XML arrange. The asking party is an internet location that gets security information.

### Open Confirmation (OAuth)

It may be a strategy utilized for association with protected information. It is fundamentally utilized to supply information get to to engineers. Clients can give get to to data to designers and shoppers without sharing of their personality [3]. OAuth does not give any security by itself in fact it depends on other conventions like SSL to supply security.

### OpenID

may be a single-sign-on (SSO) strategy. It may be a common login handle that permits client to login once and after that utilize all the partaking frameworks [3]. It does not based on central authorization for confirmation of users.

### SSL/TLS

TLS is utilized to supply secure communication over TCP/IP. TLS works in essentially three stages: In to begin with stage, transaction is done between clients to distinguish which ciphers are utilized. In moment stage, key trade calculation is utilized for confirmation [3]. These key trade calculations are public key

calculation. The ultimate and third stage includes message encryption and cipher encryption.

### CONCLUSION

This paper depicts a few of the cloud concepts and illustrates the cloud properties such as adaptability, stage autonomous, low-cost, versatility and unwavering quality. In spite of the fact that there are different security challenges in cloud computing but in this paper, we have examined a few of them conjointly the methods to avoid them, they can be utilized to preserve the secure communication and evacuate the security issues. This overview is fundamentally done to ponder all the issues like assaults, data loss and unauthenticated get to to information additionally the strategies to evacuate those issues. As the cloud computing is energetic and complex, the conventional security arrangements given by cloud environment don't outline well to its virtualized situations. . Organization such as Cloud Security Organization together (CSA) and NIST are working on cloud computing security. In this paper we have talked about some security approaches but a few other approaches are too there that are within the process. A few benchmarks are moreover indicated which can be utilized to preserve secure communication and security in a cloud as numerous frameworks communicate in it and perform operations.

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# A Review On: Software Based Crankshaft Analysis

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## ABSTRACT

Crankshaft is the most objective, outsized and uncovered part of a gas powered motor. In this work a 4-chamber diesel motor driving rod is utilized for investigation. For examination a driving rod is displayed utilizing programming PRO-E and further investigated by utilizing programming Ansys R15.0. FEA technique is utilized to direct static as well as powerful investigation of the driving rod in which the force is applied on the drive end. Different investigation on the driving rod are directed, for example, Equivalent head flexible strain, Maximum shear pressure, Equivalent Von misses pressure. The examination will be done to get the variety of stress greatness at basic areas. Drive end, backside and other basic areas of the associating bar are designated in light of the modern practices and the writing audit overviewed. In light of the outcomes acquired a few basic ends will be inferred. As a near pressure investigation for both static as well as unique cases will be performed, stress dissemination and reaction levels will be connected along with the assistance of the outcomes acquired. These outcomes will be moreover contrasted and hypothetical outcomes with the assistance of disappointment speculations. Definite understanding will be accommodated future examination and improvements in the field of driving rod.

**Keywords:** *Crankshaft, Crankpin, FEA, Static analysis, Dynamic analysis, Theoretical analysis*

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## INTRODUCTION

Crankshaft aka driving rod is one of the fundamental parts with a multifaceted calculation in the motor, which upholds the development of the cylinder with the assistance of a connection instrument put in a gas powered motor. Twisting anxieties and torsional stresses follow up on the driving rod because of different powers caused because of variable gas strain during working of the motor. Driving rod isn't just significant yet additionally troublesome in view of its plan. For any creation industry to plan and foster the driving rods is consistently pivotal undertaking however very complicated and hard to guarantee reasonable driving rod with least weight, well-suited strength and other significant utilitarian prerequisite.

## LITERATURE SURVEY

Farzin H Montazersadgh et al. proposed dynamic examination and were explored the impact of torsional load and the variety of stress extent at basic area by utilizing the limited component investigation strategies.

Amarjeet Singh et.al. Investigated and enhanced strength, the fundamental goal of this strategy was led static examination on four chamber motor driving rod. In this strategy subsequent to getting out the pressure results, the basic focuses recognized were the knuckle of wrench arm and outrageous left bearing.

Jian Meng et al Revived and broke down driving rod model and wrench toss. The driving rod contortion was essentially bowing bending under the lower recurrence. Higher misshaping was situated at the connection between fundamental bearing diary, crankpin and wrench cheeks

GuYingkui et.al Researched a three-layered model of a diesel motor driving rod showed with the assistance of Star/E programming. Utilizing Ansys programming, the greatest pressure were observed which were for the most part packed in the knuckles of the wrench arm, the fundamental diary and the wrench arm and interfacing pole diary.

Xiaorong et.al performed audit on the driving rod. The audit, driving rod terms, activity conditions and different disappointment sources are talked. They broke down the impact of powerful boundaries like leftover weight on weariness conduct and strategies of convincing compressive lingering pressure in driving rods.

Guagliano et.al contemplated on a marine diesel motor driving rod by utilizing Finite component examination to decide the pressure fixation. In this mathematical model investigation was approved with trial results. When contrasted with the exploratory outcomes, the FEA results were more exact and OK.

Henry et.al decided the pressure in the filet zone of driving rod by utilizing Finite component examination technique. The accomplished anxieties were tried by test result on a 1.9 liter turbocharged diesel motor with Richard sort of burning chamber

Prakash et al concentrated on the pressure and exhaustion investigation of driving rod by utilizing the old style technique and FEM based methodology utilizing Ansys. From this examination the outcome got expressed that the strength and malleability types have extraordinary impact on life.

Borges et al concentrated on the pressure appropriation on the driving rod by utilizing the FEA by applying ANSYS programming to decide the pressure focus. The FEA model gives the indistinguishable pressure dispersal over the driving rod and the pressure focus is high in the filet between the wrench pin bearing and the wrench web.

Zoroufi and Fatemi et al concentrated on the powerful burden examination of the driving rod. By utilizing the FEA examination programming both static and dynamic examination were performed. The examination between the outcomes got from mathematical strategy and test technique was introduced and basic zone of pressure fixation is happened on the filet area of driving rod.

M. Fonte and P. Duarte et al concentrated on the two harmed driving rod of single chamber diesel motors which are utilized in farming administrations for a considerable length of time are engaged. In this the driving rod are fizzled after 100h in assistance. To decide the main driver of disappointment of a driving rod the disappointment mode investigation is utilized and results are contrasted and the limited component examination by applying ANSYS programming to observe the basic districts where the high pressure fixations are available and the disappointment is generally happened in crankpins. Because of the great pressure focus and high pressure inclinations the basic zone is happened on the filet area of driving rod.

Anand and Parthasarathy et al played out the limited component examination by utilizing the investigation programming Ansys and the static and dynamic investigation were directed on the driving rod which is comprised of EN-19 steel and Nitriding covered EN-19 steel. The absolute misshapening, Von misses pressure and shear worry were finding. The material has been tried by utilizing different mechanical testing, for example, pliable test, hardness test, warm development test. The outcome got was likewise talked about in when solidifying of interfering interaction.

Andrzej and Tomasz et al to addressed the three layered warm and mechanical issue they created one customized. Numerical model of driving rod disfigurement was created in the state of hotness treatment by considering flexible plastic twisting and stage change process. In this paper, it was shown that during stage change, the cooling system is considered by three time changing the discovery of twisting of driving rod and stress indication of it. It is done because of nonlinearity of warm disfigurement during stage change and dumping of metal after the temperature become uniform.

M. Fonte and V. Infante et al played out the investigation on two different harmed driving rods. Out of these one got from diesel motor of little excavator and second one from a car vehicle. The interfacing pole, crankcase and engine block harm because of the diesel engine experienced a genuine mechanical harm following three years and 5000 hours in its administration. While

concentrating on both the driving rods were flopped because of the break which was available in crankpin-web. Both the driving rods were seen with the assistance of checking electron magnifying instrument investigation and discovering the zone where the breaks were started. As indicated by this method both the driving rods were flopped because of the weariness.

## CONCLUSION

The current work is to be performed for static as well as dynamic investigation of driving rod for 4 chamber inline motor furthermore different worries are finding. A hypothetical methodology is introduced to observe the greatest disfigurement, most extreme shear pressure, identical Von Misses pressure and most extreme guideline stress values actuated in the driving rod. On account of intricacy in math, it is decreased to single toss by rule of balance about vertical hub. The material of existing driving rod is nodular solid metal and applied power per chamber is taken as 833 N at a point of 25° with vertical pivot. Different shaft disappointment hypotheses material to above conditions are applied and hypothetical not entirely settled. The different burdens values getting from hypothetical examination which is contrasted and limited component investigation, the qualities are same. From the above investigation it is observed that the disappointment is because of the weakness and driving rod is fizzled at the crankpin which is the basic zone where the break can start.

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# Stock Management Using IOT

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## ABSTRACT

In this fast-developing business generation, it is important to keep the track of everything in small-scale industries it is difficult to keep the track of material although we can check it manually it is not so 100% sure that it is correct so here, we introduce Stock management system using IoT. with the use of this system, we can check the inventory from anywhere this system is accurate it will give the correct number of quantities of material left in the Inventory. also, this system will give a message through email. if the material goes below user-defined criteria.

**Keywords:** *IoT (Internet of things), criteria, Stock management*

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## INTRODUCTION

Smart systems and the Internet of Things (IoT) are becoming increasingly important in business and industry. This generation and the upcoming generations are IoT and AI-based so that all the businesses or industries are heading towards IoT or AI-based Projects, in products nowadays where time is everything, it is important to keep the track of material or products to avoid losses. Finding a specific product in a short period of time is a difficult endeavour. The demand for stock management system using IoT is increasing day by day because of its automatic working. The place or section where we stored the material is known as the Warehouse the main aim of the Warehouse is to control the flow of material otherwise it will affect things like time and cost. Because of the profit, stock management systems employing IoT are important in today's commercial section. stock management using IoT provides less effort, it is more efficient and it has got stable result the demand for automatic warehouses is increasing because in human-based Warehouses it is very difficult to avoid errors.

In this era of IoT, advanced sensors can manage your stocks very easily.

## LITERATURE REVIEW

S. Jayanth, M.B. Poorvi and M.P. Sunil "Inventory Management System Using IOT has proposed Efficient System for Managing the Inventory For various Application In general, warehouses are used to store goods or products. If a user wishes to locate a product in a warehouse, it is quite difficult because the user must do a detailed search manually in all of the available stockrooms. this requires a lot of effort.

So, to avoid this problem the warehouse stock management system is very helpful because it maintains the detailed product information and tells us in which stockroom the product is present. The warehouse stock management system is playing a significant aspect in many productions and goods-based methodology. Though there are many wireless communication technologies the RFID suits the best for the warehouse stock management system. The tag data is sent from the transmitter part to the open-source hardware over a wireless link that uses the internet. The warehouse stock management system built on the architecture of the Internet of Things is developed to track the products attached to the tags with product information and their respective time stamps for further verification. flow. The web page which is built in accordance to provide convenient and the developed system results a very low-cost system and works dynamically compared with the existing present warehouse inventory management systems.[1]

In their paper "Smart Shelf for Smart Kitchen," Apoorva Verma et al. propose that the Smart Shelf can measure supermarket items. The Smart Shelf can weigh and measure groceries. The Smart Shelf is divided into two parts: weight sensing and level sensing. The level sensing component comprises of a fixed-size container with an RFID tag defining container size and product description, as well as an RFID tag reader and an ultrasonic sensor for measuring the level of the container. the content of the container. Weight sensing consists of the RFID tag with similar container specification and content identification, RFID tag reader and weight sensor measuring all contents on the shelf[2].

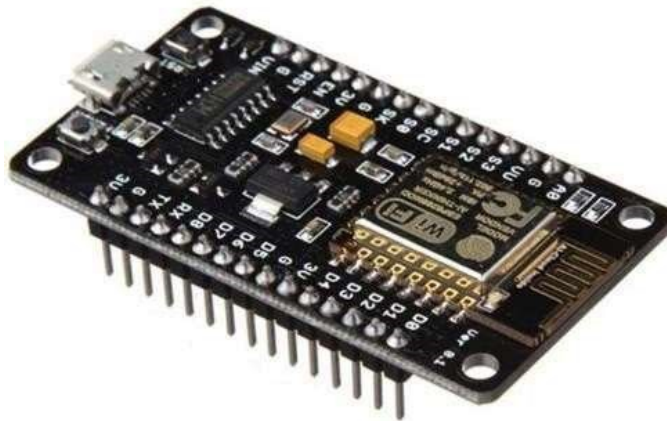
In "Research and Design of the Intelligent Inventory Management System Based on RFID," Xiaojun Jing

and Peng Tang proposed a "Research and Design of the Intelligent Inventory Management System Based on RFID" Design of the Intelligent Inventory Management System Based on RFID," Xiaojun Jing and PengTang proposed a "Research and Design of the Intelligent Inventory Management System Based on RFID" RFID and ZIGBEE are both integrated into this system. RFID can identify the nature and location of some sensing nodes, and ZIGBEE focuses on sensing indicators in a confined region. The fundamental disadvantage of RFID is that its

detection range is limited. It's also difficult for the RFID reader to read the signal precisely if numerous loads are on the same palette [3].

## METHODOLOGY

The switch is used to turn off or on the energy in a specific region manually. The ESP8266 Node MCU is a programmable IoT kit. Unlike the ESP-01 ESP8266, which only has the IoT functionality, it has both the IoT and programming features.



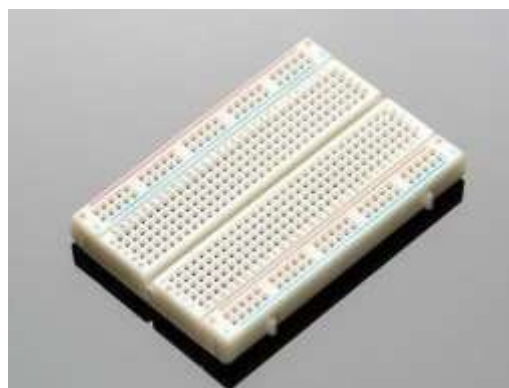
*Figure Node MCU ESP8266*

Obviously, wire will be used to connect the components.



*Figure Jumper Wire*

We are using a breadboard to connect the components because it does not require soldering and is also reusable.



*Figure Breadboard*



*Fig Ultrasonic Sensor*

The ultrasonic transducer utilized is the HC-SR04, which has a transmitter and a receiver and runs on 5 V. There are three input pins and one output pin on the sensor. The echo is the output, and it's connected to the Raspberry Pi through a logic shifter. Two of the remaining three inputs are 5 V and GND. The trigger is the other input, which does not require a level shifter to connect to the Raspberry Pi. The voltage at the output pin drops to zero when a trigger pulse of adequate width (about 10us) is applied to the transducer's trigger pin.

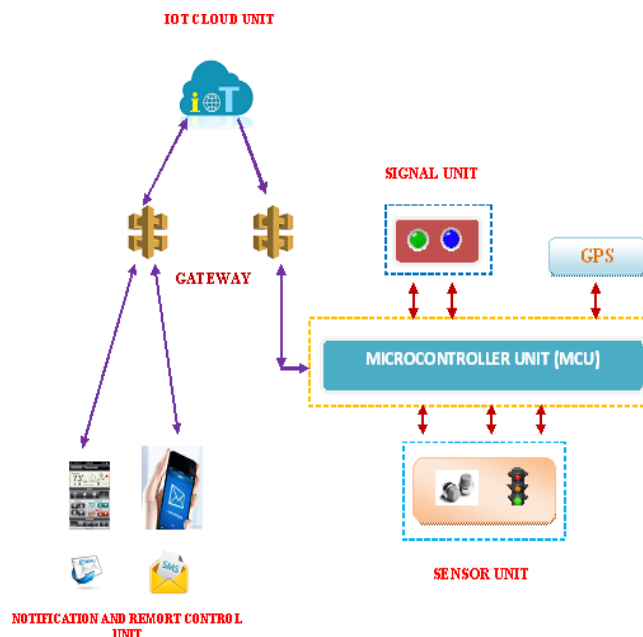
The ultrasonic sensor is a multi-use sensor with four pins. It can be used to avoid obstacles and Ultrasonic sensors use ultrasonic waves to measure distance. It makes a noise.

It sends out an ultrasonic pulse and receives the reflected wave from the target. The following formula can be used to calculate the distance:

Distance  $D = \frac{1}{2} \times T \times C$  Where T= Time and C= Speed

Where T denotes time and C denotes speed. The concept is to utilize an ultrasonic sensor to measure the distance between it and the stacked boxes. If we know the width of one box, we can guess how many boxes are currently stacked in a row based on this distance value.

## WORKING



*Fig Architectural Diagram*

## CONCLUSION

The cost-effectiveness of this system is obvious. We simplified the system by using both ultrasonic sensors' Vcc and GND pins are linked to the Vin and GND pins of the NodeMCU. The first ultrasonic sensor's trig and echo pins are linked to D1 and D2, respectively.

The second ultrasonic sensor's D2 and trig and echo pins are connected to D6 and D7 pins, respectively. The entire setup will be fueled via Node-micro-USB MCU's connector through the use of a USB cable. Calculate for distance. ultrasonic sensors to measure the stocks, which can be utilized for both solid and liquid stocks. It is simpler and easier to mount the ultrasonic sensor because it must be positioned on the top of the container. As can be seen, the system sends a mail to the provider directly, reducing the need for human intervention. errors. Because the threshold amount was established in such a way, the stockpiles are sufficient for operation till the new year. Stocks arrive, the system is self-sufficient and there are no supply shortages. inventory Because of its low cost, ease of installation, and efficient design, it can be advantageous. It has been deployed in hospitals, small-scale companies, and large-scale industries.

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# Survey on AI Based Attendance System Using Face Recognition

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## ABSTRACT

Artificial intelligence-based attendance systems with facial recognition are essential for monitoring student performance in any organization. This technology has made many improvements in a changing world. Facial recognition-based attendance with real-time facial recognition is a real-world solution that is closely linked to everyday student attendance management activities. In all organizations, attendance is recorded manually by calling the registration number or name and entering it in the attendance list issued by the department head as evidence. In some organizations, students sign these sheets and save them for later reference. AI-based presence system with facial recognition Computer systems can quickly and accurately find and recognize the faces of people from images captured by surveillance cameras. The system can recognize a person's face and record that person's presence, making presence activities more efficient and faster.

**Keywords:** *Student Attendance System, Student Attendance System and Application, Artificial Intelligence, Face Recognition.*

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## INTRODUCTION

The student's attendance machine the usage of synthetic intelligence idea particularly works the usage of the idea of facial reputation machine. Face is taken into consideration as a number one key function to pick out and speak with different peoples within side the international due to the fact face taken into consideration as a completely unique identification for every and each person. The facial functions might be precise to the alternative indusial. The Unique functions for each indusial make facial reputation in enforcing the actual international. Human distinguish a specific folks face primarily based totally on numerous elements like color, nose, eyes, ears, and many others however for computer systems, it is hard to investigate the statistics so we might also additionally use the idea of Computer imaginative and prescient. The goal of the usage of pc imaginative and prescient era to apprehend the human functions in a pc.

In current years we discovered incredible adjustments in face reputation strategies due to to be had biometric methods, that is the maximum unnoticeable approach. The set up face reputation structures on a huge scale are clean however the real implementation of face reputation machine is bold as it has to recall for all ability instances variant resulting from a amendment in face expressions with the aid of using light-weight, face expressions, one-of-a-kind styles, photograph resolution, sensing

detail device, viewing distance, and many others. Several algorithmic regulations are applied on face reputation and each set of rules has strengths and competencies with the aid of using its own. We have a tendency to do face reputation almost on a every day basis. Most of the time we look at a face and renowned with the aid of using in a flash with the statistics gift already withinside the database This flair if ability observed with the aid of using machines will have an impact on be precious and ought to deliver for a essential position in realworld packages like range get admission to management, country wide and worldwide protection and defense, and many others. At gift particularly strategies depend upon Face reorganization methods. The first and really acquainted technique is local face reputation machine that relies upon on face expressions of a overlaying as an instance eyes, nose, color, and many others. To pick out the face with a person matching or not. The 2nd technique is international face reputation machine which makes use of the complete face to pick out someone. The defined strategies are enforced with the aid of using a way with the aid of using diverse forms of algorithms. The current implementation the usage of synthetic intelligence packages in face reputation draws many scientists to investigate in this topic. The elaboration of a face functions originates from the adjustments constantly in the facial features that adjustments with the aid of using time. Apart a majority of these adjustments, we're equipped to renowned an character easily. Facial Recognition

System may be described in easy phrases because the era that identifies someone and verifies it with the database with the aid of using evaluating the facial functions defined with the aid of using Chaitanya reddy.

Face Recognition: Scientists commenced running on computer systems to apprehend human faces from mid-1900s due to its widespread packages on face reputation has obtained non-stop interest from researchers. Face reputation can be mentioned due to the approach of feature with the aid of using a person primarily based totally on biometrics with the aid of using the technique of matching a taking pictures photograph or video with the statistics gift withinside the database. The statistics float procedure in face Recognition structures begins offevolved with the aid of using having the capacity to discover face and apprehend frontal faces from statistics enter gadgets like cell phones, cameras, and many others. Practically it's been validated that scholar attended instructions simplest whilst there may be complete manage on study room and attendance monitoring.

## LITERATURE REVIEW

In this paper, the concept of technology specifically Student Attendance and Feedback gadget has been carried out with a synthetic intelligence approach. This gadget mechanically detects the scholar overall performance and continues the scholar's information like attendance and their remarks at the topics like Science, English, etc. Therefore, the attendance of the scholar may be made to be had through spotting the face. On spotting, the attendance information and information about the marks of the scholar is received as remarks [1].

Automated Attendance System the usage of Face Recognition proposes that the gadget is primarily based totally on face detection and reputation algorithms, that is used to mechanically detects the scholar face while he/she enters the elegance and the gadget is successful to marks the attendance through spotting him. Viola-Jones set of rules has been used for face detection which detected human face the usage of cascade classifier and PCA set of rules for characteristic choice and SVM for classification. When it's far in comparison to standard attendance marking this gadget saves the time and additionally facilitates to screen the scholars. In the front of the digital digicam to discover and apprehend the iris, for the gadget to mark attendance for the scholar. Some algorithms like grey scale conversion, six phase square filter, pores and skin pixel detection is getting used to discover the iris. It facilitates in stopping the proxy troubles and it continues the attendance of the scholar in a powerful manner, however in one of the time-ingesting method for a scholar or a body of

workers to attend till the final touch of the preceding members [2].

This paper proposes that the gadget takes the attendance mechanically reputation received through non-stop remark. Continuous remark facilitates in estimating and enhancing the overall performance of the attendance. To reap the attendance, positions and face photos of the scholar's gift withinside the elegance room are captured. Through non-stop remark and recording the gadget estimates seating role and vicinity of every scholar for attendance marking. The paintings is centered at the technique to reap the specific weights of every centered seat in line with its vicinity. The effectiveness of the photograph is likewise being mentioned to allow the quicker reputation of the picture. Camera that detects and acknowledges the faces of the scholars and the device compares the identified face with students' face photos saved withinside the database. Once the face of the scholar is matched with the saved picture, then the attendance is marked in attendance database for similarly calculation. If the captured picture does not in shape with the scholars' face gift withinside the database then this picture is saved as a brand new picture onto the database. In this gadget, there are opportunities for the digital digicam to now no longer to seize the picture nicely or it could omit a number of the scholars from capturing [4].

## METHODOLOGY

### Functional Specifications:

Functional specs are the necessities wherein calls for to perform a device. These necessities are vital to bring together a device with a view to be required to gain the goals launched into formerly changed into carried out through jireh robert jam .Some of the crucial purposeful and non purposeful necessities are mentioned beneath through studying the store keeper story.

- First taking pictures the facial picture graph through excessive high-satisfactory digital camera.
- HD Camera mainly expert digital of Facial functions ought to be detected in image.
- Crop the general stages of faces detected.
- Resize all of the photos till the popularity device takes image to understand.
- Calculating the general attendance percent primarily based totally on facial functions matched.
- Storing all of the detected face photos in a folder.
- Loading the photos into the database.
- We need to teach facial functions to laptop to understand.



- Perform reputation for faces saved on database.
- Calculate laptop facial reputation velocity for powerful protection of appearing face reputation sequentially for every picture graph cropped.
- Displaying enters and output cropped picture graph aspect through aspect on a identical slot to understand and examine the functions through machine.
- After spotting the face shows the call of the output picture graph above the picture graph withinside the given place to discover without problems.

#### Non-Functional Specifications:

- The first and crucial component is person want to discover smooth to take pictures.
- The device may be without problems installed.
- The operator will supply a clean practise on the way to pose the face to teach laptop. The face reputation device is relatively secure.
  - The reaction time if the device may be very much less i.e., 10 seconds.
  - The face reputation device ought to be fast, dependable and 100% efficient.

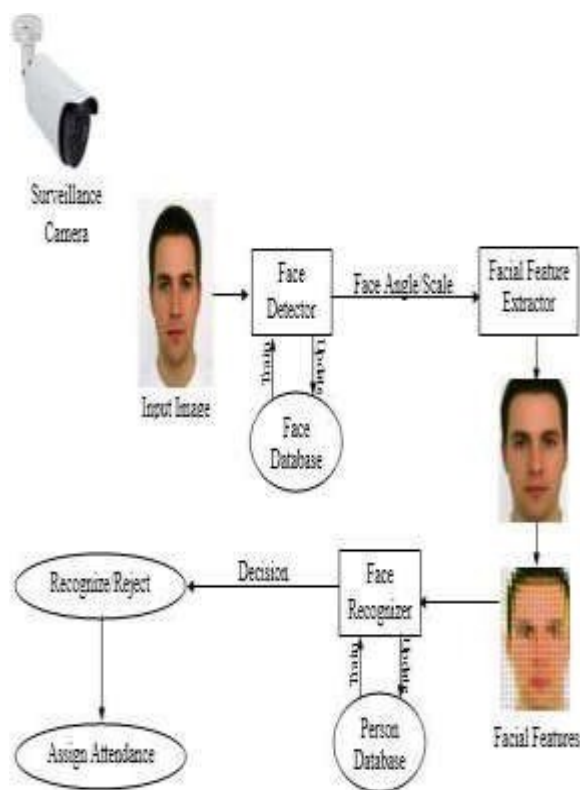


Fig No. 1

From the above diagram noted Face Detector detects the face inputted withinside the given picture graph or video and masses the picture graph to the device. Face localization can note anywhere face is located in the inputted picture

graph or video marked the use of the bounding boxes. The landmarks of the face like eyes, color, nose, mouth and so on are carried out for characteristic extraction from the device the use of face localization. The key functions are extracted the use of face extraction to go through monitoring effectively. Facial functions are matched and classify with the databases saved. Face detection gives outputs both a wonderful output or bad output for the supported picture graph from the set of saved database series of photos.

#### Working of face reputation device:

The operating of face reputation device especially categorized into sorts of algorithms. They are holistic matching set of rules and characteristic-primarily based totally set of rules. The complete face is taken into consideration as enter information to discover a selected man or woman from the database withinside the holistic matching technique and the face is split primarily based totally at the facial functions like eyes, color, pores and skin tone and eyebrows and so on in characteristic-primarily based totally technique. Apart from the above, in latest days 3 dimensions face reputation approach is used to seize the three-D faces the use of sensors to discover man or woman in actual international very accurately. Real-time face detection the use of three-D sensor primarily based totally packages decide someone with numerous facial photos in exclusive angles, on exclusive mild conditions, and numerous poses with exclusive expression makes greater green in all packages.



Fig No. 2

#### Artificial Intelligence to mark attendance:

Artificial Intelligence enabled Face detection primarily based totally software turning

into international famous. This changed into mentioned through Santana Fell. In Washington, American non-public standard faculty in Seattle starts offevolved imposing computerized face detection approach referred to as SAFR (Secure correct Facial Recognition). In this technique faces of mother and father are including into the database. This device objectives to construct a powerful magnificence attendance device the use of face reputation techniques. The proposed device could be capable of mark the attendance thru face Id. It will stumble on.

## CONCLUSION

This device objectives to construct an powerful magnificence attendance device the use of face reputation techniques. The proposed device could be capable of mark the attendance thru face Id. It will stumble on faces thru webcam after which understand the faces. After reputation, it's going to mark the attendance of the identified gift pupil and replace the attendance record.

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## Artificial Intelligence & Robotics

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### ABSTRACT

Artificial intelligence & robotics in latest world is progressing unexpectedly with new advanced improvements day in day out. Today's robotics are depended on computer systems are designed to perform small tasks, for instance, car driving, and performance of other minor duties. However, the primary goal of artificial intelligence and robotics is to develop advanced and more complex systems that would helpful for humans in any way. Robotics includes the performance of more complicated tasks like domestic help, medical help, military help, etc. Therefore, the future goal of AI & robotics is to perfect all human activities and provide better solutions to problems than the human can do. In the long term, an automated system that does all the human functions from medical checkup in case of non-availability of doctor, we can control car with the help of computer. As a result, the development of super AI that thinking power of human become decreases. The development of a super AI & robotics will mark the greatest invention in the human history. Therefore, the development of further developed innovations (robot) has altogether helped in war. Besides, trend setting innovation would a lot of help in battling against destitution.

**Keywords:** *Artificial Intelligence, Machine Learning, Robotics, Speech Recognition, Problem Solving.*

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### INTRODUCTION

Artificial intelligence and robotics have a long history of scientific discussion and communication. The birth of artificial intelligence and robotics takes place in the same period (50's). at the starting there was no clearly difference between two topics. Artificial Intelligence (AI) is the ability of a computer or a robot controlled by a computer to do task that are usually done by humans because they require human intelligence. It is theory & development of computer systems that can performs tasks that normally require human intelligence Example: speech recognition, robotics. Robotics is the domain in artificial intelligence that deals with the examine of making smart and efficient robots. Robotics learn to perform their tasks from humans through machine learning language which is part of computer programming and AI. Robotics is the most exciting field in AI. Everybody agrees that robot can work in an assembly line, but there's no exact matches on whether robot can ever be intelligent. Robot has movable physical structure a motor of a specific type, sensory system, power supply, and computer "Brain" that controls all of these factors. Robots are human made versions they are the machines that replicate human behavior.

In general, Artificial Intelligence is a computer concept that helps a machine to think and solve complex problems as we humans do with our ingenuity. For example, we do a certain job, we make mistakes and we learn from our mistake. Likewise, AI or Artificial Intelligence should work on the problem, make some mistakes in solving the problem and learn from the problems on how to fix it as part of its development. Or in other words, think of this as playing a game of chess. Each

bad move you make reduces your possibilities of winning the sport. So, every time you lose against your friend, you try to remember the actions you took that you should not have and apply that knowledge to your next game and so on. Eventually, you improve your accuracy, or in this case the chances of winning or solving a problem.

### FIELDS OF AI ROBOTICS:

**AI in social media:** AI in social media: Social Media websites like facebook, Twitter, and Snapchat contain billions of user profiles, which require to be stored and managed for the duration of a completely efficient way. AI can organize and manage large amounts of information. AI can analyze multiple data to identify new styles, hashtags, and requirements for various users.

**AI in Robotics:** Artificial Intelligence plays an amazing role in Robots. Usually, general robots are programmed such they will perform some repetitive task, but with the assistance of AI, we can create smart robots which may also carry out responsibilities with their personal experiences without pre-programmed. Humanoid robots are excellent examples of AI in robots, and recently a clever Humanoid robot named Erica and Sophia has been developed that can speak and behave like humans.

**AI in Education:** From the age of fifteen AI is considered to have developed in the field of education. Applications are used by teachers and students today. Robots have long been a popular teaching tool, In the 1980s at MIT Lab Lego Mind Storms kits were developed

for educational purposes. Other robots like Ozobot and Cubelets teach and help students and children.

**AI Safety and Security:** AI is used only when

necessary and shipping is done very carefully.

The term AI is also useful for Cyber security, and machine learning makes an impact. The CCTV's that are distributed almost everywhere in the world today are often very useful in helping to solve and prevent crime.

**Smart Cars:** AI provides real-time driving analytics alerts to warn potential drivers of potential dangers such as accidents. The start of Google's self-driving technology with the aim of

making it easier for people and things to move around. AI is a self-driving technology.

#### NEED OF AI AND ROBOTICS:

1. Domestic Robots
2. Robots used in industrial operations
3. Robots used in the military
4. Robots used in medical examination
5. Robots used for space exploration

1. **Domestic robots:** A house robot is a robot that we use for our housework i.e. cleaning the house, etc. you can see know that robots are being used for home entertainment as well as for education.



2. **Robots used in industrial operations:** In the individual sector, robots are used or lifting, packaging, cleaning, and assembling product.



**Robots used in military:** Robots are now also used in the military. In the military robots are sometimes used for combat, and sometimes for bomb detection and diffusion.



3. **Robots in medical examination:** Even in the medical field we use robots to care for patients, perform surgeries on them perform medical examination on them and so on.



4. **Robots used for space exploration:** They are also robots that we use for space exploration as well as for research on various planets.



#### CONCLUSION:

A robot is not a human being but a device that works in the same way that we instruct it by programming it through a computer. Robotics reduces the impact of human work. The robot has more power than man. Robots work with the help of electricity, batteries and solar system. Artificial Intelligence (AI) is the ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans because they require human intelligence.

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# Generation of Mobile Communication Network

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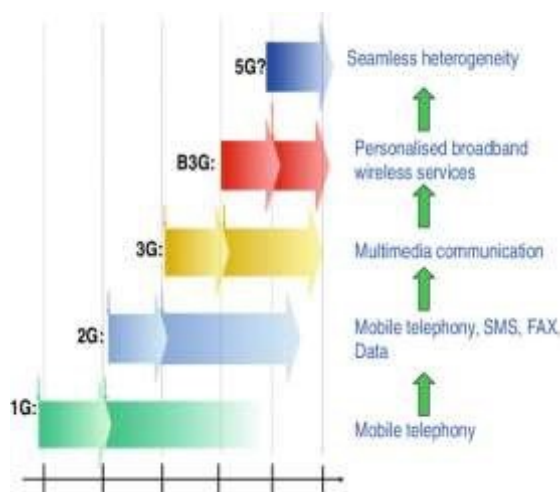
## ABSTRACT

The development path for mobile wireless communication spans decades. This progress in mobile communications has been made up of several generations and is still ongoing. This white paper presents multi-generational research using 1G, 2G, 3G, 4G and explores future generations such as 5G, 6G, 7G. The main concern of this research is to find an image of the future of mobile communications. Wireless communication was first introduced in 1895 by transmitting Morse code using EM waves using wireless telegraphy. In modern wireless communication, the method of transmitting and receiving signals uses the same phenomenon as the transmission of EM waves. The purpose of this document is to cover technical standards, data rates, and frequencies to represent the development and years of progress in mobile cellular technology.

## INTRODUCTION

The growth in telecommunication industry is very sharp during last little decades. The cellular communications networks are known by their numeric generation: 1G, 2G, 3G, 4G and 5G. ... cellular. 5G. The latest cellular generation began in 2018 and will take several years for nationwide adoption. The mobile phone concept was developed at AT & T's Bell Labs in the 1970s.

Then development Generations for cell wi-fi conversation takes its start. Total numbers of cell wi-fi conversation generations which might be being skilled are four. industrial cell turned into evolved in Scandinavian united states in 1981 with the call of Nordic cell telephone (NMT) networks. The first cell conversation trial turned into positioned in Chicago in 1978. After that, this release took place in Chicago in 1983 commercially expressions by light-weight, face expressions



## LITERATURE REVIEW

In literature review we will discuss mobile communication generations from 1G to 5G.

### 1G (FIRST GENERATION):

1G refers to the first generation wireless cellular technology (mobile communication). These are analog communication standards that were introduced in the 1980s and continued until they were replaced by 2G digital communication. The main difference between these two generations of cellular is that voice transmission in 1G networks was analog, whereas in 2G networks it was completely digital.

Although both systems use digital signaling to connect the radio towers (which listen to the handsets) to the rest of the telephone system, the voice itself during a call is encoded to digital signals in 2G whereas 1G is only modulated to higher frequency, typically 150 MHz and up.

### DRAWBACKS:

The main drawback of 1g technology is the use of analog signals rather than digital signals. This is an ineffective means of transferring information. It's slower, the signal can't reach that far with respect to remote areas, and such 2G and 3G signals are much more widespread.

Analog signals are likely to suffer from interference problems, making it difficult to use mobile phones with analog signals. New brands of 2G and 3G technology are more recommended. 1G mobile phones seem bulky and unwieldy by modern standards.



1G technology has disadvantages compared to its successor in terms of overall connection quality, has less capacity, unreliable handover, poor voice connection, and voice calls are played on the tower. Therefore, there is no security at all. These calls are vulnerable to unwanted eavesdropping by third parties.

## **2G (SECOND GENERATION):**

2G technology enabled the diverse networks to offer offerings together with textual content messages, photo After 2G became launched, the preceding cell wi-fi messages, and MMS (multimedia messages) With General Packet Radio Service (GPRS), 2G gives a radio indicator on 1G networks are analog, radio indicators theoretical most switch pace of forty kbit/s (five kB/s). With EDGE (Enhanced Data Rates for GSM Evolution), there may be a theoretical most switch pace of 384 kbit/s (forty-eight kB/s). The maximum not unusual place 2G generation became the time-department more than one access (TDMA)-primarily based totally GSM, at the beginning from Europe however utilized in maximum of the sector out of doors Japan and North America. In North America, Digital AMPS (IS-fifty-four and IS-136) and coma One (IS-95) had been the primary structures. In Japan, the ubiquitously deployed gadget became Personal Digital Cellular (PDC)...

## **DRAWBACKS:**

- (a) Short Messaging Service (SMS)
- (b) Digital Modulation
- (c) Limited Capacity
- (d) Limited Internet Browsing

## **3G (THIRD GENERATION):**

Third Generation (3G) is a name for a set of mobile technologies to be available in India by early '07. These use a host of hightech infrastructure networks, handsets, base stations, switches and other equipment to allow cell phones to offer broadband wireless internet access, data, video, live TV & CD quality music services. The 3G wireless networks will be capable of transferring data at the speed of 384 kbps going up to 2 mbps. Average speed for 3G networks will range between 128Kbps-384 kbps. Some of the features of the proposed 3G service are Always connected. 3G networks use packet-based IP connections. A multimedia service featuring audio and video streaming. Email with full-fledged attachments such as PowerPoint files. Instant messaging with video / audio clips. Quickly download large files such as faxes and PowerPoint files. Access to enterprise applications

## **DRAWBACKS:**

The cost of upgrading a base station and cellular infrastructure to 3G is very high. Another handset is required and there is a handset availability issue. 3G mobile phones are a complex product. Roaming and data / voice capabilities have not yet been demonstrated. Also, higher power requirements (more bits at the same energy / bit) require a larger handset, shorter talk time, and a larger battery).

Base stations must be close to each other (higher cost). Huge spectrum licensing costs, network provisioning costs, handset subsidies to subscribers and more. German and British mobile operators that won spectrum licenses at auction paid astronomical prices. As a result, there is little money left to build the infrastructure. As a result, 3G deployment in Germany and the United Kingdom will be delayed.

## **4G (FOURTH GENERATION):**

4G is the short name for fourth generation wireless, the stage of broadband mobile communications that supersedes 3G (third generation wireless) and is the predecessor of 5G (fifth generation wireless).

The 4G wireless cellular standard was defined by the International Telecommunication Union (ITU) and specifies the key characteristics of the standard, including transmission technology and data speeds. Each generation of wireless cellular technology has resulted in increased bandwidth speeds and network capacity. 4G users can get speeds up to 100Mbps, but 3G only promises a top speed of 14Mbps

Below are some possible characteristics of a 4G system:

1. Supports interactive multimedia, voice, video, Wi-Fi and other broadband services.
2. High speed, large capacity, and low cost per bit. 3
3. Global mobility, service portability, scalable cellular network.
4. Seamless switching, various services based on quality of service (QoS) requirements
5. Better scheduling and call admission control technology.
6. Ad hoc networks and multishop network

#### **DRAWBACKS:**

The battery makes use of is greater.

Hard to implement.

Need completed hardware.

It had to avail offerings of 4G technology.

The system required for a next-era community continues to be very expensive.

The community has greater trouble has safety issues. Not many regions of 4G offerings yet

#### **5G (FIFTH GENERATION):**

5G is the 5th generation cellular network and is an important evolution of today's 4G LTE networks. 5G is designed for the vast data and connectivity growth of today's modern society, the Internet of Things with billions of connected devices, and tomorrow's innovations. 5G will initially work in conjunction with existing 4G networks, and later versions will evolve into a common addition to providing faster connections and greater capacity, a very important advantage of 5G is its fast response time, called delay. Delay is the time it takes for devices to respond to each other over a wireless network. The standard response time for 3G networks is 100 m/s, and 4G is about 30 m/s.

For the community, 5G enables the connection of billions of devices for smart and secure vehicles that improve smart cities, smart schools, smart homes, healthcare and

education, and provide safer and more efficient housing plentifully standalone network with extended coverage

#### **DRAWBACKS:**

Immediate regression. Migrating to 5G requires a device that can support 5G. Current 4G devices do not have this feature and will soon be discontinued.

Technical exclusion. The implementation of 5G networks also means that the average budget is not readily accessible and that implementation is delayed due to lack of funds to use it. Inadequate infrastructure. For 5G networks to work properly, it requires an ambitious investment in infrastructure to increase bandwidth and increase coverage, but it is not cheap. This situation inevitably leads to implementation delays due to the high costs that governments have to bear for the proper functionality of 5G.

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# Drag and Turbulence Analysis of Blended Wing-Body Aircraft in Low Velocity Regime

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## ABSTRACT

Investigations were carried out for understanding the aerodynamic characteristics of a blended wing body (BWB) design. In BWB aircrafts, there is no specific delineation between the body and the wing. An initial understanding of how this design works is obtained by testing an existing design. Numerical simulations are carried out in subsonic regimes on a BWB UAV, at low altitude, to provide better detail. The results are analysed to understand how the drag force is affected by altitude and velocity. The turbulence characteristics are studied in detail for a deeper insight.

**Keywords:** *BWB, aerodynamic characteristics, drag, turbulence, subsonic, UAV*

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## INTRODUCTION

Every aircraft has identifying features, and more often than not, it would be the wings and the fuselage. A Blended Wing-Body (BWB) design, however, blends the two, as the name suggests. There is a well-defined wing and a well-defined fuselage, but they are smoothly blended. The advantage this provides is reducing the wetted surface area, and hence the parasite drags experienced in-flight. The blended design means the entire body is now lift-generating, which is beneficial for an aircraft, both in terms of payload carrying capabilities and fuel efficiency.

Meanwhile, Unmanned Aerial Vehicles (UAVs) are very much in demand. Very early, it was recognised that there are certain situations where unmanned missions are necessary. This may be due to inaccessible terrain, such as under fallen rubble after a natural disaster, or in reconnaissance missions over hostile enemy territory. The development in UAVs has grown continuously, and the world now boasts an impressive array of UAVs, purpose-built for specific purposes. It stands to reason, therefore, that the BWB concept would be applied to UAVs. For smaller UAVs operating at low altitudes and velocities, the BWB concept can reduce drag and ensure smoother flight.

Significant progress has happened so far in this field. Roman D et al. [1] employed computational fluid dynamics and multi-disciplinary optimisation in conjunction to produce a Mach 0.93 BWB configuration. They

concluded that the BWB is a compact aerodynamic and efficient structural design with enormous potential for reduced fuel burn, weight, and cost. According to Liebeck et al. [2], the research findings of comparison of an 800-passenger BWB and conventional configuration aircrafts demonstrated significant performance improvements. Subsequent in-house studies have yielded the development of a family of BWB transports ranging from 200 to 600 passengers. According to Siouris and Qin [3], the BWB's direct operational cost per seat/mile is 15% lower than current conventional designs, with a 20–25% improvement in lift-to-draft (L/D). Vicroy [4] presents the findings of a series of low-speed wind tunnel tests on a BWB tri-jet configuration to analyze low-speed static and dynamic stability and control characteristics over the full angle of attack and sideslip envelope.

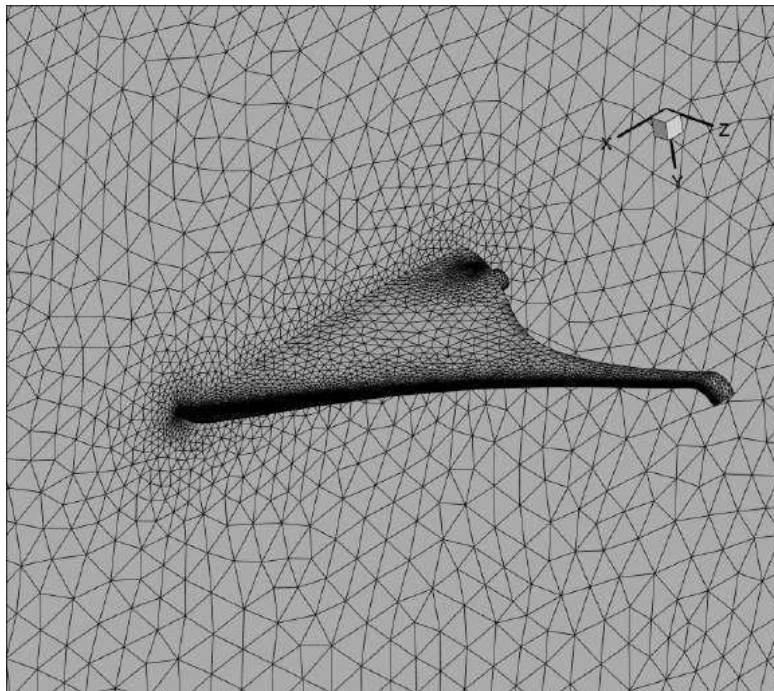
At the target lift coefficient, Kuntawala et al. [5], observed a nearly 40% reduction in induced and wave drag for a blended-wing-body aircraft travelling at Mach 0.85. The drag reduction from a partial section optimization has been more than 50%. Peifeng et al. [6] proposed a BWB design concept in which the cruise point, maximum lift to drag point, and pitch trim point are all in the same flight attitude. Inverse design is considered reasonable to planform optimization since it improves aerodynamic characteristics effectively. The study of Lehmkuehler K et al. [7] describes the design and testing of a UAV with a blended wing body layout. The tests for this aircraft demanded the use of the entire flight envelope in terms of angle of attack and sideslip. Low-speed wind tunnel investigations matched the expected data very closely. Panagiotou et al. [8] devised

a winglet optimization strategy for a medium altitude long-endurance unmanned aerial vehicle and the airflow across the entire aircraft was measured at loitering conditions to compare the aerodynamic performances. The integration of traditional and blended wing body-specific layout methodologies into a digital tool was detailed by Jorrit van Dommelen and Roelof Vos [9]. Ankit et.al [15] performed CFD analysis on two stage sounding rocket performing over different body parts of rocket. The simulation is carried out using ANSYS Software. The rocket is designed to reach maximum apogee to perform scientific experiments and can be recovered safely after use. The forward-swept configuration with wing-mounted engines has the highest harmonic range, according to the results. Md. Akhtar Khan et. al. [10] developed a CNC-machined aluminium BWB model that can fly at up to 35 m/s and has been tested at angles of attack ranging from  $0^\circ$  to  $16^\circ$ .

Zhoujie Lyu et al. [11] conducted a series of aerodynamic shape optimization studies using **METHODOLOGY AND NUMERICS**

Reynolds-averaged Navier–Stokes computational fluid dynamics with a Spalart–Allmaras turbulence model and discovered that the drag coefficient at the cruise condition is minimised when lift, trim, static margin, and centre plane bending moment constraints are applied. Suresh et al. [12] attempted to design and analyse a Blended Wing Body UAV with and without flaps using a CFD technique.

In this research, a BWB model is analysed at different Mach number and different altitudes. The major point of study is the drag coefficient. It is important to understand how the CD value is affected by changes in altitude and Mach number. The turbulence characteristics are another important factor. Detailed study of parameters such as turbulent kinetic energy and specific dissipation rate can help in determining a direct correlation between turbulence and drag.



*Figure 1. The mesh and geometry details of the current case*

A BWB UAV is analysed here, with wingspan of  $B$  m, and length of  $L$  m. The UAV is selected to operate at two different Mach numbers, 0.1 and 0.2, and at two different heights, 2500 m and 5000 m. Different angles of attack are analysed, from  $0^\circ$  to  $30^\circ$ , at regular intervals. The range of angles of attack represent the possible configurations the UAV may take during its flight.

Case 1		Case 2		Case 3	
Altitude	2500 m	Altitude	2500 m	Altitude	5000 m
Mach number	0.1	Mach number	0.2	Mach number	0.2
Reynolds number		Reynolds Number	$7.3 \times 10^6$	Reynolds number	$5.7 \times 10^6$

Table 1. Different test cases for the analysis

As seen in Figure 1, an unstructured mesh was designed for the current simulation with a higher mesh density closer to the aircraft surface. A box enclosure was provided for the domain with dimensions 16m x 6m x 12m. No-slip boundary condition was applied to the aircraft surface, while the velocity-inlet was positioned ahead of the aircraft nose. Since only half of the aircraft was considered, hence, symmetry boundary conditions were applied on the root side. The outlet was placed downstream of the aircraft with pressure-outlet boundary conditions.

Reynolds Averaged Navier-Stokes (RANS) equations were solved using commercial CFD software to simulate the flow. The model was a finite volume formulation, with second-order implicit discretization scheme for pressure correction. The QUICK (Quadratic Upstream Interpolation for Convective Kinematics)

scheme was used. QUICK is a third-order accurate scheme near the wall. SIMPLE[13] (Semi-Implicit Pressure Linked Equation) algorithm was used for pressure velocity coupling.

The SST  $k-\omega$  turbulence model [14] was used. Here,  $k$  is the turbulent kinetic energy,  $\omega = \epsilon/k$  is the specific dissipation rate, and  $\omega$  is the pseudo dissipation rate. The SST  $k-\omega$  turbulence model, which is a two-equation eddy-viscosity model, which is a hybrid of the Wilcox  $k-\omega$  model and the  $k-\epsilon$  models. The  $k-\omega$  model generally performs better in the near wall region, while  $k-\epsilon$  performs better in the free-stream. The hybrid model combines their strengths by using  $k-\omega$  in the near-wall and  $k-\epsilon$  in the free-stream. The complete set of governing equations are as below[15]:

$$\rho \cdot \bar{u} \frac{\partial \bar{u}_i}{\partial \bar{x}_j} = \frac{\partial}{\partial \bar{x}_j} (\rho \bar{u}_i \bar{u}_j) + \mu \left( \frac{\partial^2 \bar{u}_i}{\partial \bar{x}_j^2} + \frac{\partial^2 \bar{u}_j}{\partial \bar{x}_i^2} \right) - \rho \bar{u}'_i \bar{u}'_j \quad (1)$$

$$\frac{\partial}{\partial t} (\rho k) + \frac{\partial}{\partial \bar{x}_j} (\rho k \bar{u}_j) = \frac{\partial}{\partial \bar{x}_j} \left( \Gamma_k \frac{\partial k}{\partial \bar{x}_j} \right) + G_k - Y_k + S_k \quad (2)$$

$$\frac{\partial}{\partial t} (\rho \omega) + \frac{\partial}{\partial \bar{x}_j} (\rho \omega \bar{u}_j) = \frac{\partial}{\partial \bar{x}_j} \left( \Gamma_\omega \frac{\partial \omega}{\partial \bar{x}_j} \right) + G_\omega - Y_\omega + D_\omega + S_\omega \quad (3)$$

In these equations,  $\rho$  is the density,  $\bar{u}_i, \bar{u}_j$  represent time-averaged velocities in mutually perpendicular directions.

$\bar{p}$  is the time-averaged pressure force,  $k$  is the turbulent kinetic energy, and  $\omega$  is the specific dissipation rate.  $G_k$  represents the generation of turbulent kinetic energy and  $G_\omega$  represents the generation of  $\omega$ ,  $\Gamma_k$  and  $\Gamma_\omega$  represents effective diffusivity of  $k$  and  $\omega$  respectively, while  $Y_k$  and  $Y_\omega$  represents the dissipation of  $k$  and  $\omega$ .  $D\omega$  represent the cross-diffusion term, while  $S_k$  and  $S_\omega$  are the secondary source terms. The assumption is made that the flow domain is incompressible, i.e., the free-stream density is constant. The free-stream Mach number is between 0.1-0.3 in these cases, so this is a legitimate assumption.

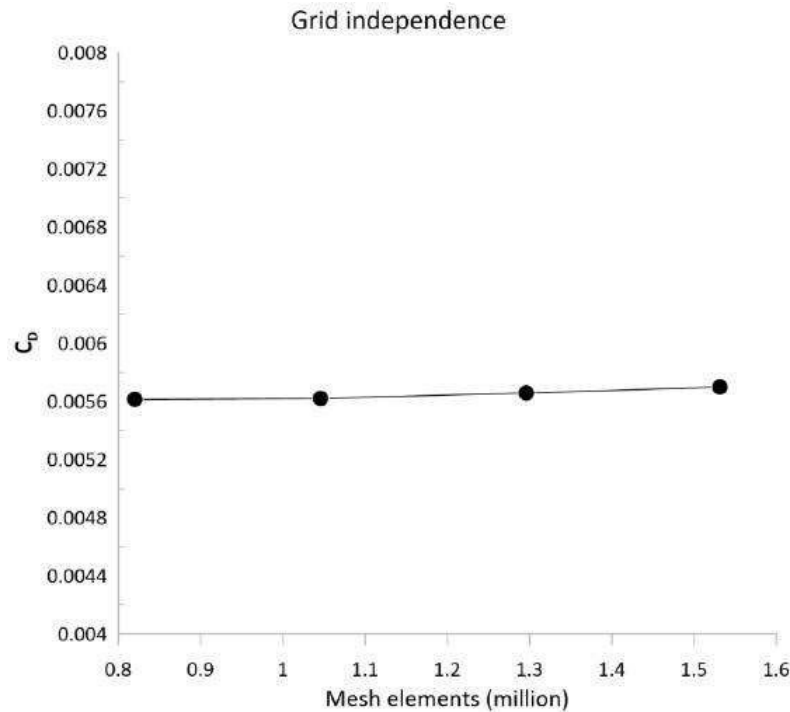


Figure 2. Grid independence

Figure 2. Drag coefficient at different altitudes at Mach 0.2

## RESULTS AND DISCUSSIONS

The main topic of our understanding here is how drag is affected by different factors. As depicted in Figure 3, At Mach 0.2, the drag coefficient values do not vary considerably between altitudes of 2500 m and 5000 m. Pressure, temperature, and relative density are 0.7469 bar, 271.9 K, 0.7812 kg/m<sup>3</sup> at 2500 m and 0.5405bar, 255.7 K, 0.6012 kg/m<sup>3</sup> at 5000 metres, respectively. At 2500 m altitude, aircraft travel at a speed of 66 m/s, whereas at 5000 m, the speed is 64 m/s, indicating that there is no substantial variation in velocity between the two elevations.

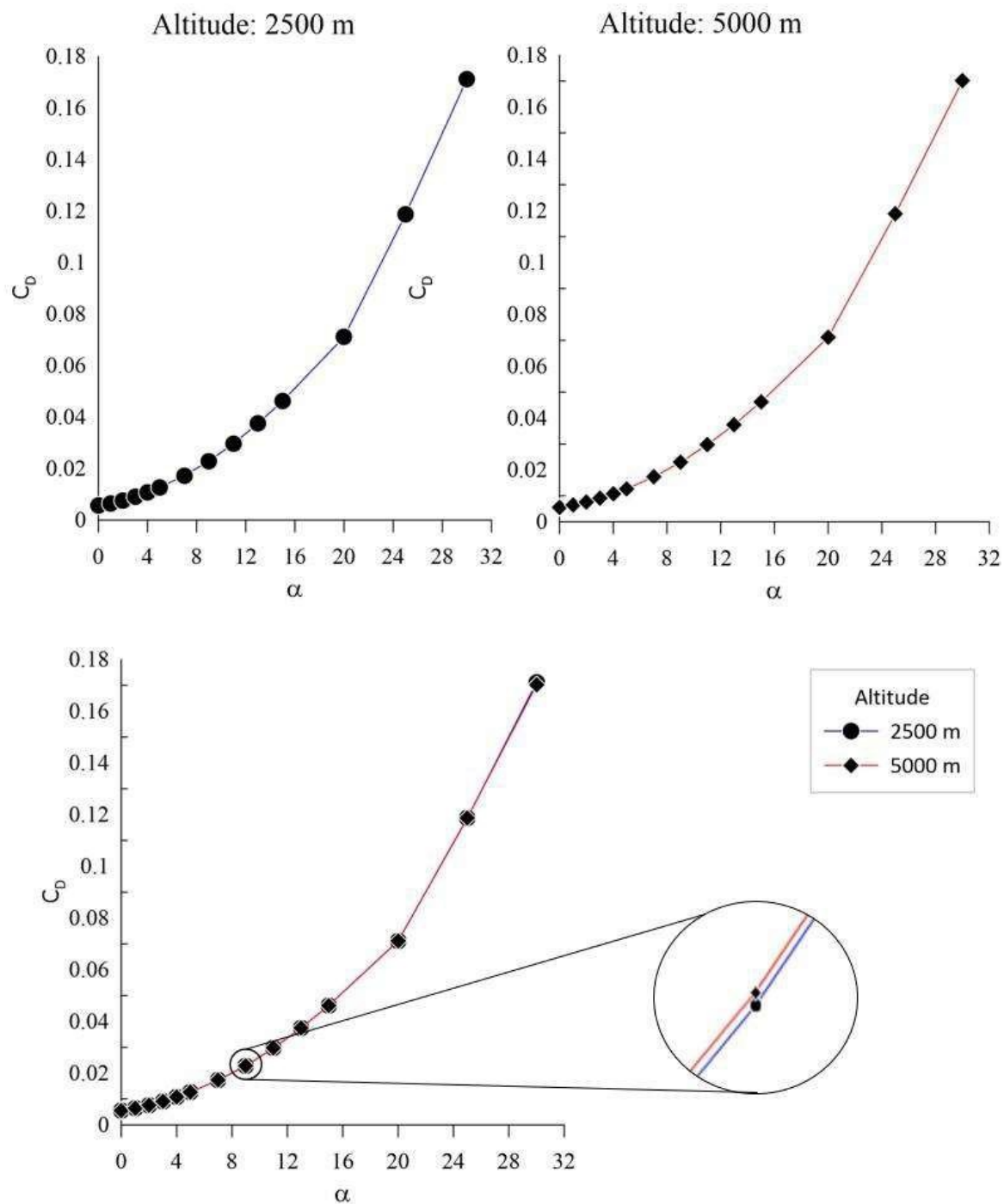


Figure 3. Drag coefficient at different altitudes at Mach 0.2



The increase in  $C_D$  with angle of attack is consistent with general expectations. The drag increases in an exponential manner, increasing heavily after stall, which can be seen by comparing with Figure 4. The  $C_L$  vs  $\alpha$  curves obtained at Mach 0.2 for altitudes of 2500 m and 5000 m, respectively, are shown in Figures 4(a) and 4(b). Figure 4(c) shows the relationship between the coefficient of lift and angle of attack for Mach 0.1 and 0.2 at 2500m elevation. It can be seen that the graphs for both cases are very similar, which is the same behaviour noted in the previous figure. The reason for this is again the very slight variations in conditions.

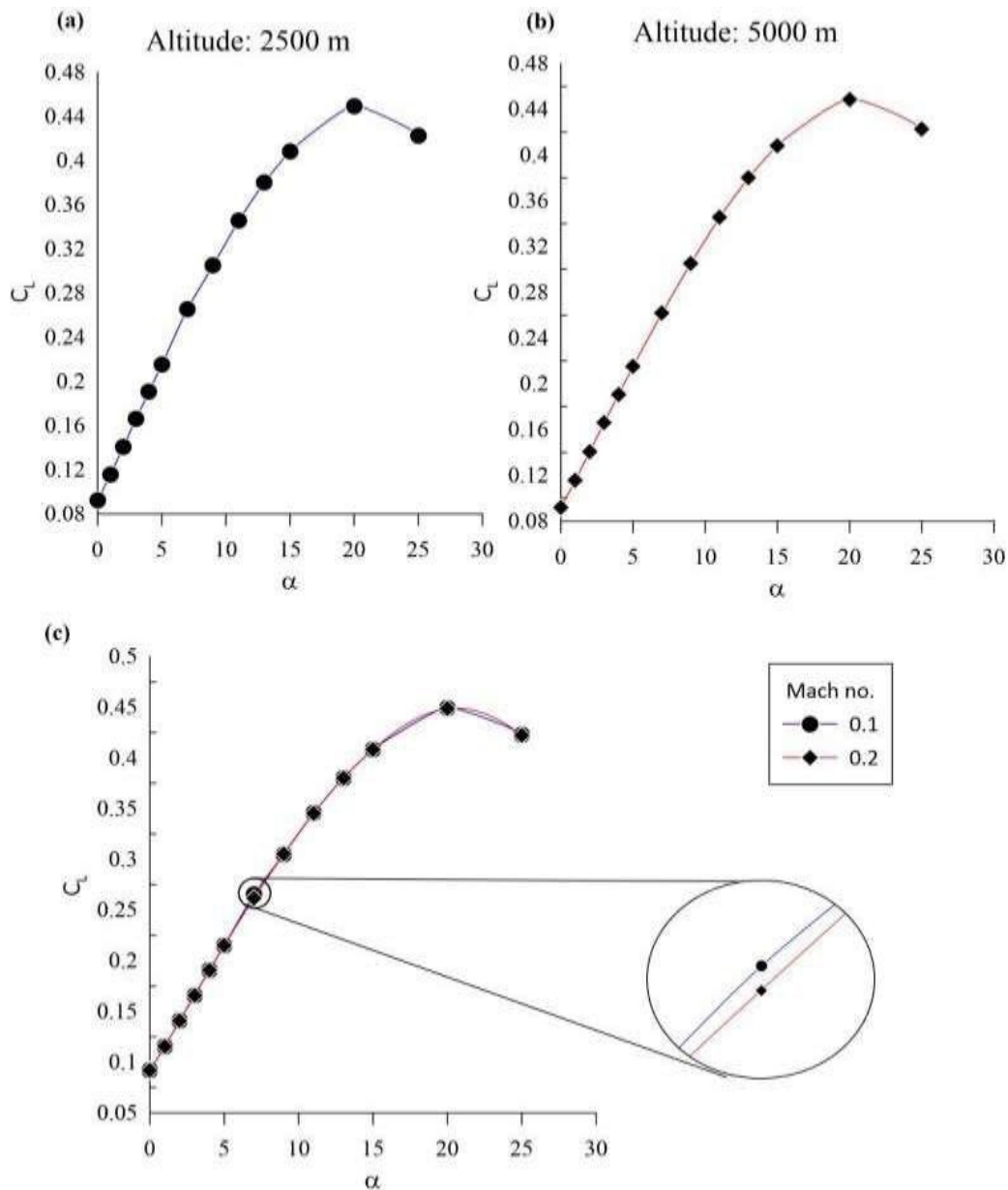


Figure 4: Lift coefficient at different altitudes at Mach 0.2

The fluctuation of drag coefficient ( $C_D$ ) with Mach number is depicted in Figure 5. As the angle of attack increases, the drag coefficient increases as well. The overall value of drag coefficient for Mach number of 0.2 is greater than that for Mach number 0.1, as a blanket rule.

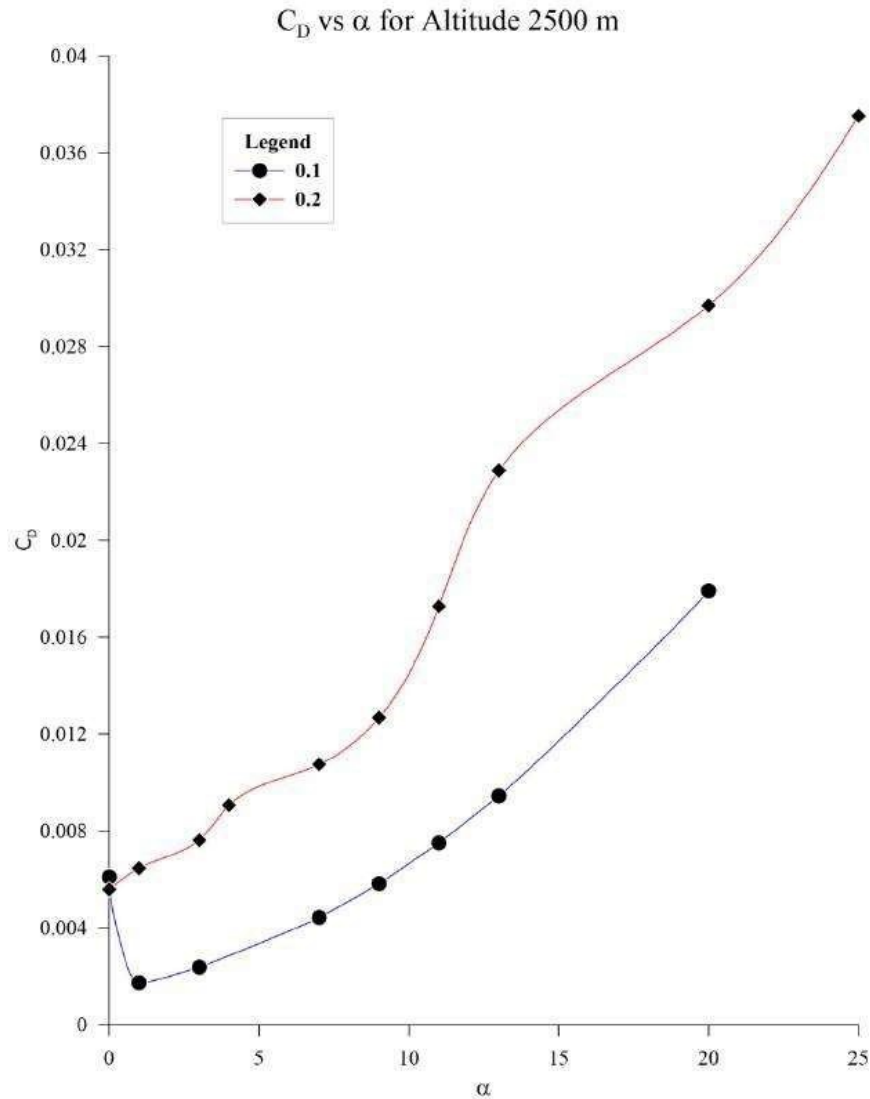
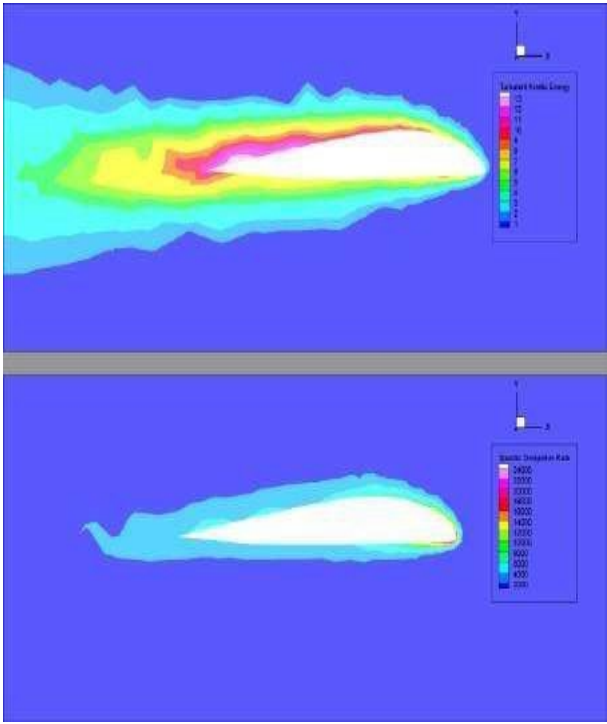
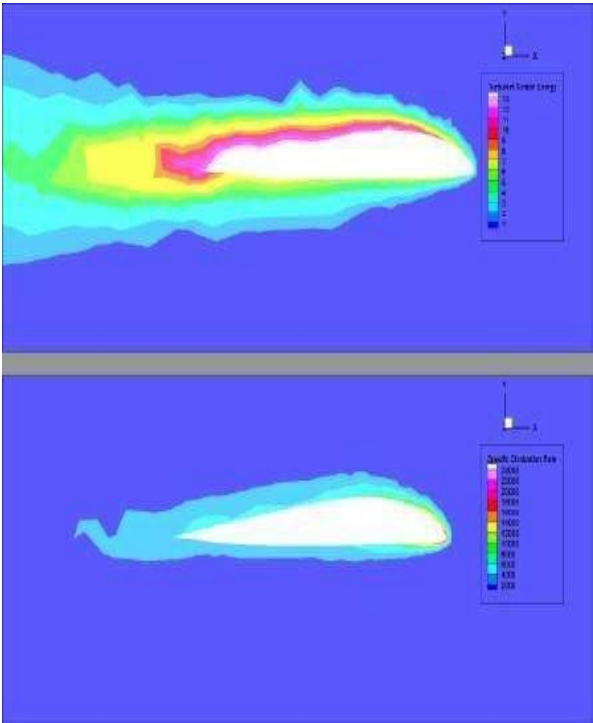


Figure 5: Drag coefficient ( $C_D$ ) variation with Mach number at 2500 m

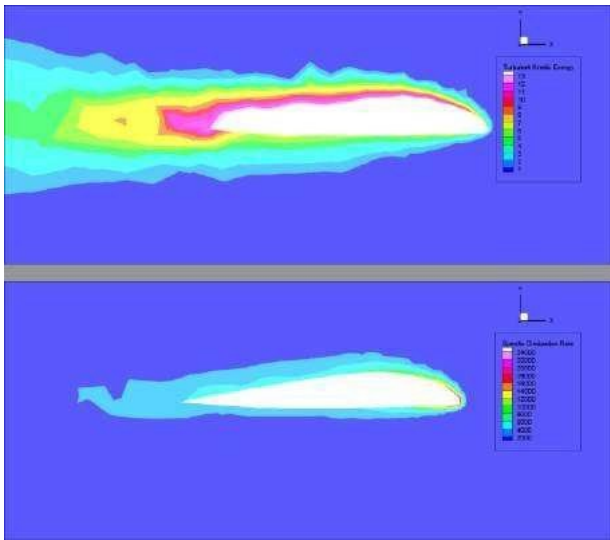
## TURBULENCE PARAMETERS



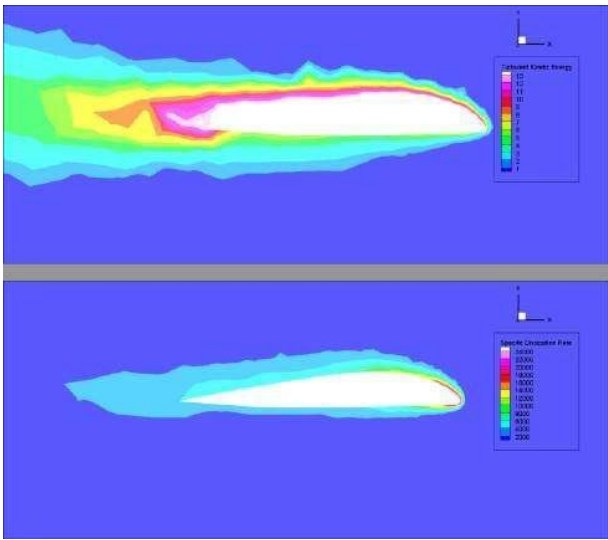
(a)



(b)



(c)



(d)

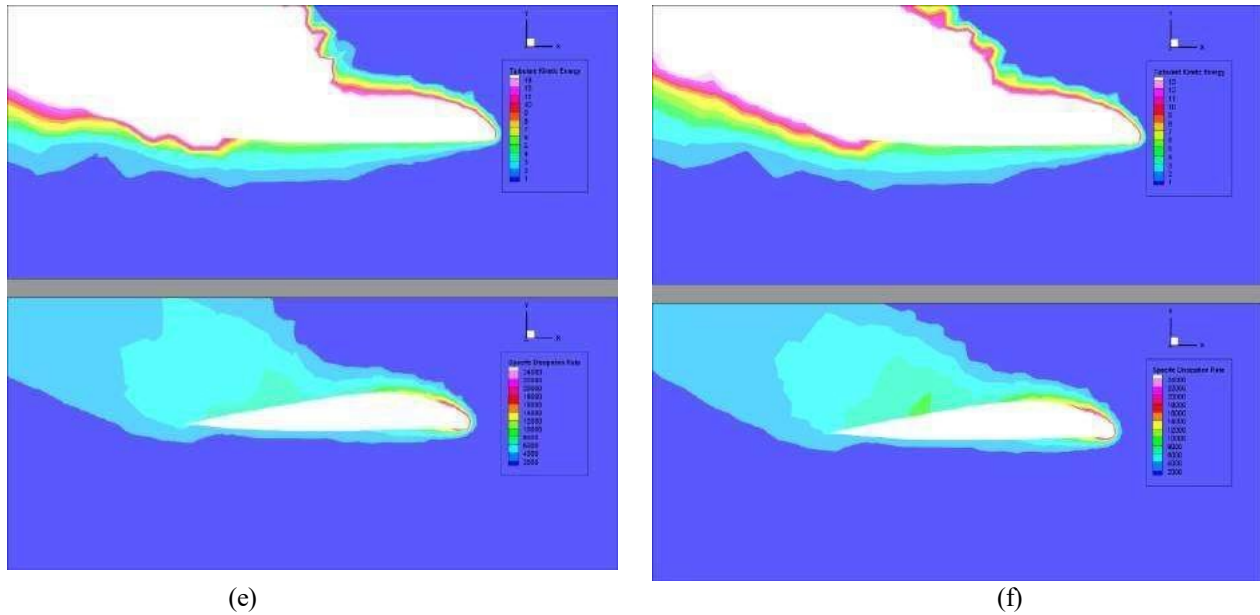
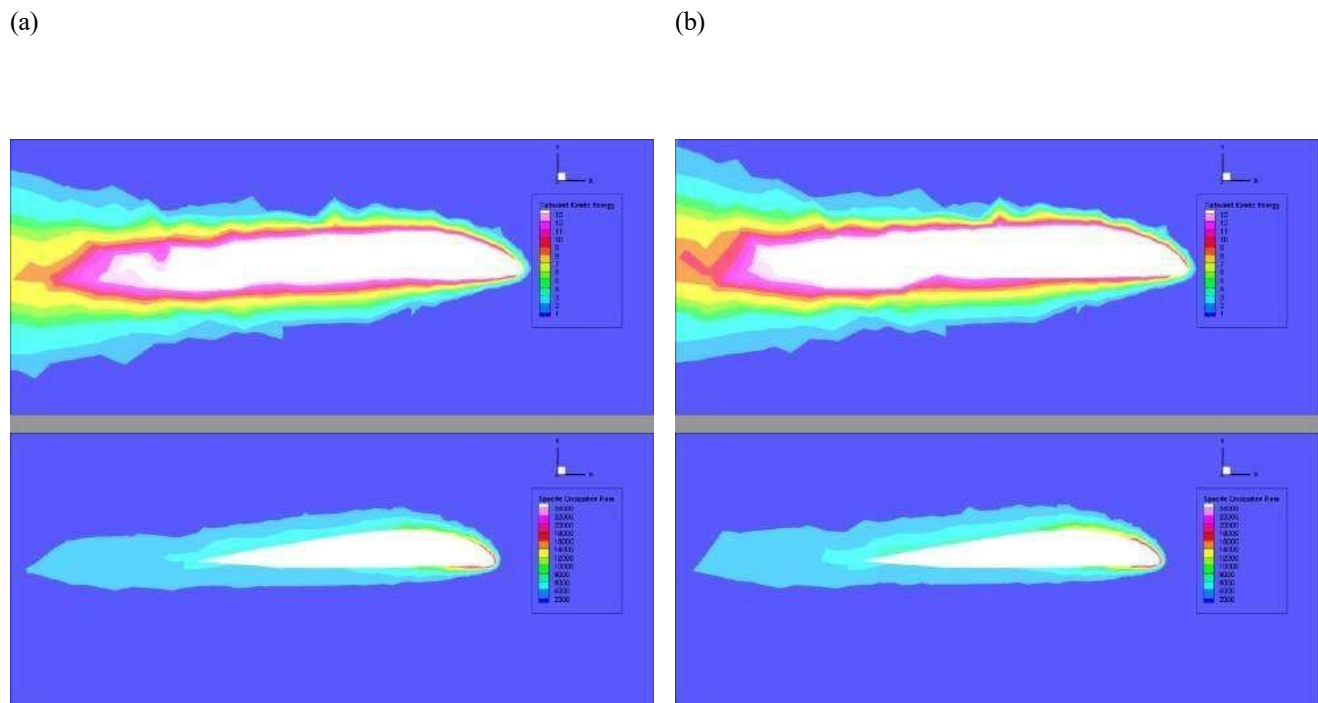


Fig 6: Turbulent Kinetic Energy (top) and Specific Dissipation Energy (bottom) at angle of attack (a)  $0^\circ$ , (b)  $3^\circ$ , (c)  $5^\circ$ , (d)  $9^\circ$ , (e)  $13^\circ$ , (f)  $15^\circ$ , at 5000 m altitude and 0.2 Mach number

Turbulent Kinetic Energy and Specific Dissipation Rate are the most important parameters required for understanding the turbulence characteristics of the flow. The use of the SST  $k-\omega$  model makes these two parameters the primary points of consideration. In Figure 6, the contours have been plotted for six different angles of attack –  $0^\circ$ ,  $3^\circ$ ,  $5^\circ$ ,  $9^\circ$ ,  $13^\circ$ ,  $15^\circ$ . These plots are at Mach number, and for each case from (a)–(f), the top half shows turbulent kinetic energy and the bottom half shows specific dissipation rate. It is clear that the contours get more chaotic as the angle of attack increases. Below  $10^\circ$ , however, the flow more or less stays attached. At  $13^\circ$  and  $15^\circ$ , the flow is clearly separated, as it is in post-stall.



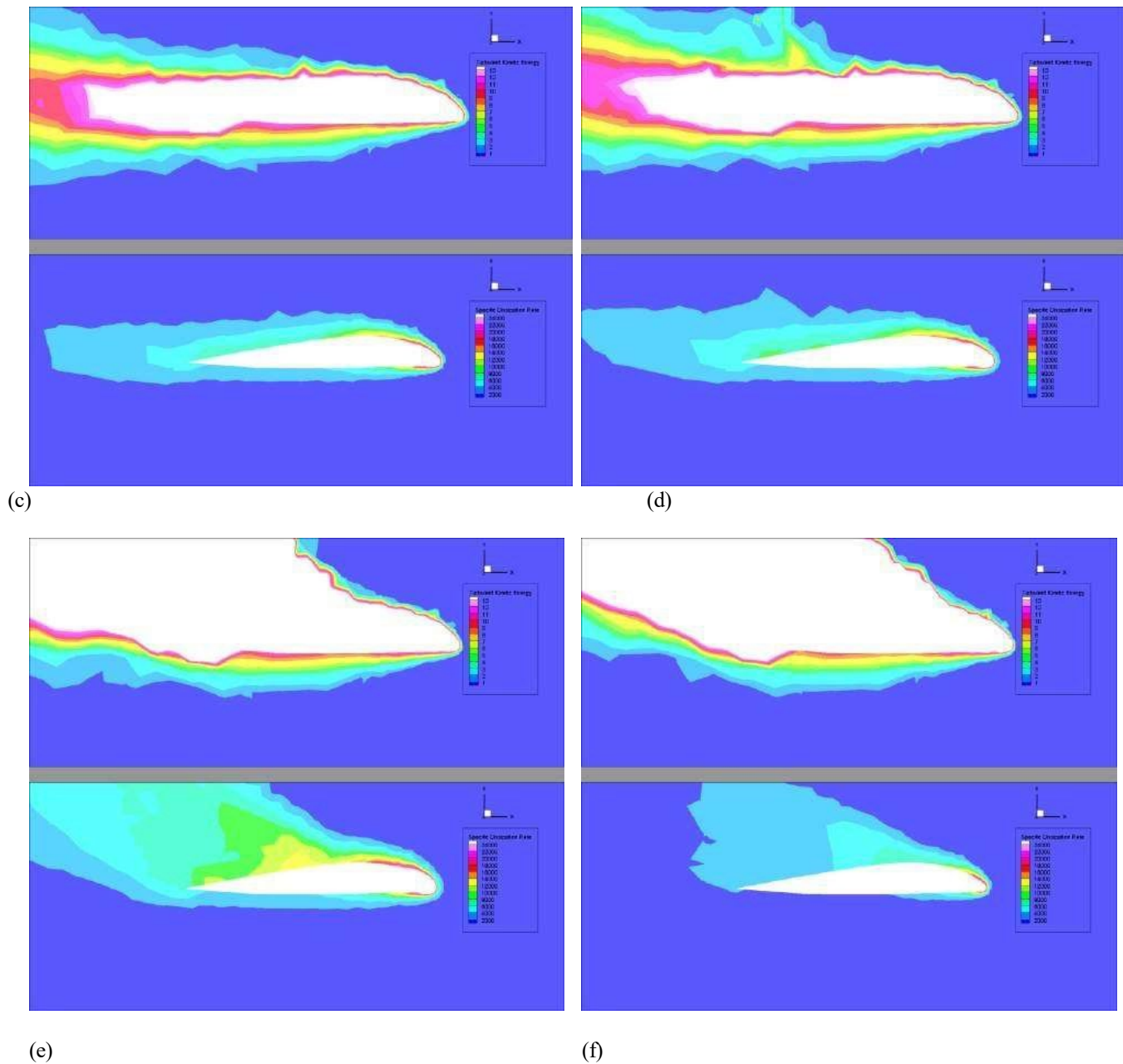


Fig 7: Turbulent Kinetic Energy (top) and Specific Dissipation Rate (bottom) at angle of attack 0, 5, 9, 11, 15 and 20 degrees respectively, at 5000 m altitude and 0.3 Mach number

The contours in Figure 7 are the same altitude of 5000 m as with Figure 6, but the Mach number is 0.3. the arrangement is similar, with six angles of attack, in this case, 0°, 5°, 9°, 11°, 15°, 20°. Each figure from (a)- (f), in turn, has turbulent kinetic energy in the top half and specific dissipation rate in the bottom half. Similar to the previous case, the flow is more or less connected to the body, but is more and more separated as we go to higher angles of attack, and the contours are more chaotic.



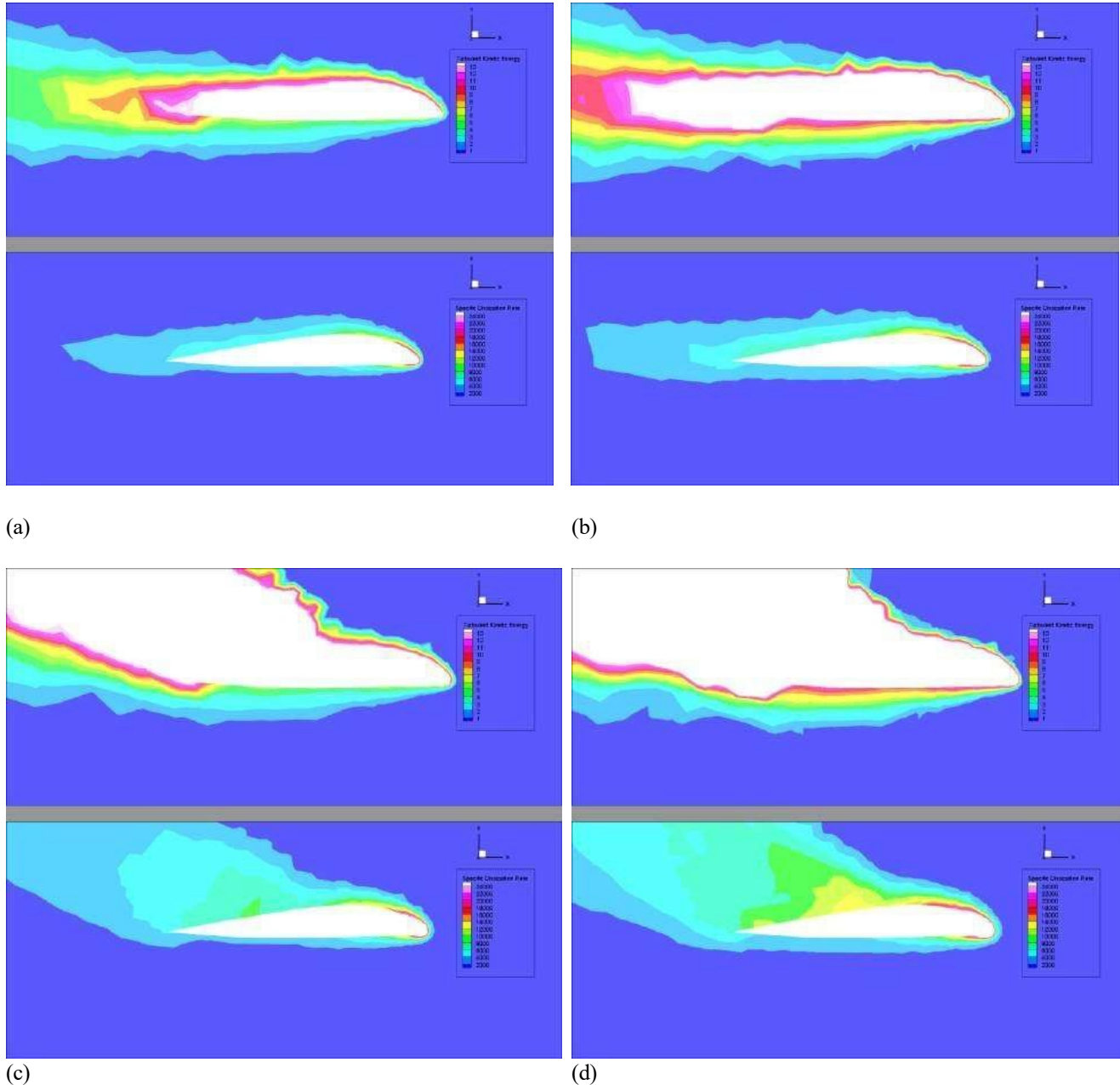


Figure 8: Comparison of  $k$  and  $\omega$  with Mach number at  $9^\circ$  for (a)-(b), and at  $15^\circ$  for (c)-(d); (a) and (c) are at Mach 0.2, while (b) and (d) are at Mach 0.3; all are at altitude 5000 m

Figure 8 shows how turbulence parameters vary with mach number. On the left side, the figures at  $9^\circ$  and  $15^\circ$  are both at Mach 0.2, while on the right, the figures are of Mach number 0.3. All the figures are the same height. The reason for choosing the particular angles of attack is that one is pre-stall and the other is post-stall. As noted in previous figures, the pre-stall angle shows attached flow, while it is separated in the post-stall region. Beyond that, we can see that the flow attachment is much better at Mach 0.2 compared to 0.3. The white region in the TKE contour expands at the higher Mach number for both angles, as separation ensues. It's the same case for  $\omega$ , with the contour showing an lower values near the upper surface and more detachment.

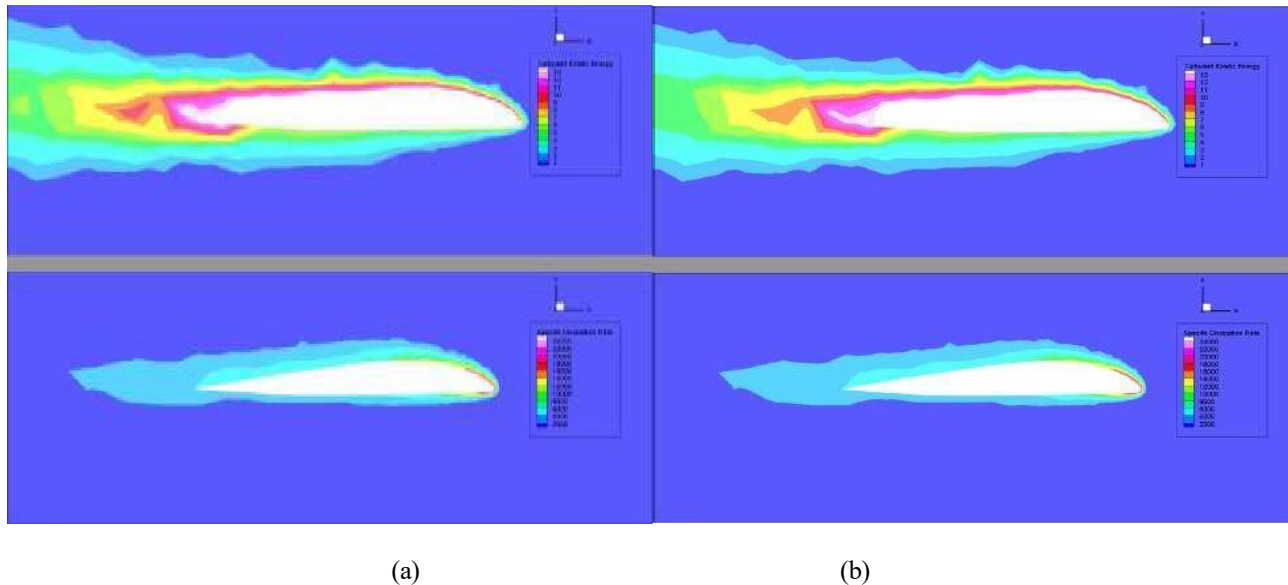


Figure 9: Comparison of  $k$  and  $\omega$  with Altitude at  $9^\circ$  for (a)-(b); (a) is at 2500 m altitude, while (b) is at 5000 m altitude; both are at Mach 0.2

The altitude different is barely noticeable in Figure 9. It is the same issue that was noticed in Figures 3 and 4, where the lift and drag coefficient values for the two altitudes almost completely overlapped one another. Looking closely, a slight difference can be seen in the contours at 2500 m in figure 9(a) and 5000 m in figure 9(b), but it is not much.

## CONCLUSIONS

A clear picture is available from the above figures, and it provides a detailed understanding of how the BWB configuration performs at different situations.

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## Digital Interventions in Literary Spaces

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### ABSTRACT

The whirlwind of technology has not spared any sphere of life, and literature, as a reflection of life, could not have remained unaffected. All aspects of literature have been transformed, and traditional systems have been ruptured, including the production, circulation, reading, reflecting, and critiquing. The present article is a detailed examination of all spheres of Literature and how they have been altered as a result of the transformation of the ecology of communication and human life brought about by digital technology. Previously, it was difficult to get a book published, and once published, reaching the targeted reader was another matter entirely. However, with tools developed through social media and products such as self-publishing, the entire process has become more technologically oriented, and the ramifications must be assessed. Similarly, the language of novels, drama, and poetry is deteriorating into stichomythic, indicating a breakdown in human communication. On the other hand, there is eclectic literature that has been shaped by technology in newer forms and formulations. Twitter handles are creating poetry, and machines are writing novels, completely uninhibited by the constraints of daily human interaction. Every day, machine learning and artificial intelligence expand our horizons, and the day is not far when we will be ordering books based on our tick boxes, just as we would with a driverless car, genetically modified vegetable, pet, or even human being. What the future of Literature may be in such an ecology is merely an extension of what digital intervention already infringes, the paper explore all these possibilities.

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## Waste Water Treatment And Sanitation in Rural Area

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### ABSTRACT

Poor hygiene & sanitation in chavare village has been a major public health challenge. The study was collected to assess the existing practices of sanitation and hygiene.

The descriptive study of was carried out in chavare information was collected through face to face interview to the people and observation of sanitation and hygiene. There was availability of latrine in most of the households. The study showed 71.41% of the respondents used to wash their hands with soap water after defecation. Few of the respondents reported bathing daily. More than two third of the household used to take water directly from sources. Nearly half of the households used to dispose garbage waste directly into river.

Sanitization & hygiene practices in chavare was reported much satisfactory but still public health concern.

**Keywords:** *Sanitation, Hygiene, Waste Water, Public, River, Water*

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### INTRODUCTION

Water and sanitation have been recognized as the Despite huge investments in the sector by governments and other, many still do not have essential needs of human development access to these basic needs.

Similarly, despite heavy subsidies and targeted intervention in the past, only about 20 % of the rural facilities have access to safe sanitation facilities.

The major reasons for this situation are ;

- Lack of community ownership of the assets created, leading to their failure
- The delivering agencies/ departments are too far from the local people and are not accountable to the people.
- Focus was only on creating new assets and not on taking care of the created assets.
- Lack of line the efforts to make the people realize that sanitation is behavior aspect
- Lack of adequate focus on sustainability of natural resources.

Based on the above lessons and the policy of government of India (GOI) for the sector reforms program (SRP), now known as Swachh Bharat Mission, the government has taken a policy decision to implement key reforms in the sector, beginning in the year 2000.

### LITERATURE REVIEW OF TOPIC:-

Literature review is done of some of the papers published in international conferences and papers they are listed in brief as follows:

Rural water and sanitation community participation in appropriate water supply and sanitation technologies by RG Feachem –proceedings of the royal society of 1980–royalsocietypublishing.org In this paper we review what is currently known about access to water and sanitation for persons with disabilities in low and middle income countries from the perspective of both international development and global health and identify existing gaps in research, practice and policy that are of pressing concern if the water and sanitation needs of this large and largely overlooked population are to be addressed b) Rural sanitation by Bennett J. Crank, R. Ayers T.L. Odiambo, A. Faith, S.H. & Quick R (2015) This paper provides a review of recent literature on the impact of poor water, sanitation on the hygiene(wash) in health care facilities, comments on the state of the evidence base and introduces some of the resources available to assist governments and external support agencies to address the serious shortcomings outlined. c) The relationship between the level of household sanitation and child mortality by PW steepens-African Demography working paper series 1984-respository.upenn.edu d) Designing water supply and sanitation projects to meet Demand in rural and Peri urban communities by P Deverill-2002-books.google.com e) Pro-

poor sanitation technologies by C Paterson D mara. T. Curtis-Geoforum ,2007- Elsevier

#### **METHODOGY TO BE FOLLOWED WHILE SOLVING TOPIC CONSIDERED:-**

- 1)Literature review of the papers published in conference and journals.
- 2)Getting cleared of basic concepts about the sanitation.
- 3)We did case study on Chavare.
- 4)Studied the problems faced by the Village.
- 5)Waste water treatment

#### **OBJECTIVES -**

1. To Recycle and reuse of waste water
- 2.To create awareness about sanitation system among people.
3. Try to prevent and control unhygienic condition created due to bas sewage system.
- 4.Try to provide maximum benefits to society by implementation of sanitation program.
5. To minimize the cost of sewage treatment in rural area.
- 6.To provide maximum options for onsite waste management for rural area.
- 7.To design house drainage system that easily permit cleaning and removal obstructions
- 8.To build public toilets and create awareness among people.

#### **CONCLUSION**

We studied the sanitation system of CHAVARE and we conclude that.

- 1) There should be arrangement of sanitation awareness camps for both villages .
- 2) For disposing waste water only chlorination method used so it should be replaced by advanced disposing waste water system like screening and sedimentation.
- 3)There should be house to house collection of solid waste by trolleys:

- And it is further categorized into two parts-
- Decomposable and non-decomposable

- 4) Solid waste is categorized and used for different purpose.

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## Alumni Portal

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### ABSTRACT

The objectives of this application are to allow old and new student of university or college to communicate with each other. In this system students can know about each other's and they can also been touch with current activities. This application will also collect actual information about working experiences of graduates. This application consists three modules like Administrator, Alumni, Student .The available information includes all these focuses and points on comfortable user interface.

**Keywords:** *Graduated class, Graduated class entry, graduate, relationship, manual, computerized, significant, pleasant, organized, web base application.*

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### INTRODUCTION

This system is an application for the Alumni Portal to manage the college information and student's information. The system is an online application that can be accessed throughout the organization and outside customers as well with proper login provided, which will give better service to the customers. This application can be used as the workplace of Alumni and College connection seeks to guard the privacy of its alumni and friends, and thus, efforts to safeguard the use of knowledge in its custody. To that endpoint, the Office of Alumni and College connections provides constituent information to requestors only under the conditions. Overall method consists of environment of the entire requirement. It also consists the information about actor and function which is used. It gives specific information about diagram architecture and it also gives the information of what we have assumed and dependencies. It also supports specific requirement and functional requirement, supplementary requirement other than actor which is used. It also gives explanation on any doubt and queries. Once a understudy graduates from the established, his/her proficient life or career starts, with higher instruction playing an imperative part in setting up himself/herself within the calling. In regard of College, it has been our involvement that from the exceptionally starting, the graduated class have kept up individual contacts with one another, instead of utilize the channel of Graduated class Entrance.

### LITERATURE REVIEW

Numerous colleges keep up display and ancient understudies physically. Recalling this information within the manual framework is exceptionally troublesome. In case understudy needs any data about graduated class they ought to approach college administration. By and large

collecting the data is exceptionally dull errand in this system.

1. IITKanpurAlumni([www.alumni.iitkanpur.edu](http://www.alumni.iitkanpur.edu)) IIT has Display with numerous pictures, Addresses subtle elements with particular day and time, contacts which appears whom all are associated with this entrance, lady graduated class tradition as partitioned for the lady as it were on the Domestic page. Highlights are Display on the domestic page, visit for direct allotments is given so that the junior understudy can get the arrangement or the exhortation for their difficulties. Notice with highlighted shape is appeared for way better visualization. too gives the Giver Alumni Princeton University ([www.alumni.princeton.edu](http://www.alumni.princeton.edu)) Activity Chance. IIT Kanpur appears data occasions approximately display on each page where the current occasions are highlighted too there's a partitioned women alumni tradition which is the special feature.

2. Harvard Alumni([www.alumni.harvard.edu](http://www.alumni.harvard.edu)) Front page of this entry appears the highlights like login tab so that the alumni can login effectively, ways to put through for interfacing the junior and the pass out understudies, make blessing for different events like birthdays or anything else. With that Harvard gives Highlights News for encompassing data, Address points of interest which portrays the plan, occasions and the Take note are shown on domestic page itself with the display occasion. Too gives the Giver Activity Chance for the situation when the graduated class understudy, he/she feels that they can offer assistance the college in terms of gift so that will be conceivable with this. With all this we have watch the one of a kind highlight that, it gives the clubbed video. on the domestic page and this thing makes the entire entrance exceptionally much attractive.

The presumption is made that graduated class and the under studies can communicate with each other through this entrance. Graduated class or the pass out candidates working in certain presumed IT businesses can post any opportunities with respect to any work or any kind of internships openings through Gathering. They can moreover post their encounters and sees approximately companies and ventures. They can too share their encounters as a fresher and afterward for coming to the current assignment. They can share the continuous and up and coming requests of the market. The existing understudies as well the graduated class can communicate with each other through Forum system. The questions from either side can be let go and the individual having a information (a bit or more) can answer to the individual. This way all the individuals on the entrance will be benefitted. The entrance too makes a difference Graduated class to see the up and coming occasions within the college.

### EXISTING SYSTEM

The current system in addition a modernized system however it contains incalculable exceed expectations sheets that are made by each client. For illustration, in the event that we need a few records, we have to go through all the record. This prepare may take more time. And keeps up of these exceed expectations file is a troublesome errand. It doesn't allow various clients get to and moreover doesn't have distinctive client benefits.

### DISADVANTAGE OF EXISTING SYSTEM

- Cannot be used frequently.
- Based on manual work.
- Cannot maintain regularly.
- Data can be losses.

### PROPOSE SYSTEM

Proposed framework will be the web-based application so graduated class can get to it with the assistance of admin. This framework is computerized but it keeps up by centralize database for example in robotization structures it may be a quick strategy. The keep up the database is gotten to be easier because of an internet framework which makes it simple to get to and quick recover information frame. It also provides numerous clients get to at the same time in a quick way.

### ADVANTAGE OF PROPOSE SYSTEM

- Within the proposed system it is amazingly straight forward to supervise recorded data in the database.
- It's totally mechanized framework.
- This framework gives a centralized database maintains.
- It also gives a single point of the organize as all the individuals can be associated to college at a single put.

### IMPORTANT MODULES

#### 1. Alumni Model

The alumni module comprises of a series of tools that helps to run email campaigns, social networks, event details, Forum etc. It helps in strengthening the bound of the institution with former students. This module can be designed as per the size and requirement of the institution. The highlights can be deducted or included based on the usefulness of the organization and the graduated class base.

- Upload Profile
- View Event Details
- Forum
- Login

#### 2. Administration Module:

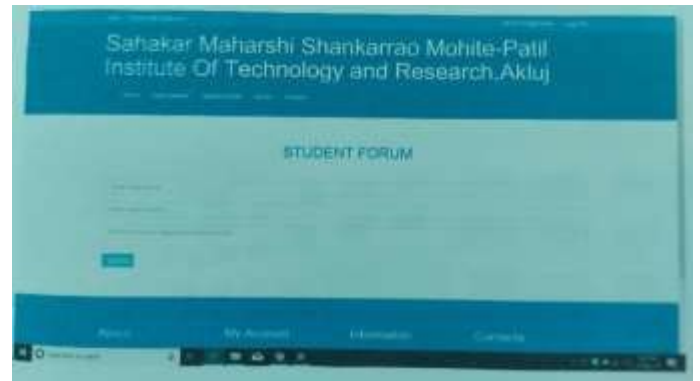
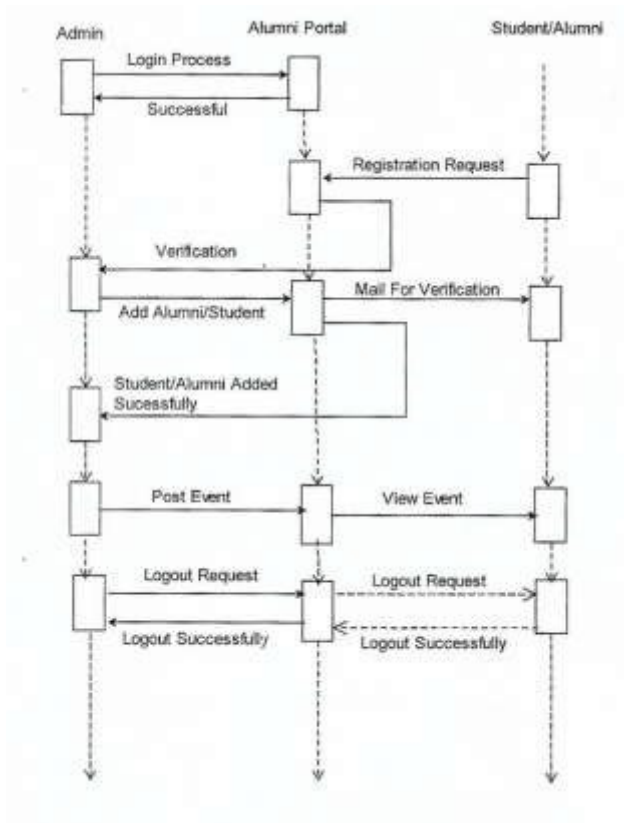
The administration module helps in facilitating the administrative work of institution Any administrative work requires mountains of paper work and takes a lot of time to maintain all records. This module reduces the job of entering the master files every time and saves a lot of time. This also helps in maintaining accuracy and error free details. The most eminent functionality of administration module is 'Assigning Access Rights to all the users of the system

- Add Student
- Add Event
- Send Mail
- Forum & Login

#### 3. Student module:

Access to the framework can offer assistance them in building associations to assist them in their projects or for situations through gathering. The understudy module can be utilized to browse through the location and get to graduated class data. The students will be able to upload their queries via the system with the alumni through forum.

- Login
- Upload Profile
- View Event Details
- Forum



## OBJECTIVE

- To enhance the communication between fellow alumni, we are also providing a Forum facility shortly.
- Alumni or Student can Upload their profile in the Alumni portal
- Get offer assistance and keep in touch with all your peers and resources and update yourself.
- To provide facility to post Event Details for your fellow members.
- Important links related to employment services or information about Companies wanting recruits will be put up.

## PROJECT SCOPE

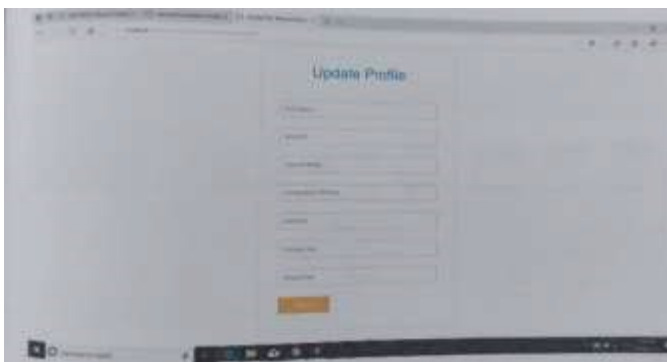
This graduated class entrance would give common stage for interaction of graduated class, understudies and college altogether.

- Entrance gives energetic highlight such as dynamic client status, personal chatting messaging.
- Virtual graduated class meetings.
- Work posting
- Internships.
- Industry supported projects.
- Entrepreneurial guidance.
- Online master address recordings

## CONCLUSION

So the Alumni Portal is mainly used to share the views between the users of the application which is very useful to

## RESULTS



upgrade the knowledge of everyone. The application in also serve as a useful site to know what is going on in our in our college and can also know about the various opportunities of the outer world. The captured alumni data are also processed and analyze automatically with less risk of data loss, compared to a manual filing approach. The developed Web-Based Alumni Portal technology will significantly improve e current manual process of alumni recording system, especially in a university environment

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<https://www.umassd.edu/cmr>



# A Review On: Modeling and Analysis of Piston using Three Different Materials

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## ABSTRACT

This paper portrays the similar investigation of pistons made of three distinct materials by utilizing Finite Element Method (FEM) and endeavours to sort out whether the material utilized in the piston of supercars can be utilized in a motorbike or not. The boundaries utilized for the re-enactment are working gas tension, temperature and material properties of piston. The determinations utilized for the investigation of these pistons have a place with four stroke single chamber engine of Bajaj Pulsar 220 cc. This undertaking represents the technique for logical design of two aluminium combination and one titanium amalgam piston. The aspects are gotten and a three dimensional CAD model on CREO 3.0 is ready. Static underlying and warm pressure investigations are performed by utilizing ANSYS 16.0. The outcomes anticipate the most extreme pressure and basic district on the pistons utilizing FEA. The best material is then chosen on premise of these outcomes and an examination is made with the titanium combination to see if the titanium amalgam is appropriate for motorbikes or not.

**Keywords:** *piston, modelling, CAD, CATIA, FEA, Solidworks, Ansys Workbench.*

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## INTRODUCTION

A gas powered engine is characterized as an engine where the synthetic energy of the fuel is delivered inside the engine and utilized straightforwardly for mechanical work, rather than an outer ignition engine wherein a different combustor is utilized to consume the fuel. The gas powered engine was imagined and created in the last part of the 1800s. It altogether affects society, and is viewed as one of the main creations of the last century. The gas powered engine has been the establishment for the fruitful improvement of numerous business innovations. For instance, consider how this sort of engine has changed the transportation business, permitting the creation and improvement of cars, trucks, planes, and trains.

A cylinder is a part of responding engines, responding siphons, gas blowers, and pneumatic chambers, among other comparative systems. It is the moving part that is contained by a chamber and is made gas-tight by cylinder rings. In an engine, its motivation is to move power from growing gas in the chamber to the driving rod by means of a cylinder pole or potentially interfacing bar. Car parts are in extraordinary interest these days on account of expanded utilization of vehicles. The expanded interest is because of further developed execution and decreased expense of these parts. Research and development and testing engineers ought to foster basic parts in most limited conceivable chance to limit hour of kickoff for new items. This requires comprehension of new advancements and speedy assimilation in the improvement of new items. A cylinder is a moving part that is contained by a chamber and is made gas-tight by cylinder rings. In an engine its motivation is to

move from growing gas in the chamber to the driving rod by means of cylinder pole and additionally associating bar. As a significant part in an engine cylinder bears the cyclic gas strain and inactivity powers at work and this functioning condition might cause the weakness harm of the cylinder. A cylinder is a part of responding IC engines. It is the moving part with in a chamber and is made of gas-tight by cylinder rings. In an engine, cylinder is utilized to move power from extending gas in the chamber to the driving rod by means of a cylinder bar. Cylinder bears the cyclic gas pressure and the inertial powers at work, and this functioning condition might cause the exhaustion harm of the cylinder, for example, cylinder side wear, cylinder head breaks, etc. So there is a need to enhance the plan of cylinder by considering different boundaries in this project the boundaries chose are examination of cylinder by applying pressure power acting at the highest point of the cylinder and warm investigation of cylinder at different temperatures at the highest point of the cylinder in different strokes. This investigation could be helpful for configuration engineers for change of cylinder at the hour of plan.

There are huge exploration works proposing, for engine cylinders plans, new calculations, materials and assembling methods, and this advancement has gone through with a consistent improvement throughout the last many years and required exhaustive assessment of the littlest subtleties. Engine cylinders are one of the complicated parts and its harm instruments have various starting points and are primarily wearing, temperature, and exhaustion related. Among the weakness harms, warm exhaustion and mechanical weariness, either at room or at high temperature, assume a conspicuous part. For mechanical

weariness investigation we have thought about vibration examination of the cylinder and utilized limited component strategy.

## LITERATURE SURVEY

In this paper [1], the covered piston went through a Von-misses test by involving ANSYS for the load applied on the top. Examination of the pressure circulation was done on different pieces of the covered piston for tracking down the burdens because of the gas strain and warm varieties. Von-misses pressure is expanded by 16% and diversion is expanded after improvement. Yet, every one of the boundaries is well within design thought.

Design, Analysis, and improvement of piston [2] which is more grounded, lighter with least expense, and with less time. Since the design and weight of the piston impact the engine execution. Examination of the pressure dissemination in the different pieces of the piston to know the anxieties because of the gas tension and warm varieties utilized with Ansys.

With the distinct component investigation programming, a three-layered unequivocal component examination [3] has been done to the fuel engine piston. Considering the warm limit condition, the pressure and the distortion circulation states of the piston under the coupling impact of the warm burden and blast pressure have been determined, accordingly giving reference to design improvement. Results show that the primary driver of the piston wellbeing, the piston distortion, and the incredible pressure is the temperature, so it is achievable to additional decline the piston temperature with structure streamlining.

This paper [4] includes the reenactment of a 2-stroke 6S35ME marine diesel engine piston to decide its temperature field, warm, mechanical, and coupled warm mechanical pressure. The circulation and sizes of the in advance of referenced strength boundaries are helpful in the design, disappointment investigation, and enhancement of the engine piston. The piston model was created in strong works and brought into ANSYS for pre-handling, stacking, and post handling. The material model picked was 10-hub tetrahedral warm strong 87. The reproduction boundaries utilized in this paper were piston material, burning strain, inertial impacts, and temperature.

This work [5] depicts the pressure appropriation of the piston by utilizing a limited component strategy (FEM). FEM is performed by utilizing PC-supported engineering (CAE) programming. The fundamental goal of this undertaking is to examine and break down the pressure appropriation of the piston at the genuine engine condition during the ignition process. The report depicts the cross-section advancement by utilizing the FEM method to anticipate the higher pressure and basic district on the part.

The effect of crown thickness, the thickness of barrel, and piston top land tallness on pressure dissemination and

complete distortion is checked during the review [6] of the genuine four-phase engine piston. The whole improvement is done in view of measurable investigation FEA examination is completed involving ANSYS for ideal calculation. This paper portrays the pressure circulation and warm burdens of three distinct aluminum compounds pistons by utilizing a limited component technique (FEM). The boundaries utilized for the recreation are working gas tension, temperature, and material properties of the piston. The particulars utilized for the investigation of these pistons have a place with the four-stroke single-chamber engine. This theme shows a survey on the design investigation of a piston based on further developing strength as per the material properties.

Vibhandik et. al . (2014), concentrated on the Design investigation and improvement of the piston and misshaping of its warm anxieties utilizing CAE apparatuses, he had chosen the I.C. engine piston from TATA engines of the diesel engine vehicle. He had performed a warm investigation on ordinary diesel pistons and also on enhanced pistons made of aluminum composite and titanium amalgam material. Traditional diesel piston made of primary steel. The principal objective of this investigation is to decrease the pressure fixation on the upper finish of the piston in order to expand the life of the piston. After the examination he reason that titanium has better warm property, it likewise assists us with further developing piston characteristics yet it is costly for enormous scope applications, because of which it tends to be utilized in a few extraordinary cases.

Ch. Venkata Rajam et. al . (2013), zeroed in on Design examination and streamlining of piston utilizing CATIA and ANSYS. He had advanced with all boundaries are inside thought. The focus of streamlining was to arrive at a mass decrease of the piston. In this examination a fired covering on the crown is made. In an improvement of the piston, the length is consistent in light of the fact that hotness stream isn't impacted the length, breadth is additionally made steady because of the same explanation. The volume shifted in the wake of applying temperature and strain loads over piston as volume isn't just relying upon length and measurement yet in addition on thickness which is more impacted. The material is taken out to diminish the heaviness of the piston with decreased material. The outcomes got by this examination shows that, by decreasing the volume of the piston, thickness of barrel, and width of other ring lands, Von-misses pressure is expanded by, and Deflection is expanded after streamlining. Be that as it may, every one of the boundaries is inside designed thought.

V. V. Mukkavar et. al . (2015), portray the pressure dispersion of two distinct Al compounds by utilizing CAE devices. The piston utilized for this examination has a place with the four-stroke single-chamber engine of the Bajaj Pulsar 220 cc cruiser. He had inferred that disfigurement is low in AL-GHY 1250 piston in contrast with the ordinary piston. The mass decrease is conceivable with this compound. Variable of wellbeing expanded up to 27% at

same working condition. He utilized Al-GHY 1250 and traditional material Al-2618 and results were looked at, he found that Al-GHY 1250 is superior to regular amalgam piston.

Manjunatha T. R. et. al. (2013), under look particular for both high tension and low strain stages and examination, is completed during attractions and pressure stroke and distinguish region those are probably going to bomb because of greatest pressure focus. The material utilized enemy the chamber is solid metal and piston aluminum compound for both low and high tension. He inferred that the pressure created during attractions and pressure stroke is not exactly the permissible pressure. So the design is protected.

Swati S. Chougule et. al. (2013), zeroed in on the principal objective of this paper is to explore and break down the pressure conveyance of piston at real engine condition during burning interaction the boundaries utilized for reproduction is working gas strain and material properties of the piston. She presumed that there is an extension for the decrease in a degree for the decrease in thickness of piston and subsequently Optimization of the piston is finished with a mass decrease by 24.319% than a non-streamlined piston. The static and dynamic investigation is completed which are well beneath the reasonable pressure esteem.

The investigation of Lokesh Singh et. al. (2015) is connected with the material for the piston is aluminum-silicon composites. At the high temperature at piston head, because of direct contact with the gas, warm limit conditions are applied and for most extreme strain mechanical limit conditions are applied. After this large number of examinations, all values acquired by the investigation is not exactly passable worth so the design is protected under applied stacking condition.

The investigation of R. C. Singh et. al. (2014), examined with regards to the disappointment of piston in I.C. engines, after all the survey, it was observed that the capacity coefficient increments with expanding surface unpleasantness of liner surface and warm execution of the piston increments. The pressure values acquired from FEA

during examination are contrasted with and material properties of the piston-like aluminum combination zirconium material. In the event that those worth got are not exactly permissible pressure worth of material, the design is protected.

## CONCLUSION

The main purpose of this paper is to analyze the previous studies conducted in the context of performance of piston using different possible materials and their behavior under various load conditions. In this study, we studied that the piston made up of composite material using three different materials found much suitable with the varying range of temperature and respective load conditions. FEA of designed model also plays a very crucial role in determination of boundary conditions and load conditions.

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# The Effect of Change of Molarity of Sodium Hydroxide on Geopolymer Concrete

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## ABSTRACT

Abstract Power stations using hard coal or brown coal as fuels are important energy sources world-wide. But only about 20% of the fly ashes produced as by-products in the combustion process are reused. In order to reduce the negative environmental impact of the production of ordinary Portland cement, the possibility to reuse this inorganic waste as alkaline activated building materials (geopolymers) is of increasing importance. The projected use of such material is concrete for the building industry in general, concrete with special properties (high resistance to acids and fire) and mortar for repairs. In order to reach this goal more knowledge about the characteristics of the fly ashes, mix design and resulting properties is needed. In this study one hard coal and four brown coal fly ashes are characterized by various methods like chemical analysis and laser granulometry. Geopolymer mortars and concretes are produced by mixing fly ash, aggregates, sodium silicate, sodium hydroxide and deionized water. The variables used were the amount of activators (sodium hydroxide and sodium silicate), curing temperature (40-95°C) and curing time. The influence of these variables on compressive strength and hydration mechanisms were studied.

**Keywords**— *Geopolymer, Alkaline Solutions, Ambient curing, Molarity.*

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## INTRODUCTION

Hard or brown coal as fuel for power stations plays an important role world- wide. As a result, high quantities of fly-ashes are obtained nowadays. For example, in Czech Republic more than 10 million tons of fly-ash is obtained per year. Most of the fly- ash is considered as waste and put out in landfills. Currently, only about 20% of these ashes are reused. One possibility is the reuse as geopolymers. Geopolymers are an inorganic aluminum-silicate composite synthesized from materials as fly ash or slag that are rich in silicon and aluminum. The potential use of the alkali-activated geopolymers includes concrete for the construction industry, in particular concrete with high resistance to heat and acids and repair mortars. On the other hand, production of ordinary Portland cement needs large energy resources and is responsible for a considerable CO<sub>2</sub> output into the atmosphere. The global cement industry contributes around 1.3 billion tons of the greenhouse effect gases emissions annually; that is about 7% of the total world made greenhouse gas emission to the earth's atmosphere. The increased use of alkaline activated geopolymers as concrete and mortar represents a possibility to decrease CO<sub>2</sub> emission in the production of building materials.

## OBJECTIVES OF STUDY ARE

1. Cutting the world's carbon.
2. Better compressive strength.
3. The price of fly ash is low.
4. Eco-friendly.

## METHODOLOGY

### A. MATERIALS

## 1. FLY ASH AND AGGREGATE:

F Type Fly Ash and Natural sand & coarse aggregate (20mm) maximum size were used in this research. Physical properties of sand and gravel are as per IS Code.

## 2. SODIUM SILICATE:

Sodium silicate is also known as water glass or liquid glass, available in liquid (gel) form. In present investigation sodium silicate 2.0 (ratio between Na<sub>2</sub>O to SiO<sub>2</sub>) is used. As per the manufacture, silicates were supplied to the detergent company and textile industry as bonding agent. Same sodium silicate is used for the making of geopolymer concrete.

*Table 1: The chemical compositions of the fly ash, as determined by X-Ray Fluorescence*

Sr.no.	Parameter	Content (%)
1.	Alumina (Al <sub>2</sub> O <sub>3</sub> )	22.86
2.	Silica (SiO <sub>2</sub> )	77.15
3.	Iron (Fe <sub>2</sub> O <sub>3</sub> )	00.65
4.	Calcium (CaO)	01.60
5.	Magnesium (MgO)	00.16
6.	Potassium (K <sub>2</sub> O)	00.031
7.	Sodium (Na <sub>2</sub> O)	00.027
8.	Sulphur (SO <sub>3</sub> )	00.72

## B. EXPERIMENTAL INVESTIGATION

### 1. Mix design of concrete:

By using Is method, M20 grade concrete were designed, **Proportion 1:1.5:3.3**

### 2. Test on FLY ASH:

Class F fly ash originates from anthracite and bituminous coals. It consists mainly of alumina and silica and has a higher Loss of ignition than Class C fly ash.

**Table 2: Mix Design (1:1.5:3.3)**

Materials	Kg/m <sup>3</sup>
Fly Ash	408
Fine Aggregate	612
Coarse Aggregate	1305
Sodium Hydroxide(10M)	137 ml
Sodium Silicate	342 gm.

**4. Test on hardened concrete:**

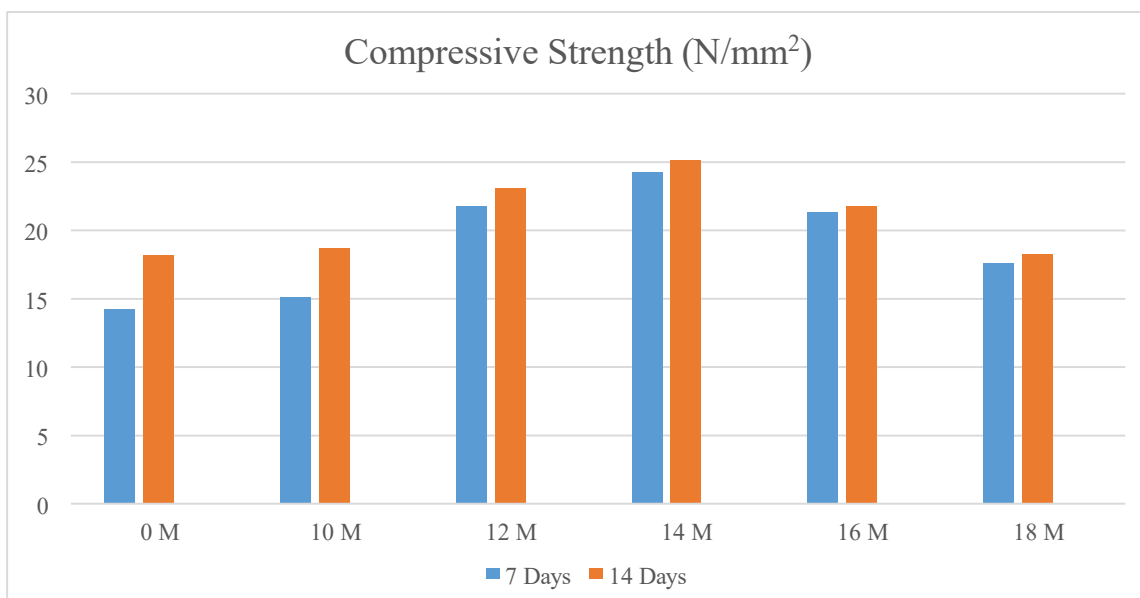
From each concrete mixture, cubes of size 150mm x 150mm x 150mm have been casted for the determination of compressive strength. The concrete specimens were cured under hot air curing conditions as per IS 516-1959 and were tested at 7days and 28days for determining compressive strength as per IS 516-1959 and splitting tensile strength as per IS 5816-1999.

*Figure3.Compressive strength test of cube using CTP**Table no-3 Compressive Strength Test results for cube specimens of size 150mm x 150mm x 150mm*

Molarity	Compressive Strength(N/mm <sup>2</sup> )	
	7 Days	28 Days
Ordinary Block ( 0M )	14.22	18.16

10 M	15.11	18.66
12 M	21.77	23.11
14 M	24.22	25.11
16 M	21.33	21.77
18 M	17.56	18.22

Graph No.1:- Compressive Strength of Geopolymer Concrete



## CONCLUSION

On the basis of results obtained, following conclusions can be drawn:

1. Higher concentration (in terms of molar) of sodium hydroxide solution results in higher compressive strength of fly ash & natural sand based geo-polymer concrete.
2. The mix concrete gives higher compressive strength, as it has high molarity of NaOH
3. Geo-polymer concrete shall also be used in the Infrastructure works.
4. In addition to that fly ash shall be effectively used and hence no landfills are required to dump the fly ash

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# Conceptual Design Overview of Solar Sail Technology

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## ABSTRACT

Solar sail holds a promising future in space propulsion technology as it has several advantages over conventional propulsion technologies. Theoretically, solar-powered spacecraft can attain a maximum speed of 10% the speed of light due to the constant light pressure being applied to the sail, making them travel faster than traditional propulsion technologies. Long-term and deep-space missions will require an alternative propellant since science has nearly reached the limits of rocket fuel's chemical efficacy. Solar sails do not carry their fuel, making them a perfect fit for deep space and interplanetary missions. There are still a lot of barriers in the way of flagship-class missions using solar sails. The use of solar sails has been mainly limited to the orbits of Earth. In this paper, we have discussed solar sail propulsion and the science behind it, parameters affecting them, different folding techniques, proposed efficient folding method, and present our work: "*Detailed Overview of Solar Sail Technology*." We began by explaining the history and the advancement of solar sails over the years. Further, we talked about several parameters affecting the performance of solar sail. Then we dived into different folding techniques, compared the performance characteristics of several folding methods, proposed the most efficient folding way, and discussed approaches to improve sail performance. This paper is primarily theoretical, with some experimental aspects to better understand the topic.

**Keywords:** *Solar sail, Interplanetary mission, Space propulsion, Sail parameters, Radiation pressure*

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The solar sail was initially hypothesized by Johannes Kepler in 1610 in a letter he wrote to Galileo. He observed that the comet tails were pointing away from the sun, which meant the solar radiation was putting pressure on them. This pressure is also termed Solar Radiation Pressure or SRP. In the 1860s, James Clark Maxwell theorized that electromagnetic (EM) waves carry both energy and momentum. The momentum carried by the EM wave transfers an effective force. [1]

Solar radiation consists of quantum packets of energy or photons. Solar sails make use of the momentum that these photons carry. Once the photons hit the reflective surface of the sail, it conveys the momentum giving a slight push to the sail. Upon bouncing off the sail's surface, they give it another push. This causes the sail to move in the opposite direction. The force applied by the photons is relatively small in both cases. But in the vacuum of space, this small continuous force gradually increases the sailcraft's velocity over time. The sailcraft can attain the impossible speed for other conventional propulsive rockets in the long haul. [2]

Solar sail holds a promising future in space propulsion technology. It cuts down the mission costs and increases the payload mass fraction as it

does not have any huge power generator or engine, nor does it carry any propellant. [3] It can significantly improve the present state-of-the-art propulsion systems by 2-3 orders of magnitude. It does not rely on chemical fuel and is the most efficient way to travel between stars and planets by taking advantage of sunlight and solar radiation pressure.

## LITERATURE REVIEW

**Hiroki Ashida et al.:** The CUTE-1.7+APD developed by the LSS at the Tokyo Institute of Technology conducted missions such as attitude control experiment, new APD sensor, digital repeater function for future space experiment opportunities using Nanosatellites. These missions were carried out, and the short-term and long-term APD missions were successful. Based on the results, necessary modifications were made. [4]

**Les Johnson et al.:** The paper discussed the solar sail propulsion system for small satellites with the mass efficient propulsion system and deorbit capabilities. The design development and testing of the sail subsystem for Nano Sail-D was performed and sealed down to 40 m<sup>2</sup>. The Nano Sail-D flight demonstration mission operations and these system overviews and lightweight deorbit system were discussed. [5]

**S. Nasir Adeli et al.:** This paper discusses one of the main challenges in solar sailing: the deployment mechanism of a large structure in space. It is the subsystem that has a high risk associated with it. This paper proposes a deployment mechanism for the cube sail; it also discusses four folding patterns and techniques. A creasing indicator was also suggested that reduces folding effects on sail efficiency. Two types of deployment - controlled and uncontrolled were also discussed. [6]

**Victor I. Kleshch et al.:** The paper describes a new type of propelling a spacecraft: the E-sail or electricsail, which uses the solar wind as a thrust source. The Nano graphite films are used in the electron gun in the E-sail thruster system, and these are tested, analyzed, and their results are

**K.L.G. Parkin:** Breakthrough star shot is ultra-fast light-driven Nano sails sent to Alpha Centauri. The paper discusses the system model to describe the beam-driven sail craft. Three point designs were considered in this paper. The cost-optimal solutions were discussed for all three-point designs. The modeling work for all the three-point designs was also presented using system engineering. [9]

**F. Dalla Vedova et al.:** The SSM focuses on advanced materials such as lightweight and resistant sail coatings, films, and adhesives. Two frameworks were considered the STF -short term framework and the LTF - long term framework. Various subdivisions of the solar sail, such as films, coating, and adhesive materials, were considered for each framework. The sail to structure interface (SSIF), which contains booms and bus containers, was studied. The current developments and testing in the SSM project were discussed in the paper. [10]

**Malcolm Macdonald et al.:** The paper discusses the future technology developments required for a solar sail mission to the Heliopause. Studying the Heliopause will provide insights into the nature of the interstellar medium and its interaction with the solar wind. It was found that to send solar sail missions to Heliopause, Kuiper belt, significant development is required in the areas of solar sail film areal density reduction. The Oort cloud mission is considered a beyond far-term technology that will be only possible with a carbon-mesh sail and a distributed spacecraft system that can generate power from the interstellar magnetic field. [11]

**Les Johnson et al.:** The large and small solar sail system-level deployment in this paper was reviewed. A 20 m large solar sail was tested in a vacuum chamber. Parameters like Sail Subsystem Areal Density of the sail were found out using

discussed. The Nano cathodes are found to satisfy the requirements of the E-gun in terms of stability and efficiency and thereby can be used in the E-sail thruster system. [7]

**Juan M. Fernandez et al.:** The paper talks about the design and arrangement of booms in the solar sail to be lightweight and easy for deployment. The completely stripped solar sail technique was discussed. This concept can significantly reduce deployment complexity and overall sail mass. They also simplify the complex billow problem required for sail shape determination and thrust prediction. They also minimize element bonding problems, folding and packing become manageable, reduce the intensity of space debris hazard, and the stability of the sail increases with a completely stripped concept. [8]

software tools. An Optical Diagnostics system was developed, and structural analysis was performed. The Nano Sail-D system was also reviewed. The system bus included a flight-proven computer, power supply, S-band radio, and UHF beacon radio. However, the original Nano Sail-D could not be put into orbit as the launch vehicle failed to put it into orbit. [12]

**Y. Tsuda, O et al.:** The paper covers the mission design, system design, solar sail deployment operation, and current flight status of IKAROS (Interplanetary Kite-craft Accelerated by Radiation of the Sun). The sail was deployed by rotation and had no rigid member to support the extension. The material used for the sail was polyimide (APICAL-AH & ISAS-TPH). The attitude of IKAROS is determined by the Sun angle and the Earth angle and controlled by SRP torque. [13]

**Elena Ancona et al.:** The sail used for extrasolar space exploration is coated by carbon or carbonated material, which undergoes thermal desorption and provides thrust when exposed to a temperature range of 800–1000 K. The coat sublimates exposing the aluminum surface beneath, which then acts like any other conventional sail. This provides a higher specific impulse than a liquid rocket. The study was done for two different scenarios, i.e., and the first included the sail to be sent as payload using conventional rockets by a Hofmann transfer to too close to sun then deploying it there and the second one was an elliptical transfer and slingshot and then thermal desorption. The second scenario is the best in terms of cruise speed and distance covered per year. [14]

**Bo Fu et al.:** Solar sail dynamics, attitude control, design, and deployment were studied in this paper. We saw two different types of solar sail based on whether or not supporting structure is

used for deployment, i.e., Rigid (clipper, quad sailer, and butterfly) and non-rigid or spin type (disk and heliogyro). Spin-type sails have more advantages over rigid sails. Spin-type sails have a better mass-to-membrane area ratio and can generate high acceleration, are easy to deploy, and offer a degree of attitude stabilization. [15]

**Miroslav A. Rozhkov et al.:** The reflectance is calculated when the solar sail and photon interaction occurs. High surface reflectance is favorable for a solar sail. Solar sails are made up of multiple thin layers. Highly reflective aluminum and beryllium are used. From the calculations of optical characteristics, it was found out that there is a restriction in reducing the thickness of the sail. So other ways should be found to increase the efficiency of the solar sail. [16]

**R. Naga Lakshmi Chittitalli et al.:** The paper analyses the thermo-structural used to identify the different solar sail designs and compare them to decide the spin-stabilized sail as the preferred one. Also selected are the sail configuration and settings, attitude controls, packaging, and the active deployment demonstration. The attitude control employed in this case is constructed with solar panels, which do not require any external energy and solely utilize photon energy from the sun. The booms employed are wire booms, which will be beneficial for various tasks in the future since they are more easily deployed than other supports. The spinning sails often provide higher acceleration, which aids in interplanetary space travel. As seen in the illustration, this solar sail may also be driven by laser energy. As a result, the sail will be guided in the appropriate direction, allowing the sail to reach other planets far faster than current technology. Several missions are planned for the near future. [17]

**Daniel Miller et al.:** Combining solar sailing with SEP in a single hybrid spacecraft may result in a compromise with lower fuel costs than SEP and shorter flight periods than solar sailing alone. An example voyage to Comet 45P is presented to demonstrate in this paper to show how hybrid propulsion enables mission designers to balance flight durations better and deliver mass. The analysis is made, and the result given by combining both SEP and the solar sail is that the improvements made by the delivered mass using hybrid low-thrust propulsion are better than the solar electric propulsion. [18]

**Patric Seefeldt et al.:** The report summarizes current work at DLR's Institute of Space

Systems in Bremen to design and qualify deployable membrane structures for solar sailing, thin-film solar cells, and drag deorbiting. FEM models in Ansys 14.5 were used to evaluate the stress-strain condition and wrinkling of the deployed membrane. In shaker, centrifuge, quick decompression, and deployment testing, the Gossamer-1 sail membrane stowage and deployment technique has been confirmed. [19]

**F. Dalla Vedova et.al:** This paper talks about the attachments, coating, and adhesive materials of the surface. SSM (Solar Sail Materials) is an ongoing (ESA) project that is based on previous and recent European solar sail design initiatives. Its goal is to develop and test future technologies that will be appropriate for big, operational solar sail crafts. SSM is into main 3 things: 1. Materials for sail film and coatings, including film thickness reduction and large-scale assembly procedures. 2. Sail-to-Structure Interfaces (SSIF), which include sail containers and attachments 3. Ground sail tensioning procedures are correlated using 3D imaging and Finite Elements Model (FEM) simulations. [20]

**Giromalo Costanza et al.:** This paper talks about the Kapton. Kapton appears to be the best material for sail manufacture, and activated booms have traditionally been employed as deployment methods in space missions. In this work, a self-deploying system based on Nitinol Shape Memory wires was designed and built in a small-scale prototype. Because Kapton has traditionally been used with a thin Al coating on one or both sail surfaces, commercial pure Al thin sheets were utilized in the early efforts to imitate the sail. Three distinct configurations for bending the sail were examined in the small-scale prototype, while two different Nitinol wires were employed as active materials for the sail's self-deployment. Infrared lights were used to warm the solar sail and activate the shape memory active components. [21]

**Suresh et al.:** This study presents the sail configuration choices, calculations, and analysis to create a superstructure solar sail that is theoretically perfect for interstellar exploration and future engineering. This research includes sail configuration options and calculations and analyses to develop a superstructure solar sail that is theoretically ideal for interstellar exploration and future engineering. L-shaped boom configuration has more advantages than any other configuration in weight and strength. The material had been selected based on the optimal material available to us. The forces are calculated and

analyzed. [22]

**Felipe Coelho et al.:** This paper examines the performance of CubeSat-class solar sails as a promising technique for low-cost deep space exploration. This paper has presented the principles of solar sail theory and sail design parameters, and three 12U CubeSat-based solar sails have been proposed for mission study. The report is divided into 3 phases: escape from earth, interplanetary transfer, and capture by mars. Paper evaluates the performance of the solar sail design, which maneuvers in the orbit of Mars. [23]

### PARAMETERS AFFECTING SOLAR SAIL

Some of the factors affecting the performance of solar sail are sail geometry and the optical properties of the sail film [24] [25]. The resulting force on the sail also depends on the intensity or power of the incident radiation. The resultant force is inversely proportional to the distance of the light source and directly proportional to the square of the cosine of the angle formed between the sail and the incident radiation. [3]

There are several terms used in determining the performance of the solar sailcraft. Following are the terms or sail parameters:

- Sail loading ( $\sigma$ )
- Characteristics acceleration ( $a_c$ )
- Lightness number ( $\lambda$ )

#### Sail loading ( $\sigma$ )

Sail loading is also known as the areal density. It is calculated by dividing the vehicle's total mass by the area of the sail and expressed as  $\text{g/m}^2$ . It determines the acceleration of the vehicle.

#### Characteristics acceleration ( $a_c$ )

Characteristics acceleration is the acceleration a solar sailcraft would experience at 1 AU when facing the Sun. Expressed as ( $\text{m/s}^2$ )

#### Lightness number ( $\lambda$ )

The lightness number is the dimensionless ratio of maximum vehicle acceleration divided by the Sun's local gravity.

High-performance sails will have a lightness  $\geq$  number

1. This further implies  $a_c$  of  $5.93 \text{ mm/s}^2$  and maximum sail loading of  $1.4 \text{ g/m}^2$  [3]

### MATERIALS

The materials on the solar sail are based upon the conditions in Space. Space is an environment where solar radiation or interaction with solar plasma (solar wind or high energetic particles) could cause damage to devices. The solar sail material should be significant to ensure both strength and reflectiveness. It should hold up high thermal conductivity to maintain the temperature balance. There is a possibility that due to solar flux or by absorbing sunlight, the balance might get disturbed, and it might get heated up rapidly as well, the main three layers for materials in a solar sail. [26]

- Reflective
- Emissivity
- Structural

#### Reflective

The reflective layer faces straight to the sun. This layer's material has a thickness that should be appropriate for the solar sail. If it is too thin, it might leak the light, and if too thick, it slows down the propulsion of the sail.

The preferable material for this part is Aluminium due to its reflectivity value (measures efficiency of the surface, for absorbing sunlight) which is about 90% in the range below 1000nm wavelength. But gold can

give reflectivity around 95% in IR range. Gold is more useful in many ways than predicted. For instance, Cooks use high-speed heaters, which emit infra-red rays around 750nm to 3000nm, located at the focus of the gold-coated metal reflector, which has a 200nm gold deposit. Recently James Webb space telescope was launched. The telescope has a gold reflective mirror of 48gm with a thickness of 100nm. The gold consumption is less, therefore less cost. To absorb radiated heat energy, it deposits on the solar energy distributors of solar cells. The solar cells can also be maintained at optimum temperatures.

### Emissivity

The layer which faces away from the sun is the Emissivity layer. This layer is the backbone for the propulsion of the sail. The emissivity layer should be larger than the reflective coating to reduce the heat. Human skins, water, even flat-finish paints have an emissivity. Emissivity is a measure of the efficiency of the surface, emitting thermal energy. They were heavily oxidized metallic surfaces with emissivity around 60% depending on the surface condition. The material mainly used here is Chromium. The emissivity value (measures the efficiency of the surface, emitting the thermal energy) is about 30% in the IR range, but it adapts to the space conditions. Since only a nanometer-sized thin layer is used, emissivity is expected to be higher, around 70%.

### Structural

It attaches and holds both reflective and emissivity layers for the solar sail. The material used in this part should be strong and lightweight. The proposed material for this part is Carbon

Nanotubes (CNT). It is a single layer, rolled-up sheets of carbon atoms in cylindrical molecules. It is lightweight and chemically bonded with  $sp^2$  bonds, making it an extreme form of molecular interaction. CNT possesses highly conductive electrical and thermal properties. It is best compared to Aluminum because of its reinforcement between polymer matrix and aluminum matrix, with the single-wall carbon nanotubes offering orders of magnitude higher than aluminum 2219-T87. The mechanical strength of CNT is 400 times stronger compared to steel, which makes it perfect for space exploration.

### Membrane folding

Membrane folding plays a crucial role in solar sail technology, and it affects how the sail deploys in space and affects sail efficiency. Sail performance and efficiency depend on the occupied folded volume, folded dimensions, creases, etc. The membrane should easily unfold during deployment, reducing the risk of tearing. The creases or stresses in the fold lines should be kept to a minimum while folding. [6]

### Triangular folding pattern

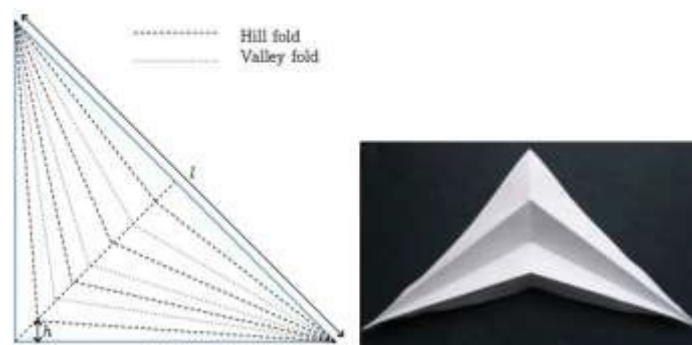


Figure 1: Folding pattern 1 [6]

A single fold is used in the middle as a guide for other subsequent folds in this folding pattern. The folds along the center line must be in odd real numbers for the endpoints of the center line to be folded in the same direction. When all the four quadrants are folded, the right-angle corners of the sail are wrapped around the spindle. This folding pattern is very compact and can be easily stowed. However, it is difficult to create subsequent folds due to the central fold and also tricky to converge other fold lines to the triangular edges. After the sail is deployed, since the tension is present along the crease lines, a large tension is required to keep the sail taut.

### Converging folding pattern

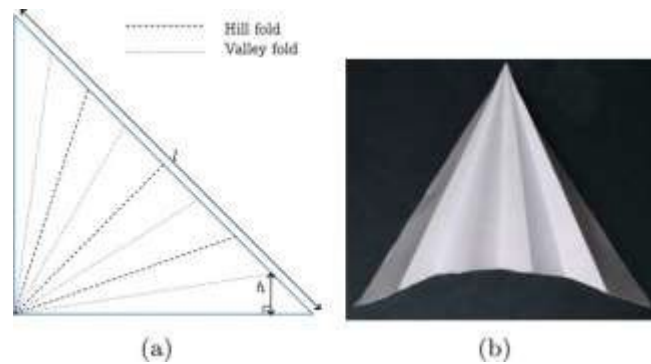


Figure 2: Folding pattern 2 [6]

The major issues in triangular pattern were resolved in this pattern here. The crease lines begin at the right-angle corner of the triangle and spread out evenly. Since the crease lines are not parallel to the tension lines like triangular pattern, a small tension is required to tighten the sail. An odd number of folds is necessary to fit around the spindle. This folding pattern is much more efficient in folding and storage. However, since the crease lines converge into a single point at the right angle corner of the quadrant, these crease lines make the quadrant weak and increase the chances of tearing, especially at the point of attachment to the bus. Extra reinforcements might be required to strengthen the membrane; however, these are added mass and volume making folding difficult.

### Parallel folding pattern

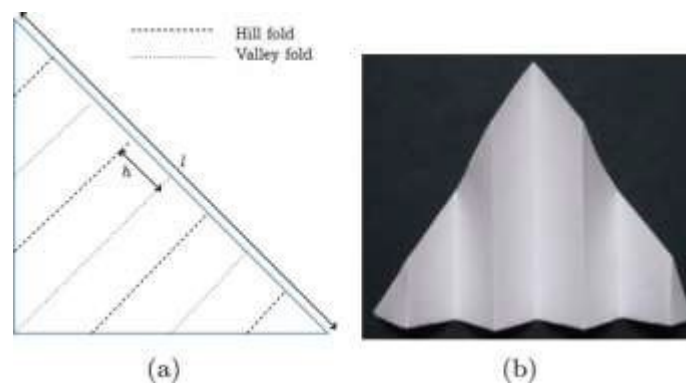


Figure 3: Folding pattern 3 [6]

Parallel folding pattern overcomes the disadvantages of the previous two patterns by making the crease lines parallel. This pattern solves the convergence of the crease line problem; hence this folding pattern does not weaken the sail membrane, and the crease lines are present close to perpendicular to the tension lines. However, the membrane is present loosely around the spindle when the quadrants are wrapped around the spindle; this does not cause a problem as the membrane is present inside the bus and is covered by the bus side panels.

### Spiral folding pattern

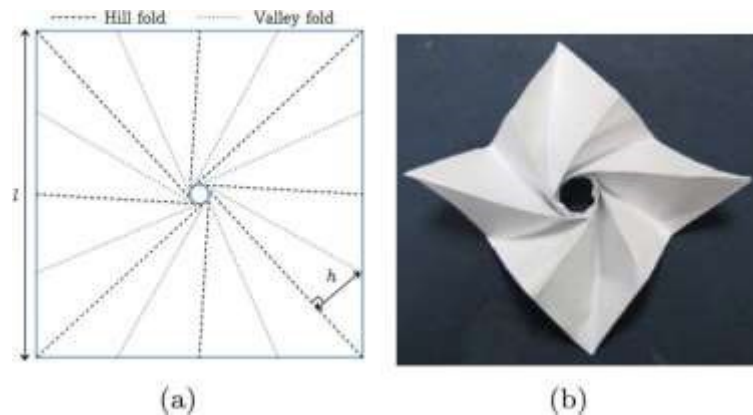


Figure 4: Folding pattern 4 [6]

This pattern is also known as the spiral folding pattern or single membrane folding pattern. The membrane is not divided into quadrants; instead, a single sheet is folded around the spindle. Unlike other folding patterns, a folding apparatus is required for this folding technique. The membrane is first attached to the spindle and then twisted or turned; this causes tension and creates hills and valleys along the tension lines. This folding technique is based on an origami pattern known as origami flasher. The spiral folding pattern utilizes the same folding techniques as in an origami flasher; however, it is more organized and has an orderly pattern with well-defined fold lines and wraps itself around the spindle. This folding pattern can be utilized for regular and irregular polygons. One of the major advantages of this folding pattern is the absence of quadrants, as a single sheet can enable a larger sail area and increase the propulsion force. Another advantage is that it requires less storage volume as the membrane is tightly wrapped around the spindle because of the tension due to folding. [27]

### Circumferential folding pattern

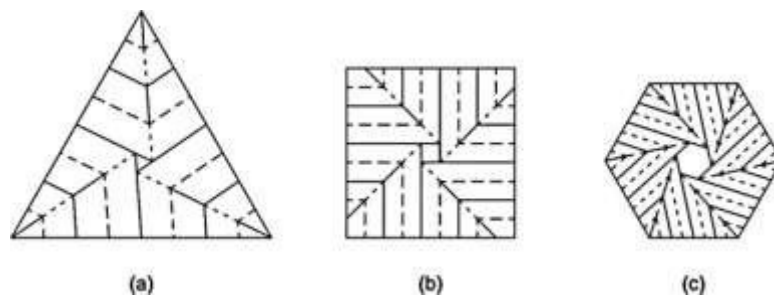


Figure 5: Folding pattern 4 [27]

This is known as the circumferential folding pattern, in which the pattern consists of zigzag folding in the radial direction and roll-up folding in the circumferential direction. This folding pattern is much more complicated than spiral folding. Unlike spiral folding, circumferential

folding cannot be tessellated to fold more extensive membranes. The dual triangular, dual square, and dual hexagonal folding patterns are developed from the circumferential folding pattern. [27]



### Efficient folding pattern

Effective folding of the sail is required to guarantee reliable solar sail deployment. Hence these play a crucial role in solar sail technology. Five folding patterns were discussed, and the most efficient patterns were folding patterns 3, 4, and 5. Parallel folding pattern is widely used in Cube sails as the crease lines are close to rightangle with respect to the tension lines. A minimum tension force is required for enabling a taught sail. The spiral and circumferential folding patterns are simple and do not require any complex twisting and turning. The circumferential folding pattern was employed in IKAROS.

The spiral folding pattern showed a smooth and regular deployment sequence during deployment analysis, with less stress development in the panels. These also showed minimal deformations in the panels during deployment. However, the circumferential folding pattern wrinkled during the transition of the deployment stages. This causes very high-stress development in the panels and can hinder the structure's deployment.

About 10 – 20 electrically charged aluminum rods extend from the spacecraft's center; this forms a circular electrostatic field that repels the fast-moving protons from the solar wind. Momentum exchange occurs between the protons and positively charged wires which causes thrust force and propels the spacecraft forward. Unlike solar sail, where the thrust efficiency relies on the reflective area and solar radiation pressure, E-sail relies on solar winds. In solar sails, when the spacecraft reaches a distance of about 5 AU, the energy of solar photons dissipates and the acceleration stops; however, E-sails can cover distances up to 16-20 AU, nearly three times further than solar sails. [28]

E-sail is an upcoming in-space propulsion technology that does not require propellants to propel the spacecraft forward. It is an enabling technology that can effectively reduce spacecraft's time, cost, and mass to reach their destinations. As an electromechanical device, it does not rely on poisonous, explosive, or radioactive substances for propulsion, nor does it involve any dangerous construction procedures or testing techniques. It is a green propulsion technique that significantly reduces the launch mass and chemical propellant burnt. [29]

Due to the above reasons, the spiral folding pattern is the most efficient method for deployable structures. These show a smooth deployment and have minimum stress development required for regular deployment.

### Future advancements in solar sail technology

E-sail or electric solar wind sail is another revolutionary technique of propelling the spacecraft forward. E-sail works on utilizing the dynamic pressure of the solar wind as the thrust force. E-sail spacecraft consists of long thin conducting tethers, centrifugally stretched from the main spacecraft due to their spin. These tethers are extremely thin, about 1 millimeter thick, and two and a half miles long. Protons and electrons are released at very high velocities up to 750 kilometers per second during a solar wind. An electrostatic field is required to deflect solar wind ions; hence the long tethers are positively charged at high voltage using an on board electric gun powered by solar panels. [7]

### CONCLUSION

In this paper, we discussed the basics of the working of solar sails and the history behind them. We also discussed some factors affecting the performance of the sail and sail parameters. The performance of the solar sail depends on both geometries and the optical property of the sail film. We concluded that for a high-performance sail craft, the Lightness number should be greater than or equal to 1. Five folding patterns were also discussed in the paper, and the most efficient folding pattern was chosen based on its ease of deployment and less stress development. The spiral folding pattern is the most efficient folding method for deployable structures.

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# Development of Stirling Engine Based Automobile Battery Charging System for Electric Bicycles

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## ABSTRACT

Presently a day, India is going to electric development in auto area. Nonetheless, it is important to comprehend the accessibility of electric foundation in India. There are around 36% of the Indian urban communities and towns are as yet disapproving of power accessibility. In this paper, creators have examined with regards to the different written works about electric bicycles and vehicles. This paper likewise centred on recognizable proof of different writings having diverse recommended speculations and studies.

**Keywords:** *Electric Bike, Alternator, Stirling Engine, Battery Charging, Controller*

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## INTRODUCTION

There are number of vehicles are accessible in India from various makers. India has enormous quantities of vehicles driven by oil motors. These motors give great result power and are valuable in different street conditions. Be that as it may, this petrol motor applies different poisons in to the climate. This prompts the contamination and influences living being. Presently a day, to defeat this issue and to get more result half and half vehicles exists in market. In the event of two wheeled vehicles, the electric bicycle is a superior option for oil vehicles.

Starting today, a large portion of the electric bicycles are not reasonable for significant distance venture. And furthermore, the framework for electric bicycle isn't great. Still India doesn't have accessibility of Recharging Stations, Service stations for Electric Bikes, Electricity for long time and so on so electric bicycles are as yet not reasonable for long reach. In this thesis we will examine about an option in view of electric bicycle. We will involve Stirling motor with an alternator with the end goal of battery charging and save bicycle in running condition for long excursions.

## LITERATURE SURVEY

Paul Wolfram and Nic Lutsey <sup>[1]</sup> expressed that it is observed that fossil fuel byproducts of BEVs utilizing European matrix blend power are about portion of normal European vehicle emanations, though HFCEVs and PHEVs have a lower outflow decrease potential. In the 2020 setting, electric vehicle WTW outflows are relied upon to keep offering more prominent carbon benefits because of more productive power prepares and expanding low-carbon electric power. A lower-carbon framework and higher power train

effectiveness by 2020 could cut normal electric vehicle outflows by 33% once more. Nonetheless, the normal expense decreases and potential CO<sub>2</sub> outflow cuts won't be accomplished without designated strategy intercession. More tough CO<sub>2</sub> norms, and monetary and non-financial motivating forces for electric vehicles, can assist the electric vehicle with showcasing to develop and expenses to fall. Likewise, endeavors should be joined with exercises to decarbonize the network, or discharge decreases won't be really extraordinary. Albeit the examination is centered on the European setting, comparable elements with electric vehicle innovation, strategy, and market advancement are predominant across significant business sectors in North America and Asia.

Paul Wolfram and Nic Lutsey <sup>[2]</sup> additionally expressed with regards to battery charging, there are three kinds of charging framework for BEVs and PHEVs. Level 1 charging focuses give substitute current capacity to the vehicle by means of a standard low-power 110 volt circuit, like those utilized in families in the United States or Japan. With these sluggish charging focuses, over 20 hours of charging are needed to completely charge a 24 kWh battery. Private or public Level 2 charging focuses in the United States give substitute current power by means of a 240 volt (and 30 amp) circuit, and can hence cut charging time by about half. Level 2 charging by means of a 230 volt (and 15 amps) outlet is normal in families in the EU and most different nations. Electrical board redesigns are vital in the United States to arrive at a similar voltage. Level 3 charging focuses convert substitute current line voltage to a high-voltage direct current. Connected to such a quick charging point, a battery can be energized to 80% (which is the suggested most extreme level) inside thirty minutes (NAS, 2013). Be that as it may, the venture cost of Level 3 chargers is a lot higher than those for Level 1 and 2.

**R. D. Belekar, Shweta Subramanian, Pratik Vinay Panvalkar, Medha Desai, Ronit Patole** <sup>[3]</sup>, expressed that the frame of a monetarily accessible bike is changed according to the necessities of the battery sizes and oneself charging framework. The parts like alternator, engine and DC-DC converter was organized in a way to move the rotational energy being capable by the chain sprockets through the chain to the alternator. The alternator here has the ability to create 14.4V DC, which is coordinated to DC-DC converter through a battery source. Here in DC-DC converter the voltage source is moved forward to 54V, which is to the point of charging the 4 batteries in series which respects 48V utilization. Accordingly, the batteries which are utilized to give the rotational energy to the shaft through an engine is getting back the adequate voltage source to re-energize it. The vehicle is tried for the inventory of source to the batteries utilizing multi-meter, distance went with and without the re-energizing circuit is additionally examined and is viewed as successful.

**Boopathi S, Saranya A, Raghuraman S, Revanth R** <sup>[4]</sup> At when there is energy emergency projecting its shadow from one side of the planet to the other, one needs to investigate alternator environmentally friendly power sources. One such alternator method for creating power is introduced in this paper. The turning energy of the attempts in the bike, produced by dynamo can be utilized to work little controlled gadgets. The issues related with electric bikes might be tended to by specially crafted drives that are generally proficient over a given working cycle. The aftereffects of the investigations recorded here can fill in as a stage to further develop electric bike execution, assuming new drive frameworks are planned around key boundaries that will bring about progress of the framework execution. Moreover, they can be utilized for correlation of existing drives in a deliberately, far reaching, and specialized way.

**Shete Yogesh Shreekrushna, Londhe Vishal Ramchandra, Bhosale Yogesh Jalindar, Asst. Prof. Mujawar A. I.** <sup>[5]</sup> Series Hybrid Electrical Petroleum Bicycle framework is a kind of half and half framework, where a bike works by utilizing power until battery get released and afterward generator begins to charge the battery and furthermore to keep vehicle in running condition during the excursion. This vehicle is generally electric vehicle which likewise have a module accommodated the charging of battery by giving stockpile. This might be called as Plug in cross breed electric vehicles (PHEV). These comprises the batteries having expanded limit. PHEV runs on battery all through the excursion, yet toward the finish of excursion, it movements to motor to beat the chance of cheating. Essentially PHEV requires less mechanical linkages, so the framework turns out to be simple and basic.

**Darshil G. Kothari, Jaydip C. Patel, Bhavik R. Panchal** <sup>[6]</sup> expressed that it is an approach to utilizing the active power. The idea of the task is giving straightforwardness to the rider while riding a bike and furthermore to monitor energy by every single imaginable mean. At the point when the sun powered electric bike is held under daylight then the sun

oriented beams charge the battery through the sunlight based charger. The battery controls an electric engine in the engine of wheel. It likewise brings the obstruction in accelerating down to make it more straightforward to go up slopes. At the point when there is no daylight, the bike can be charged by mains power. The half breed bike approach is unique. It works in ordinary day just as in overcast day. We have planned an electric half breed bicycle with an insignificant measure of extra weight, a coordinated control framework, in view of the decision-production of the rider and microcontroller, and that is equipped for more noteworthy effectiveness than commonplace cross breed bicycles through its utilization of regenerative engine control and different other criticism control systems.

**Shete et al.** <sup>[7]</sup> has been discussed about limitations of electric bike in their published article. Authors stated that, in comparison to the petroleum vehicle, electric vehicle lack in terms of power and speed. In addition, electric vehicle or BEV has limited use for local transportation only. This article also concluded that the Indian electric infrastructure is not much suitable for implementation of electric bikes or BEV for recent few years. The article also focused on alternatives for the BEVs for upcoming few years.

**Shete and Pawar** <sup>[8]</sup> has been reasoned that, the execution of the Stirling Engine for battery charging of electric bike can be conceivable. Creators additionally led assortment of tests to decide the battery execution. They additionally had a look over charging and releasing peculiarity of battery utilizing Stirling motor. In any case, in this exploration, creators have been involved Stirling Engine for starting battery charging reason as it were. Further the charging of batteries has been finished with the utilization of waste rotational energy of spinning wheels.

**Mama Xianmin** <sup>[9]</sup> has imagined an original impetus framework configuration conspire for Electric Vehicles which require high power thickness. The mathematical models proposed for an electric vehicle reliant upon vehicle dynamic characteristics. As shown by the power stream, the whole structure has separated into seven limit hinders, then, at that point, the models are reproduced in MATLAB device, besides the outcomes are effectively demonstrated for EV.

**Nitipong Somchaiwong and Wirot Ponglangka** <sup>[10]</sup> proposed "Regenerative Power Control for Electric Bicycle" involving PM brushless dc engine which is inside the wheel foundation. This structure happens due to the regenerative power figuring out how to prevent a DC-interface over-voltage condition. This methodology uses to investigate the energy extra piece from an engine while an engine was suspended to slow down off. This proposes fit for appraisal the voltage that arrangements to engine and assessment with the reflected voltage from the engine.

## CONCLUSION

On studying prescribed literatures, it has been clearly found that, there are so many issues and flaws are present for electric vehicles. In addition, it is also been found that, it will take so many years to completely turn to the electric automotive environment. Therefore, use of Stirling engine for battery charging should be the better option for such vehicles.

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# Application of Differential Game Theory to Reduce Miss-Distance in an Intelligent Missile

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## Nomenclature:

PN- Proportional Navigation

APN- Augmented Proportional Navigation

LQPI- Linear system Quadratic Performance Index

RSGL- Reduced Sensitivity Guidance Law

GTG- Game Theory Guidance

PI- Performance Index

## ABSTRACT

The interception of ballistic targets is more challenging as compared to the interception of static targets or targets executing simple maneuvers. Zero-sum, perfect information Differential game theory and optimal control theory are used in guidance laws for the purpose of intercepting missiles. Linear constant coefficient missile model and a time varying linear model are used for deriving the differential game laws. This method of approach uses an open loop profile of the missile speed.

To determine the optimal commands of the missile with the varying miss-distance under offense (evader) and defense (pursuer) criteria, Differential Game Theory is applied. Here, the value of the game is the cost criteria which is the miss-distance as to the maneuvering target. In conventional missile interception, PN guidance law was used where the trajectory to the target was predetermined. In this manuscript, the differential game theory is employed for missile guidance. The rationale for this is that it outperforms the optimal control law by a marginal extent. Nowadays, intelligent missiles are employed, so the maneuver of target missiles is considered.

**Keywords:** *Differential Game Theory, Optimal Guidance, Miss-Distance, Interception, Missiles, Riccati Differential Equation*

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## INTRODUCTION

Missile is an unmanned system which controls its flight path. A guided missile works only above the surface of earth. Ballistic missile is propelled by rocket engine for only the first part of its flight, for the rest of its flight, the unpowered missile follows an arcing trajectory, small adjustments being made by the guidance mechanism. In this paper, ballistic missiles are considered. Guidance is a dynamic process of directing an object towards a given invader which may be stationary or moving whereas stationary point guidance is called navigation. Missiles in flight are constantly re-aimed based on the target information obtained by sensors. Advanced or intelligent guidance systems operate by estimating data which includes the target acceleration and the predicted intercept point.

Missile dynamics are usually analysed in the missile body-fixed frame. Aerodynamics is a part of the missile's airframe subsystem and the autopilot receives the guidance commands and processes them to the controls such as deflections or rates of deflection of control surfaces or jet controls. The autopilot response should be attended quickly with minimum overshoot which avoids exceeding structural limitations.

In order to guide and control missiles, several functions must be achieved. The launch function monitors the launch events sequence and establishes the initial missile position and velocity after launch. Followed by, the targeting function which establishes the basic geometry between the missile and target and operating system relative to which the missile targeting and guidance must be performed. Further, the missile guidance function generates guidance commands

directing a missile towards a target. The flight control function converts guidance commands into vehicle response through autopilot. The control actuator of missiles consists of thrusters that control the direction of the thrust vector and/or mechanical devices that move external to the surfaces of the missile so that the aerodynamic forces acting on it are deviated for its advantage.

Guidance Law is an algorithm that determines the required commanded missile acceleration. A guidance law for an interceptor missile with a time-varying lateral acceleration limit is developed using Differential Games formulation with bounded controls. This is because the instantaneous movement of the target cannot be predicted so Optimal Guidance fails. The effectiveness of a guidance law depends on parameters of a missile's flight control and the minimal miss-distance to intercept the target. Thus, differential game theory is applied for achieving possible zero miss-distance by considering intelligent invader missiles.

#### LITERATURE REVIEW:

It is evident that the interception of ballistic missiles is generally more difficult compared to engagement of static targets or targets executing simple maneuvers (such as an aircraft in level flight) due to less accurate dynamic models and high speed of the target. So, even just a little deviation in the predetermined guidance process can translate into large miss distances for the interception of ballistic targets. Fast maneuverability and accuracy of missiles is the primary objective of the guidance law and the penetration strategy, which has been put forward as requirements [1]. Zarchan gives a comprehensive explanation of PN and APN (Augmented) guidance implementation and performance as PN guidance law was upgraded to the augmented PN (APN) guidance law that compensated for target maneuvers [2]. There has been rigorous research in the past years that focuses on development of guidance, control, and estimation laws for interception of maneuvering targets by a single missile [3]. The evader has evasive maneuvers so, game theory-based guidance is preferred to outwit potential adversaries. This paper is concentrated on interception that involve two parties, comprising an attacking missile (pursuer) aimed against another missile or aircraft referred to as a target or an evader. Here, an evader missile is considered. The evader missile is designed to eliminate the defending missile and the target.

Linear system Quadratic Performance Index (LQPI) approach is utilized for obtaining the game theory-based linear state feedback guidance laws for the elements. The guidance law is called the Reduced Sensitivity Guidance Law (RSGL), which has its foundation built on the differential game theory and the capacity of target maneuver [4]. The Riccati differential equation gives the feedback gain values. The differential game guidance laws are less prone to errors in estimating the target acceleration than the optimal control laws. Chen and Speyery formulated the multiple missile engagement problem as a Linear Exponential Gaussian Differential game and used their algorithm to intercept ballistic missiles in terminal and boost phase [5]. Wang et al. utilized a probabilistic model to increase the hit-to-kill probability for a two-missile destructive engagement [6].

#### METHODOLOGY:

In this paper, the optimal reduction of miss distance characteristics is presented. Miss distance is the maximum distance at which the explosion of a missile head can be expected to cause serious damage to the target [7]. Miss-distance represents the performance and the system output. Here, there are three parties; the defender, the missile and the target hence this problem can be considered as a 2x1 game. This is a complex combat scenario involving two aircrafts, each equipped with missiles. The objective is to shoot down the opponents aircraft without being intercepted by the opponent. Since, this research focuses on the maneuver of the defender and the interception of the missile and the target, the objective optimization and differential game theory is applied. The goal of the guidance is to reduce the miss-distance to the smallest possible amount. Also, target maneuvering plays a major role in determining the missile performance as it directly influences the miss-distance. Also, the success of the defender is assumed to be the secondary success while the interception of the missiles and target is the primary goal which leads to the continuation of the interception until the target is intercepted. The method involves an impulse function which produces a solution of the Riccati equation. But, as this solution of the Riccati equation on its indices is not continuous, certain conditions to obtain the solution are considered.



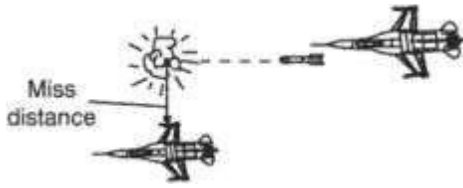


Figure 1: An illustration of the miss-distance of the missile.

The models developed here are suitable for both conventional and more advanced optimal intelligent guidance, particularly those based on the 'Game Theory' Guidance (GTG) techniques. These models accommodate changes in vehicle body attitude and other non-linear effects, such as, limits on lateral acceleration and aerodynamic forces. The missile-target interception scenarios are characterized by nonlinear kinematics and time-varying velocities.

Differential game approach enables guidance strategies to be derived for both the attacker and the target so that objectives of the parties are satisfied. Implementing feedback guidance laws through minimization/maximization of the Performance Index (PI) incorporating the game theory based objectives is a good approach. The PI is based on other terms involving interceptor/target relative velocity terms in addition to the miss-distance. This inclusion allows the designer to influence the engagement trajectories so as to aid both the intercept and evasion strategies which directly influences the miss distance. The best way to comprehend the concept of differential game theory is the game of chess. The player has to defend his party keeping an eye on the opponent's moves and based on that he should proceed strategically to end the game in his favour. This is the same as in an intelligent missile.

## RESULTS AND DISCUSSION

Considering intelligent missile systems, Differential Game Theory is the most coherent guidance law in order to reduce the miss-distance. The Performance Index of the game theory is very high which leads to possible zero miss-distance. The missile traverses based on the attacker's move and velocity spontaneously. To achieve the above stated condition, several various parameters has to be considered, these are determined using Differential Guidance Strategy.

Till date, the optimum method to reduce miss-distance has not been achieved. There have been studies based on altering the effective trajectory, velocity and guidance systems. Hence, an

extensive research focused on numerical analysis of reducing miss-distance using Differential Game Theory is vital to increase the accuracy of the missile engagement.

## CONCLUSION:

The implementation of collaborative game theory to automated systems has been studied, with applicability in monitoring and reconnaissance of possible threats, as well as sustained area denial. In most battlefields, prospective targets and threats are clever and agile, employing counter-strategies to evade being recognized, traced, or eliminated. Pursuit/evasion differential games may be used to model such action and counteraction behaviors in a gaming context. Based on the quantity of techniques that can be applied, a game could be either finite or endless. A finite game has a finite variety of options or variations in the strategy set, whereas an infinite game has an unlimited array of possibilities or alternatives in the mission design. The integration of Differential Game Theory towards the question of guidance systems necessitates defining a missile's course or dynamics as a system of ordinary differential equations. The navigation goals that a designer aspires to achieve may be stated as an objective function that must be improved in order to identify missile guidance techniques in a particular military setting.

Other sophisticated guiding rules make some attempt to employ a more accurate prediction of the projected intercept location. Such guidance laws need precise information of the time remaining until intercept, as well as a successful model of the unit's behavior. Guidance orders are inversely correlated to the square of the duration of interception and proportionate to the estimated miss distance. Exceptional performance standards can be attained when the data essential for anticipatory guidance is accessible. When there is a lack of or misinformation, predictive guiding may perform significantly worse even than proportional guidance. When operating at a disadvantage in terms of velocity, the technique for building robust guidance methods must be pressed. Whether there are adversaries that can outmaneuver the missile, breakthroughs in practical guiding law innovation are necessary. The Differential Game Theory comes into play here.

## FUTURE SCOPE:

Application of Differential Game Theory for missiles can be incorporated for advanced

strategic and tactical defense methods. One major area could be using holographic representation of a missile to disguise the attacker. For this, the attacker missile is deceived by generating deception signals so that the intelligent attacker missile tries to attack the hologram image until its end of run, thereby fleeing from the possible engagement, by buying time to achieve a dominating position to intimidate the attacker. Here, Differential Game Theory can be applied as there is the requirement for spontaneous guidance, on which the holographic method is based.

The advantage of incorporating the holographic representation for deceptive signals and Differential Game Theory proves in reduced acoustic disturbances. This method is economical in the long run as there is no requirement to deploy a counter missile. Considering the benefits, this method can be used for reliable defense tactics, henceforth research and development for this method has to be anticipated in the foreseeable future.

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## Cloud Computing Security

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### ABSTRACT

As we all know Cloud computing is an emerging domain and data security needs to be protected on the network. Some security issues arise when using services on the cloud. In this paper, we engage and do a little study and shed light on such issues as cloud security.

The main strain of our study, based on existing literature, is to understand the concept of multi-tenancy safety issue.

Cloud computing is becoming increasingly popular as many enterprise applications and data move across cloud platforms. However, a major obstacle to cloud adoption is the lack of realism and security. In this paper, we take a holistic approach to cloud computing security - potential issues and vulnerabilities related to virtualization infrastructure, software platforms, identity management and access control, data integrity, privacy and confidentiality, physical and process security aspects, and legal issues. Compliance in the cloud. We present our findings from the perspective of third-party authorities, such as cloud service providers, cloud customers and the government. We also discuss important research guidelines in cloud security in areas such as reliable computing, information-focused security, and privacy protection models. Finally, we outline a set of steps that can be used at a high level to evaluate the security readiness of a business application to migrate to the cloud. Cloud computing is a new computing model that comes from grid computing distributed computing, parallel computing, virtualization technology, utility computing and other computer technologies, and includes large-scale computing and data storage, virtualization, high expansion, high reliability and low cost services. The security issue of cloud computing is very important and it can prevent the rapid development of cloud computing.

**Keywords:** *Cloud Computing, Security issues and multi-tenancy.*

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### INTRODUCTION

Cloud Computing provides shared resources and services through the internet over the past few years, internet usage has grown exponentially, increasing the cost of hardware and software. So a new technique known as cloud computing is used to solve these problems by providing Services offered in cloud computing have various features like high reliability, scalability, dynamic and flexibility property.

Cloud computing is not a new technology but a new distribution model for information and services using existing technology. It uses the internet infrastructure to communicate between client side and server side services.

Cloud service providers (CSP's) offer cloud platforms internet service providers offer high speed broadband to their customers to use and build their web services.



## SERVICES MODEL

Three types of cloud services are given below-

- Software as Service (SaaS)
- Platform as service (PaS)
- Infrastructure as service(IaS)

**Software as Service (SaaS):**Software as service is also called delivery model where software are related data are hosted by a third party in a cloud environment and that third party is called cloud service provider, such as your Gmail account ,you use. That application on another's system.

**Platform as service (PaS):** This model is developed for private entities like one house and one institution and they can use it for their own purposes. This type of services is not available to everyone.

**Infrastructure as service (IaS):** IaS provides services on a per-use basis to companies with computer resources, including servers, networking, storage and data center space

## DEPLOYMENT MODELS

There are three Deployment Models

- Public Model
- Private Model
- Hybrid Model

**Public Model:** This infrastructure is available to the general public as the name implies, the public cloud is a model in which resources are generally available to everyone or everywhere.

**Private Model:** This model has been developed for private entities such as one house and one institution and they can use it for their own purposes. Not everyone has access to it kind of service.

**Hybrid Model:** Hybrid Cloud is a combination of public and private cloud in the same network. This can be done if the private cloud needs some important services from the public cloud such as the private cloud can store some information on their private cloud and we can use that information on the public cloud.

## LITERATURE REVIEW

All the protection problems with cloud computing are highlighted. During this paper, because of the complexity fund by users within the cloud, it'll be difficult to comprehend end-to-end security. New security techniques have to be developed and old security techniques have to get replaced or improved.[1]

During this study, we reviewed the literature on security challenges in cloud computing and proposed security models and frameworks for securing the cloud computing environment.[2] This technique solves problems associate with the secure management of virtual machine images which summarizes every application within the cloud [3].

This method helps reduce the chance of knowledge loss and data leakage processed within the cloud, further well as provides additional privacy-related benefits [4].

In this paper, security in cloud computing is discussed in a way that includes security issues and challenges, security principles and security management models.[5]

This paper introduces the technical levels and categories by which he identifies and structures security challenges and approaches to multitenant cloud computing.[6]

The main point of multi-tenancy in this paper is that clients use the same computer hardware to exchange and process information and as a result tenants can share hardware on which their virtual machines or servers run or they can share database tables.[7]

### Security issues in cloud computing

Based on the study, we found that there are many problems in cloud computing but security is the major problem that is related to cloud computing.

The top seven security issues in the cloud computing environment, as discovered by the "Cloud Security Alliance" CSA

### Misuse and abusive use of cloud computing.

- Insecure API.
- Evil intuition.
- Shared technology problem / nature of multi-tenancy.
- Data crash.
- Account, service and transportation hijacking.
- Unknown threat report.

Misuse and abusive use of cloud computing: Hackers, spammers and other criminals take advantage of proper registration, simple procedures and relatively unspecified access to cloud services to launch various attacks such as cracking or password.

Unsecured Application Programming Interface (API): Manages and interacts with cloud services through the customer interface or API. While providers must ensure that security is integrated into their service model, users must be aware of security risks. Wicked Insiders: Malicious insiders pose a major threat in cloud computing environments, as customers do not see clear provider policies and procedures. Malicious insiders can gain unauthorized access to the organization and its assets.

Shared Technology Problems/Multi-Tenancy: This is based on shared infrastructure, not designed to accommodate multi-tenant architecture.

Data Crash: Included data may contain, Deleted or changed data without backup, unlinking records from large environments, Loss of encoding key, And illegal access to sensitive data.

Account, service and traffic hijacking: Account or service hijacking is usually done with stolen credentials. Such attacks include phishing, fraud and exploitation of software vulnerabilities. Invaders can enter critical areas of cloud computing services such as privacy, integrity and service availability.

Security issues: Multi-tenancy is a major concern in cloud computing. Multi-tenancy in cloud computing arises when multiple customers share the same application, on the same operating system, on the same hardware, with the same data-storage system, and both the attacker and the victim share the same server.

## ARCHITECTURE:

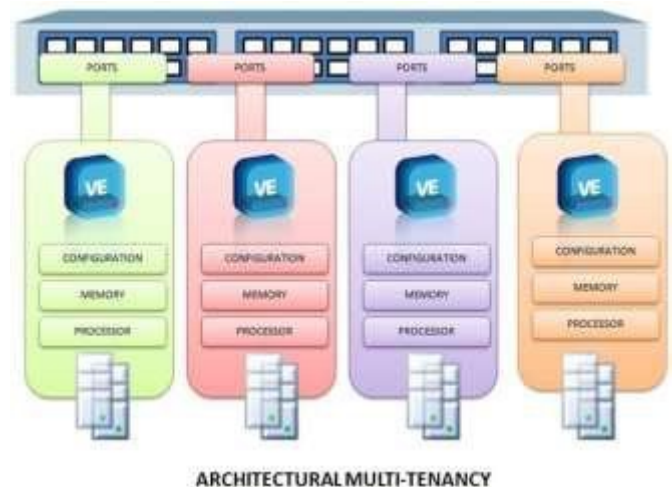
This architecture completely separates your information from other customers' information, as well as allows us to quickly roll out the latest operating systems for everyone, all at once. This approach offers the most configurations and allows you to draw in-depth insights from your information.

## FUTURE WORK

In future work we may build a framework that addresses security issues related to multi-tenancy.

## CONCLUSION

Cloud computing is a huge potential for both business and invaders - both parties can reap their own rewards from cloud computing. The endless possibilities of cloud computing cannot disappear just because of security issues - endless analysis and research for robust, regular and integrated security models for cloud computing can be the only way to motivate. Based on this fact, the impact of security issues in cloud computing can be minimized by multi-lease architecture.



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# Internet Of Things

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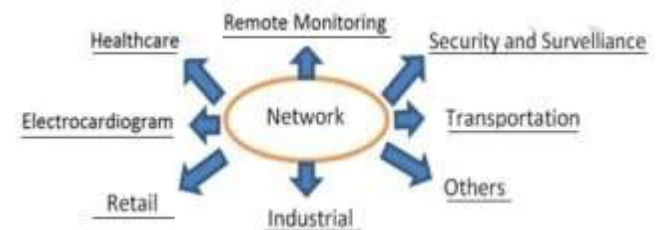
## ABSTRACT

Now a day's Internet of things is not topic & fast growing field. IoT is a short of "universal global neural network" in the cloud which connects various things. The IoT is intelligently connected devices & systems which comprised of smart machines interacting & communicating with other machines, environments, objects & infrastructures & the radio frequency identification (RFID & Sensor Organize Innovation will rise to Modern Challenges. In each & every organisation to send information about the people. We use emails, website & notice boards but in most countries internet access is available for transferring information to people via mobile devices & on system which is easier, fast and less cost through internet. The main aim of this paper gives detailed analysis of internet of things & various applications in the field of industry, home, retail, medical, agriculture, automotive & transformation energy & defense. This paper helps to researches who want to do research in the field of internet of things.

## INTRODUCTION

Today we are living in the world of internet. Internet is playing a very important role in our life. Internet has become very necessary in every field without internet our life is boring & quick. so it is very necessary in the every aspect & life. The term "Internet of Things" (IoT) was first used in 1999 by British technology pioneer Kevin Ashton in the context of supply chain management. Gartner defined the internet of things as a network of physical objects that has embedded technology to communicate with their internal state or external environment & to communicate sensations or interaction. (The internet of things is about not just connecting the device to the internet but interpreting what is connected). the internet is off & fast, one of the most popular is the universal global, URAL Network which is smart interaction with the system machinery & infrastructure (RFID) help this lot research desire in the field of internet of pings. The internet of things is known not only for internet sheets but also for connected things. The idea of IoT is especially valuable or for those who have. Importantly, because the IoT can support human activities on a large scale, the function of building or community as a whole is based on IoT internet security. IoT is based on the internet. the internet of things is fast becoming a reality. We can see evidence of this all around us. from smart phones to smart TVs to smart cars, to smart cities, our devices are getting smarter day by day. now everything is being connected to the internet. Radio frequency identification (RFID) Technology uses a two ways transmitter receiver to identify & track tags related to objects. wireless network that can use sensors to

monitor changes in physical & environmental conditions IoT allows people & things to connect anytime, anywhere, with anything & any one. ideally using any path / network & any service[fig. given]



## LITERATURE REVIEW

Recently IoT developers have focused on a variety of real time issues, developed IOT applications in various fields such as healthcare, agriculture, smart buildings (school, hospitals, homes), supply chain management, retail transport industry, infrastructure monitoring and protection.

## HEALTHCARE

Healthcare has exciting IOT applications that enhance the patient experience, improve patient care and save a lot of money. Full control on classroom and attendance monitoring.

## ADVANTAGES OF INTERNET

1. The biggest advantage of the internet is information has been easy. "If you need to know anything you can search that online. There are many

search engines such as Google, yahoo, Bing etc. you can find your desire information from there.

2. There are good articles ,video & images on every single topic. So, if you want to learn anything , the internet could be the best tool for us . It is best way to contact anyone .

3. It Can helps Smart Control of Homes And Cities via mobile Phones. It Enhances Security and Provides Personal Protection.

### **DISADVANTAGES OF INTERNET**

1. There are many disadvantages to the internet too, it gets addicting for many people

2. Especially the youth get too much addicted to social & online games. that could be harmful their health & education.

3. Hackers can gain Access to the System and Steal Personal Information. Because we add So many Devices to Internet, Our Information is At Risk Of Being Misused

### **CONCLUSION**

The internet of things is a new technology to connect people and things through the internet provides many applications, everything in the world can be connected to each other through the internet while making decisions indecently. All network &

communication technologies are used the create concept of the internet such as technology such as mobile computing RFID ,wireless sensor networks & embedded system , management process ,data collection any algorithms & methods for obtaining security , protocols & frequencies will occur in prallel ,requiring a standardized approach to target each specific & specific use.

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# Review on Optic Fibers Embedded Light Transmitting Concrete

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## ABSTRACT

Imagine a room without windows; it is day time but there is no light streaming through the door and no light are on inside. There is light however, because the walls are made up of translucent concrete, so far no-one has actually built room like this, but it is technically possible. LiTraCon a new concept in concreting field is gaining fast acceptance from civil and architectural firm from aesthetic avenues. LiTraCon is smart combination of optical fibers and fine concrete. Due to small size of fibers, they blend in to concrete becoming a component of material like small pieces of aggregate. Strands of optical fibers in concrete to transmit light either natural or artificial. The LiTraCon can be used in the variety of architectural and interior design applications such as cladding, side way, logos, litracube lamps, arches, speed bumps and also for heat insulation. Light conducting glass fibers have been used for a long time in technical fields such as communications, medicine and automotive sector. On the other hand the use of the optic fibers in concrete is relatively new as in LiTraCon. This seminar is intended to accentuate the awareness in practicing in civil engineering regarding LiTraCon and optic fibers as construction material.

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## INTRODUCTION

One of the current innovations in 2004 is litracon, translucent concrete block. Invented with the aid of using younger Hungarian architect Aron Lusonzi. The concrete recipe includes thousands of optical fiber, which run facet with the aid of using facet transmitting mild among important floor withinside the block. The mild rays are guided alongside the middle with the aid of using inner reflection. Following are the blends withinside the fiber until the go out up to twenty meters. The colorations of mild rays are unaffected. Litracon mild-transmitting concrete Litracon presents the phenomenon of mild-transmitting concrete withinside the shape of a broadly relevant new constructing fabric. Litracon is a mixture of optical fibers and exceptional concrete. It may be produced as prefabricated constructing blocks and panels. Due to the small length of the fibers, they mixture into concrete, turning into a aspect of the fabric like small portions of aggregate. In this manner, the end result isn't always best materials—glass in concrete—mixed, however a third, new fabric, that is homogeneous in its internal shape and on its important surfaces as well Light-transmitting concrete, recognised additionally as translucent concrete, is actually the brightest concrete improvement in current years. Strands of optical fibers are solid with the aid of using the lots into concrete to transmit mild, both herbal or artificial, into all areas surrounding the ensuing translucent panels. The fabric may be utilized in plenty of architectural and indoors layout applications, inclusive of wall cladding and dividers. Originally advanced with the aid of using a Hungarian architect in 2001, light transmitting concrete is

produced with the aid of using including 4% to 5% optical fibers (with the aid of using volume) into the concrete mixture. The fibers run parallel to every other, transmitting mild among surfaces of the concrete detail wherein they are embedded. Thickness of the optical fibers may be varied among 2  $\mu\text{m}$  and a pair of mm to match the precise necessities of mild transmission. Optical fibers transmit mild so effectively that there may be surely no lack of mild performed via the fibers; in fact, it's even viable to look colours via the concrete.

## LITERATURE:

Unlike regular concrete which offers a cumbersome mass because of its appearance, litracon renders soothing spacious sense on distinctive feature of its mild transmitting ability. When the partitions are built of litracon the roominess of room is felt is to be extended because the wall seems to be slender skinny. The most effective risks hampering the widely wide-spread reputation of litracon is its financial factor it's miles widely known truth that the value of fabric and labour is considerably greater than that of regular concrete. The value of producing for litracon may be minimising if an in-residence plant for manufacturing of optical fibers is ready up. Reuse of beaten sand and waste glass also are an street for greatly lowering the value. The Bill Price[1], et al (1999) studied the primary samples of translucent concrete. The opportunity of producing a concrete that might permit for mild to undergo it. His first test taken into consideration all changing the extraordinary additives of concrete to acquire transparency, without enhancing its basic

composition. He used glass and plastic aggregates and he has advanced numerous samples. We apprehend from the readings he's nevertheless operating on his invention and adapting the mixes to numerous uses. Aron Losoncz[2], (2001), studied that Instead of making concrete itself translucent, they took a extraordinary music by incorporating obvious substances into the concrete. His Concrete modules include glass optical fibers the thickness of a hair that transmit mild from one facet of the fabric to the other. To make certain that the ends of every fiber make touch with the surfaces on each aspect of the fabric, the concrete blocks are constructed in skinny layers of concrete poured right into a long, narrow mould, and layers of optical fibers are laid alongside the period of the mould, alternating concrete and fiber. The ensuing long beam is then reduced into short, square constructing blocks where various the dimensions of the blocks, however, does not extrade the impact and the fibers transmit mild the complete period.

Sergio Galvan[3], (2007), studied formula the usage of a aggregate of polycarbonate and epoxy materials, in addition to glass fibers, optical fibers, colloidal silica, silica, diethylenetriamine (DETA) and Portland cement. Gravel and sand are replaced through resins and fibers. They declare the discovery has greater mechanical power houses than the ones of a standard concrete, with decrease density and mechanical characteristics that permit equal for use in each a structural and architectural manner, permitting strengths of 4500 kg/cm<sup>2</sup>, volumetric weight of 2,000 kilograms consistent with cubic meter and that its very last placing is beneath 7 days. Joao Manuel[4], et al (2013) studied the light-weight concrete have essential functions that make its use that including weight reduction, stepped forward bodily houses and their durability. In the numerous varieties of light-weight concrete the kind of light-weight mixture used varies, just like the improved granulated cork, improved clay, pumice stone, polystyrene foam or EPS. A translucent light-weight concrete as production cloth, ornament cloth and cloth for fixtures comprising and that they carried out the usage of cork, fiber optics and unique mortar cement. M.N.V.Padma Bhushan[5], et al (2013) studied the Translucent concrete is a concrete primarily based totally cloth with light trans missive houses, received because of embedded mild optical factors like Optical fibers in it. Light is carried out thru the stone from one quit to the alternative. This effects into a positive mild sample on the alternative surface, relying on the fiber structure. Optical fibers transmit mild so efficiently that there may be genuinely no lack of mild carried out thru the fibers. The paper offers with the modeling of such translucent or obvious concrete blocks and their utilization and additionally the blessings it brings withinside the discipline of clever production. Zhi Zhou[6], et al (2013) studied the improvement of clever obvious concrete the usage of plastic optical fiber (POF) and Fiber Bragg Grating (FBG) is discussed, at the side of its obvious and clever sensing houses. The experimental effects display that an optical fiber may be without problems mixed with concrete and that the POF should offer a

regular mild transmitting ratio. Moreover, the FBG may be used as a sensing detail for pressure and temperature and the mechanical outcomes of introducing POF into concrete specimens. Soumyajit Paul, Avik Dutta [7], "Translucent Concrete", International Journal of Scientific and Research Publications, Volume three, Issue 10, October 2013, ISSN 2250-3153 labored on obvious concrete with exceptional percent of optical fiber ( 1 to 6 %) and massive diameter glass fiber. Analyze the mild Guiding property of optical fiber and glass fiber and concluded that obvious concrete has accurate mild Guiding belongings and the mild transmission is without delay proportional to the quantity optical fiber. Abhishek Tiwari, Parmod Saharan[8], "Study of Behavior of Translucent Concrete the usage of Rice Husk and Steel fiber" SSRG International Journal of Civil Engineering (SSRGIJCE) –extent three Issue 7 –July 2016, labored on Transparent concrete with addition of Rice husk Ash and 0.125% of metallic fiber. The percent of optical fiber used withinside the paper varies from 0.25% to 4% and evaluate the compressive power of concrete. It concluded that as the proportion of optical fiber is expanded the compressive power of concrete is reduced however through the addition of rice husk ash and metallic fiber compressive power of concrete is expanded. Cost of obvious concrete is extra however it's miles justified because of its numerous blessings which include electricity saving belongings, aesthetically beautiful, sustainable, etc. Prof.Sonali, M.Kankriya[9], Translucent Concrete By the usage of Optical fiber and Glass rods" International Journal of Scientific and Research Publications, Volume 6, Issue 10, October 2016, ISSN 2250-3153, Compare the Compressive power of optical fiber strengthened obvious concrete and glass rod strengthened obvious concrete. Cost of optical fiber and glass rod support concrete is likewise evaluated and concluded that the compressive power of Transparent concrete is decreased to a few quantities and consequently it's miles relevant for in particular partition wall in preference to structural detail which include column and beam. The preliminary price of obvious concrete is extra in comparison to traditional concrete however because of non-stop boom in tariff and payback calculation done, from the payback analysis it may be concluded that the saving of energy invoice is Rs.1368.58/-So the payback duration for extra quantity invested for mild transmitting block can be 1.00 years for domestic intake and 0.seventy two years for business and industrial intake. The quantity of carbon emission from obvious concrete is less.

## METHODOLOGY:

Study Of The Preparation of the Mould: A mildew of square length 150mm\*150mm\*150mm is organized with wooden or metallic. the desired length of square mildew from wooden or tin is organized. Place the clay or dust in the edges wherein the optical fibers are uncovered to the mildew for the clean demoulding after the concreting. Study Of The Optical Fiber: The cleavage of the optical fibre is performed very cautiously as according to the mildew length. The diameters of optical fibers which are usually to be had are given as following:-.25 mm, .five mm,

.seventy five mm, 1 mm, and a couple of mm Study Of The Fixing the Fibers: Fibers are commonly positioned in layer distribution due to the fact in layer distribution or prepared distribution they offer good mirrored image properties. Several holes are pushed on metallic mildew in order that optical fibres can by skip via them in a prepared manner. Study Of The Concreting: As optical fibres are inserted first withinside the mildew via holes furnished in mildew the concreting is performed after this very cautiously in order that it does now no longer disturbs the optical fibres. For acquiring the best compaction, The concrete is crammed in thinner layers additionally a needle vibrator is used to keep away from the void's formation in concrete. Study Of The Removing the Mould: The mildew is eliminated after 24 hours. The casted mildew became positioned on a completely leveled floor or undisturbed floor. Then it became de-moulded very carefully after 24 hours from casting. The respective identity mark/numbers have been given immediately after de-moulding, the dice specimens. Study Of The Cutting and sharpening: The greater fibres may be reduced as according to the scale of the mildew. Finally, the sharpening is performed with the help of sand paper or a few sharpening papers.

#### CONFIGURATIONS ADOPTED FOR THE COMPARATIVE RESULTS:

For each of the configuration 2 concrete blocks will be tested

to obtain the average results and achieve the accuracy.

- ☐ Concrete Block without optic fibers.
- ☐ Concrete Block with Optic Fibers Embedded Light

Transmitting Concrete.

#### EXPECTED/POSSIBLE OUTCOME

This product is not economical. The main limiting factors in the manufacturing of litracon are advanced technology and skillfull labour. The technique used for manufacturing litracon cannot be easily adopted in India.

By some means we are able to reduce manufacturing cost.

Those are discussed below:

Use of crushed stone and stone powder:

This obtained from the by-products of many companies which leads to health hazardous related to respiratory system of workers.

#### Use of glass powder:

Normal glass powder which usually goes to scrap can be effectively used for minimizing the cost of manufacturing litracon block.

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# Advanced Footstep Power Generation Using RFID For Charging

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## ABSTRACT

It is well-known fact that with a daily hike in population graph of the country the power consumption is also increased simultaneously in parallel to the increased consumption its wastage also has risen to the higher side so the transformation of waste energy brings back to usable form is not only major task as well as it is needed of hour. With increased population density and development of Technology has more diverging to the use of the more and more electronic gadget, devices, on the other hand, conventional power generation method is going short day by day and urgent need a ride to search for an alternate method of power generation E.g.: solar energy (renewable energy) at the same time it's time to consider about power wasted through human action to overcome this crisis the waste energy is converted to useable form with the help of piezoelectric sensor As the pressure exerted on the sensor is converted into voltage by using energy conservation method footstep power generation is used for charging a gadgets like mobile phone through USB cable.

**Keywords:-** Piezoelectric, Renewable Resources, LCD, Battery, Microcontroller, USB, RFID.

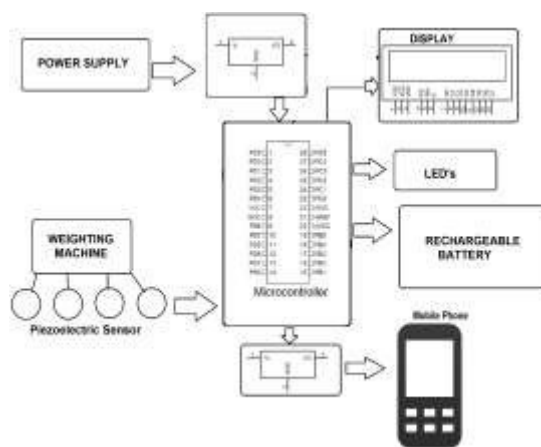
## INTRODUCTION:-

Day by day, the population of the country is increasing and the requirement of the power is also increasing. At the same time the wastage of energy is also increasing in many ways. So, reforming this energy back to usable form is the major solution. In this footstep power generation project, we are generating power with the help of human's footsteps; this power is then used to charge battery. The power is stored in a battery that can be used to charge a mobile phone using RFID card. This system is powered by Atmega 328 microcontroller, it consists of Arduino IDE, RFID sensor, USB cable and LCD. When we power on the system, the system enters into registration mode. We can register three users. Once all the user is entered in the system then the system asks to swipe the card and connect the charger. Initially all the user is given 5 minutes of charging time as default. When we swipe the card and if the user is authorised, the system turns on for charging and will charge the Mobile phone. If the user is un-authorised then the system will display as unauthorised user, just in case if the user wants to stop the charging in midway the user needs to swipe the card again. As soon as the card is swiped again, the remaining time balance is displayed and the charging stops. In order to recharge a card, we need to press recharge button which is on the system, and then system will ask to swipe the card, once the user swipes the card, it adds more 5 minutes to the particular card of the user.

## HARDWARE IMPLEMENTATION :

The advanced footstep power generator is shown below with the help of block Diagram using RFID for charging. When weight is put on piezoelectric plate's voltage come across the plates. That voltage is used for charging. LCD

attached with piezo sensor using microcontroller allows monitoring the voltage and charging that are attached to battery. RFID helps in identifying the authorized user for charging & it have USB and phone charging.



## Working :

FPG works on the principle of piezoelectric effect. It has ability to generate energy by applying mechanical force to it. Piezoelectric crystals have tendency to behave neutral and atoms are also asymmetrically arranged, but the charge is always balanced. The total positive charge and total negative charge appears on opposite side of crystals and through which they cancel out each other. By pressurizing or compressing the crystal, the voltage that produce over opposite faces that is known as piezoelectricity. The same phenomenon is used in this project. By pressing by step on

disc the crystals get compressed and voltage develops & the started charging. After shaft is lifted and a crystal is released. Thus, full vibration is recorded by a disc and a voltage is produced. Voltmeter senses the voltage and displayed it. This voltage is used to charge nearly 12v DC battery. LEDs are fixed underweight machine which is switched on by relay 555 timer IC after voltage is generated. Thus, whenever someone walks through it the system gets charged and voltage is also observed on Voltmeter.

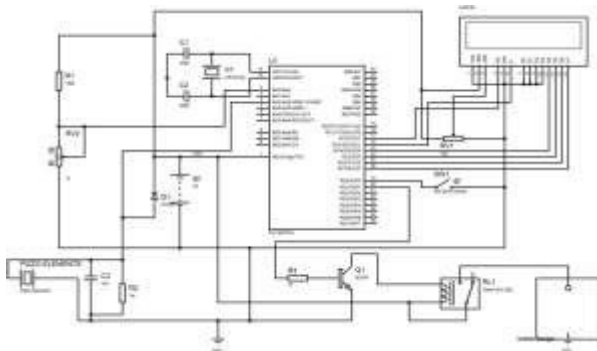


fig2 :- Circuit diagram

## COMPONENTS USED

### USB Cable–

USB is basically an IS that specifies the standards for cables, connectors and protocols for establishing connections, communication and power supply among computers and its peripherals. It has 2 wires for power of +5v and a ground wire and other 2 twisted wire to carry data. In this project USB is used so that people can connect their phone via system.



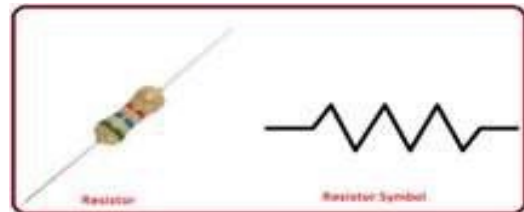
### Inductor-

A passive component which has a coil of wire around it that helps it to conduct current through it. It also develops a relation between magnetism and electricity to pass current through.



### Resistor

A resistor is a 2-terminal passive electrical component that is used in the proposed project for electrical resistance as usual. Its other applications in the proposed circuit are to reduce current flow, signal level adjustment, voltage division etc. It dissipates energy of the Arduino and its parts.



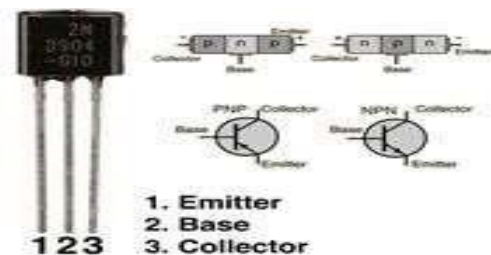
### Capacitor-

A Capacitor is a 2-terminal passive component that has the ability to store electrostatic energy between its 2-plates.



### Transistor-

A transistor is 3-terminal semiconductor device which can be used as amplifying device in its Forward and reverse active region and as a switching device also in its cutoff and saturation region. In its amplifying stage it is used in the proposed project for charging battery.





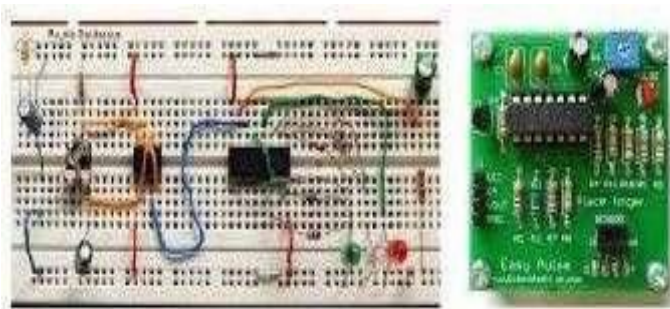
### LCD (16\*2) Display–

The LCD stands for Liquid Crystal Display. It is a popularly used display module which got its applications in number of devices like mobile phones, calculators, computers etc. It has 2 registers like data register and command register. Its operating voltage is 4.7-5.3V. It utilizes a minimum current of 1mA with no backlight.



### PCB & Breadboard–

A breadboard is basically the first step component before creating a printed circuit board. You can change and move circuits on PCB. Also the breadboards are used for designing.



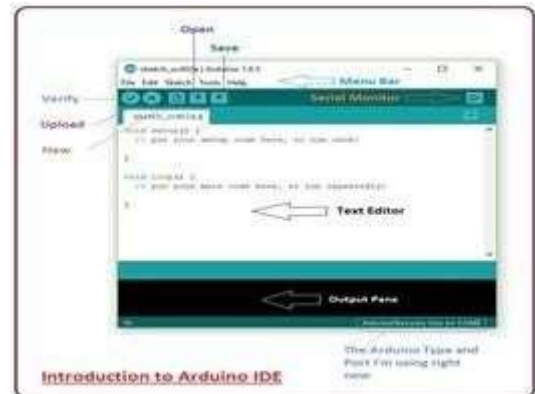
### LED–

A light-emitting diode (LED light source device which has tendency to emit light when current starts flowing through it. Electrons in the semiconductor recombine with electron and holes pair, releasing the energy in the form of photons thus emitting light.



### Arduino Integrated Development Environment(IDE)

It is a Software (IDE) – it uses a textable editor for writing code, a message box, a toolbar for some functions and a junction of menus. It is then connected by the hardware system to upload programs.



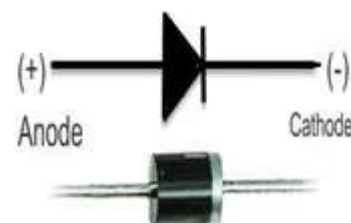
### Transformer-

It is an electrical device uses to change AC from 1 voltage to another. It designs to form "step up" / "step down" voltage's and follows the principle of magnetic induction; voltage is then developed in the other coil that is known as secondary coil.



### Diodes -

It consists of two-terminal in which current flows in single direction. Its resistance is low in primary direction, and high in the other. In reverse bias it behaves as a conductor.



### IC & IC Sockets–

It consists of many electronic circuits on a small piece of semiconductor normally silicon. It is a component interconnect that uses to connect many components on a single semiconductor. It consists of two parallel rows with connection.



### Crystal Oscillator–

It operates on the principle of reverse piezoelectric effect that causes it to vibrate to its natural frequency when AC voltage applied across the crystal. These vibrations are further turned into oscillation. For clock signal it is connected to microcontroller.



### Atmega microcontroller–

It is from AVR family of microcontroller. It is of 8 bit with RISC architecture. The power stored in battery later used to charge the phones using RFID card.



### Voltage Regulator–

It is designed to keep the constant voltage level. It is used to regulate voltage according to circuit or components used. It uses negative feedback to check for further voltage. In this project to obtain constant voltage between 5-12 volts.

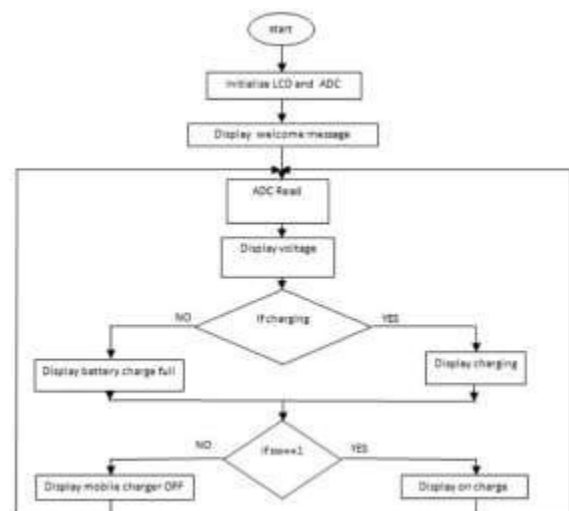


### RFID sensor & cards-

It is a digital card in which data is encoded/ captured by radio waves. It is used to identify the amount/data stored by a user to further use.



Flow chart and algorithm :



In above algorithm the flow of project is shown, our project works in such process and we are designing our project in such manner that all above processes are covered under it.

### ACKNOWLEDGMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of the people who made it possible and whose constant encouragement and guidance crowned our efforts with success.



I am highly indebted to the Management and the Principal of **SMSMPITR College of Engineering Dr. I. N. YADAV** for the facilities

provided to accomplish this project. I would like to thank the Head of the Department Prof Kokare. A. J. for his constructive appreciation throughout my project. I am extremely grateful to my department staff members and friends who helped me in successful completion of this project. Last but not the least I would like to thank all my friends without whose support and co-operation the completion of project would not have been possible.

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# Voice Control Robot

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## ABSTRACT

This robot is designed to control vehicles with human voice commands via a Bluetooth module. Robot voice control is used to perform certain commands such as: B. forward, backward, prevent, left, correct and dance (or rotate the robot), etc. Speech manipulation robots are based on speech calls. Instructions are given to the robot via the Android application. The Android software "Arduino Bluetooth Voice Control" is connected to the Bluetooth module (HC-05) connected to the Arduino Uno R3 at the same time. We give the robot commands and reproduce the images according to the commands given. This voice control robot is very useful for areas that cannot be reached by humans. Robot can paint in any situation, e.g. B. in toxic areas, under fire conditions, in polluted places, as well as in hills. This robot can be very useful for people with physical disabilities. This robot is very small, so we can use this project to spy or spy. If we implement this project, we can use these robots in marine, agricultural and business software, surveillance devices.

**Keywords:** *Arduino, Bluetooth, Transmitter, Servo engines, robot*

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## INTRODUCTION

On this venture, the robot essentially works on human speech command. The Voice control robotic is controlled by way of the use of voice command which is immediately given via user to the robot. we will say, that is a wireless robot. The android application is hooked up in phone which matches as a transmitter. The instructions are given through this android utility. The android application "Arduino Bluetooth Voice control" is locate to recognize the Arduino the usage of a Bluetooth hyperlink. The Bluetooth module (HC-05) that's related to the Arduino. As we recognise that Arduino is programmable, so we must do the programming using C or Java Language Voice control robotic is just a realistic example of controlling motions of a simple robotic through giving every day used voice instructions. on this machine, an android app is used as a medium for the transmission of human commands to microcontroller. A controller may be interfaced with the Bluetooth module via the UART protocol. The speech is obtained by means of the android app and processed by the voice module. Voice is then converted to text. The microcontroller will in addition process this newsletter, in an effort to take suitable motion to adjust the robot. The goal is to lay out a robot car whose primary movements along with transferring forward, turning to left or proper may be managed by the human voice.

## METHODOLOGY

### Hardware and Software Requirements

- The required hardware for this project is Arduino UNO R3, Bluetooth Module (HC-05), Motor Shield (L293D), 12volt adapter, Jumper wire, Chasis etc

- The required software for this project is AMR Voice Control for Android App, C or Java Programming Language.

### Working

Block diagram of a simple voice controlled robot vehicle consisting of a mobile phone confirming voice instructions and transmitting them wirelessly to the HC05 Bluetooth module. The module in this factor changes the order of the content and the character set is sent to the Arduino for further processing. The Arduino microcontroller decodes the resulting string and executes the appropriate additional capacitance. The signal is sent to the motor, which then drives and drives the associated motor. Instead of a transmitter, instructions for cellular delivery are given through a microphone. This portable headset connects to the car's transmission via a Bluetooth module. The provided portable utility is modified so that the voice commands given to the handset are received using the microphone and these simple voice commands are converted into better word order (A to D transformation). This stored sequence is then transmitted to the robotic vehicle via the Bluetooth transceiver module and sent to the transceiver controller. The Android transceiver software is used to decode the received characters with the bluetooth module. The controller evaluates these signals and the software commands stored in them and converts them into speech sequences. The sound strings are then used to operate the servomotors for appropriate time intervals. The microcontroller sends a guide which, when it's ready, helps get started.

## BLOCK DIAGRAM

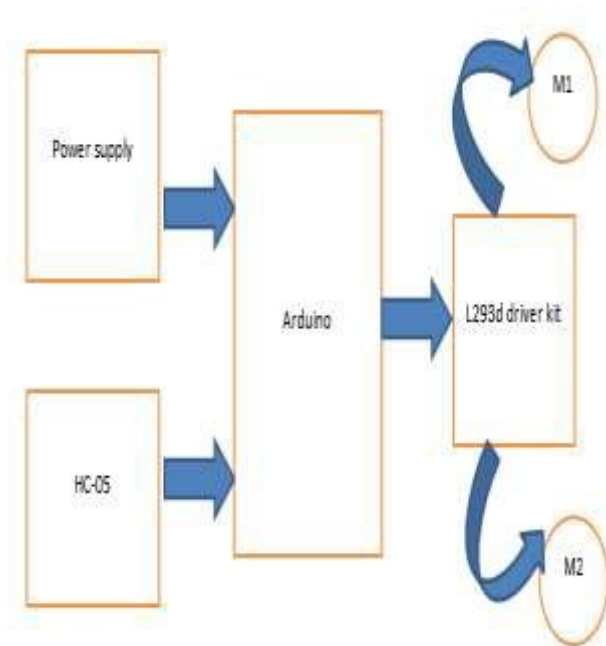
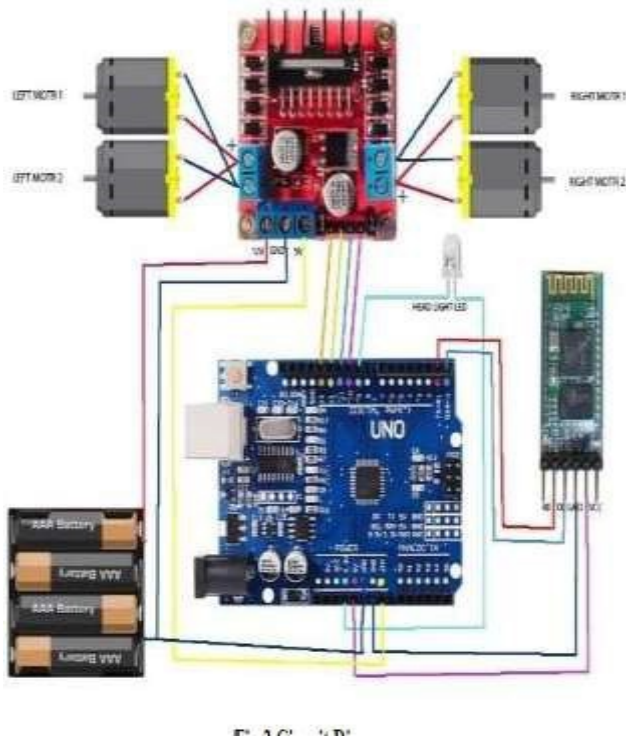


Fig 4.1 Block Diagram

Fig. 1 a sample line graph using colors which contrast well both on screen and on a black-and-white hardcopy

## CIRCUIT DIAGRAM:



## Circuit diagram description:

The circuit diagram of this undertaking is given in Fig.2. To run the machine, we need DC power supply. The DC strength supply is given to Arduino UNO R3, Bluetooth Module and Motor protect. hardware of the project is Arduino UNO R3, Bluetooth Module and Motor guard is used. The commands are given to via the Android application which matches as transmitter and obtained through Bluetooth Module which works as a receiver. This Bluetooth module is hooked up by Arduino Uno, which perform the operation because the command is given. The Arduino is programmable. we will use C or Java Language for programming of the Arduino. The DC motor is hooked up to the motor defend and Arduino. The Bluetooth module is attached to Arduino UNO.

## IMPLEMENTATION

### Controlling of robot

how to use Android software to govern the robotic for that the steps are given beneath

- 1) down load the software “Arduino Bluetooth Voice manage” from Google play save and deploy it.
- 2) After installation, turn on the Bluetooth of cellphone and Bluetooth module.
- 3) Now pair your phone Bluetooth with Bluetooth module HC-05 and the default password for pairing is “0000” or “1234”.
- 4) Now the utility and robot is ready to perform the operation.
- 5) Now click at the “MIC” of the application and supply specific command to the robot.
- 6) robot will perform the given unique command.
- 7) for example, while we are saying forward through the mobile application to the robotic, this command is given to Bluetooth module of robot which is linked to the Arduino. in step with the programming of the Arduino the robotic will perform the mission or command. for this reason, the robotic will circulate to ahead.
- 8) consistent with the given command the robotic can carry out different operation or command like Backward, Left, right, forestall and Rotation of robot.

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# Fictional World

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## ABSTRACT:

We have established different PC interceded virtual conditions including informal organizations, video Conferencing, virtual 3D universes, expanded reality applications, and Non-Fungible Token Games. Such virtual conditions, but non-never-ending and detached, have gotten us different levels of advanced change. The term 'Metaverse' has been instituted to additionally work with the advanced change in each part of our real lives. At the center of the metaverse stands the vision of a vivid Internet as a monstrous, brought together, steady, and shared domain. While the metaverse may appear to be modern, catalyzed by arising innovations like Extended Reality, 5G, and Artificial Intelligence, the advanced 'enormous detonation' of the internet isn't far away.

**Keywords:** *Meta, Virtual, 3D Worlds, Digital Transformation, Avatars.*

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## INTRODUCTION:

Imagine you with your family members or your friends. You enter this world while you're sitting in your room. You do almost all the things that you do in the real world, but not in real world. Instead in this virtual, artificially created world, using this special Headset or Glasses right from anywhere. You may ask me if the metaverse was changed the world of the internet? "I think we'll have to brace for this race for the metaverse. I think we'll see more and more of an AI coming in the game space. The next Platform and medium will be even more immersive and embodied internet where you are in the experience not just looking at it and we call this is the metaverse." Because the future is going to be beyond anything we can imagine.

The word metaverse is made up of two words meta + verse. The word meta is derived from Greek it is a prefix that basically means 'beyond' and the verse comes from the word 'universe'.

We live in this universe and it will be the metaverse that will be beyond this universe this word basically used to refer to an artificial world. In simple word metaverse is an artificially created universe. The internet can also be said to be a distinct universe but when you go on Internet it is mostly limited to 2 dimensions only.

Whether you are using your phone or your computer these are two dimensional screens but when metaverse is talked about metaverse would be a world where you can be completely in it.

In 3 dimensions like when you watch a film you wouldn't be watching the film merely as a viewer you

would experience being in the film if we use headset or glasses then you would get a 360 degree experience of watching the any view.

The word metaverse was first used in the year 1992 in the science fiction books snow crash written by Neal Stephenson in this novel, he talked about a dystopian world a world where real life has been destroyed the outdoors wasn't liveable for humans anywhere so everyone lives confined to their buildings and rooms and spend their life in virtual reality. That virtual reality, the artificial world, was referred to as metaverse by him. After this, a game was released in 2003 called the second life.

You could play this game on the computer and create a second life in this game on the computer meeting people virtually buying items, by properties in the game, exchanging goods and services and creating realistic looking avatars.

By the way an interesting fact here the word avatar was first popularized in the 1992 book snow crash. This word comes from the Hindi/Sanskrit word Avatar when we call someone a reincarnation of deity. Similarly, the word avatar was used for the characters in the virtual reality that you could create they had been your avatars. This word becomes more popular in the rest of the world with the release of the 2009 film Avatar.

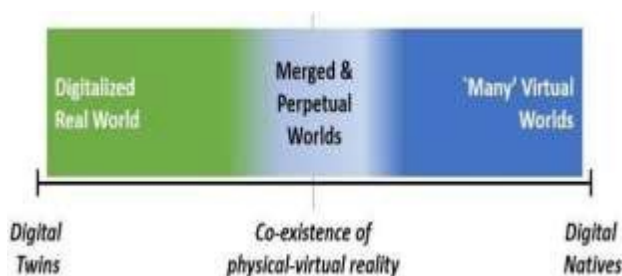
Meta word becomes more popular when Facebook decided to change the name of their company to meta. Mark Zuckerberg defined the m words in the manner and "you are gonna be able to do almost anything you can imagine" Get together with friends and family work, learn, Play, Shop, create as well as entirely new

category that don't really fit how we think about computers and phones today first let's see how the metaverse is created. Various technologies are used here to actually create the metaverse.

The first virtual reality, this technology already exists today but to use this you have to wear this headset and second technology is an AR (Augmented reality) it means that some artificial elements mixed with our real world it would not VR (Virtual reality) complete. An excellent example of it is the Pokemon go smartphone game. We'd need to constantly upload and download huge amount of data, for this had need extremely high internet speeds we'd need 5G.

Additionally, blockchain and cryptocurrencies are also mentioned when talking about the metaverse. When money would be spent to buy anything in the metaverse they can't be real money, of course because anything is digital so there would be need for a digital currency. This is where cryptocurrencies come into play and because there's a large number of transactions are constantly; they had a need to be kept secure there would be a threat of hackers for the threat of data breaches too. To keep this secure, blockchains might be used the exact manner in which blockchains keep the data secure

If you want to buy land in the metaverse or some other property or any asset in the metaverse it will be accomplished through NFTs.



## LITERATURE REVIEW

[1] Judy Joshua. Information Bodies: Computational Anxiety in Neal Stephenson's Snow Crash. *Interdisciplinary Literary Studies*, 19(1):17–47, 2017. Publisher: Penn State University Press.-The metaverse is a digital reality that combines aspects of social media, online gaming, augmented reality (AR), virtual reality (VR), and cryptocurrencies to allow users to interact virtually. Augmented reality overlays visual elements, sound, and other sensory input onto real-world settings to enhance the user experience. In contrast, virtual reality is entirely virtual and enhances fictional realities.

As the metaverse grows, it will create online spaces

where user interactions are more multidimensional than current technology supports. Instead of just viewing digital content, users in the metaverse will be able to immerse themselves in a space where the digital and physical worlds converge.

Facebook has been talking metaverse for a while, noting in an Oct. 17, 2021, press release that the metaverse is "a new phase of interconnected virtual experiences using technologies like virtual and augmented reality. At its heart is the idea that, by creating a greater sense of "virtual presence," interacting online can become much closer to the experience of interacting in person."

Interest in the metaverse is expected to grow substantially as investors and companies want to be part of what could be the next big thing. The metaverse is "going to be a big focus [of Facebook's], and I think that this is just going to be a big part of the next chapter for the way that the Internet evolves after the mobile Internet," Zuckerberg told technology site The Verge before announcing the name change. "And I think it's going to be the next big chapter for our company too, really doubling down in this area."

Proponents of the metaverse view the concept as the next stage in the development of the Internet. Facebook, for example, has already invested heavily in AR and VR, developing hardware such as its Oculus VR headsets, while AR glasses and wristband technologies are in the works.

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Verge that over the next several years, Facebook "will effectively transition from people seeing us as primarily being a social media company to being a metaverse company."

we'll make digital world then we can make avatars in metaverse world. need to remember tasks such as events deadlines and other routine obligations, but our project case we something different feature of project. We are using system time with player function. The main purpose of this study is to assess the at one time one new English word. This project provides an overview of reminder apps and their features. People often forget to perform everyday tasks, and they may find it difficult to recall details related to the tasks they have already completed. For example, people may fail to remember, or 'forget', future intentions such as they decide that should write a new word in the notebook or page every day but for some reason they can't. So, we try to implement this application.

## COMPONENTS USED:

### 1. Headset



So, you want to join the Metaverse. It is going to be an exciting new experience for you. But the Metaverse can only be accessed by the use of one device. And that is a Metaverse headset. While the headset will help you with things like voice recognition and visual effects, it will also give you a full immersion experience.

### 2. Cryptocurrency



The Metaverse is a virtual world that is the culmination of the various technologies we use every day. Later on, when the Metaverse becomes a reality, people will live, work and play inside this world and share experiences together through avatars. In the promised virtual world, people will be able to do many things. People will be able to buy virtual goods and services within the Metaverse. But how would they pay for it? Since it's a virtual world, you can't give physical cash or checks or credit cards. Does this mean the Metaverse will support Cryptocurrency?

### 3. NFT's

We'll be brief here, but a lot of people have heard of NFTs but still don't really get it. An NFT is a non-fungible token, which is a convoluted way of saying that it's something unique. It could theoretically be a way of owning lots of things, but has mostly been used for digital art at the moment. The idea is that you own a thing a token that shows you own a piece of digital art, even though literally everyone else could

screenshot it, save it, or take a picture of it. But hey, at least you're the owner.



### 4. Block Chain



the block chain allows you to own digital goods in a virtual world. You won't just own that NFT in the real world, you'll own it in the virtual world, too. In addition, the metaverse isn't being built by any one group or company.

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## Air Lines Reservation System

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### ABSTRACT

The challenge gotten to be out of the have to be adapt with the inalienable inconvenience experienced with the help of utilizing part of gather of laborers of Discuss Nigeria and their clients. The direct strategies concerned with interior the control of carrier have been seriously tried and the issues famous. The contraption so outlined gives to a brilliant degree, the answers to those issues. The challenge went in expansion to bargain with the particular procedures utilized in forcing the recently outlined computer program program in the event that you need to encourage a broader mastery of the planned program program with the help of utilizing any client. Carrier reservation contraption are utilized to hold measurements of flight plans and traveler reservations and situate assignments and cost tag purchases.

**Keyword:-** *ARS , mobile application , reservation system, Android, airline, booking.*

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### INTRODUCTION

web sites lack is the choice for the person to installation particular necessities for a Numerous human creatures are traveling with airplanes, both as approach of each day transportation to and from depictions or whereas taking put excursion, to say some . To form reservations for such voyages ,carrier organizations web locales hold the capability for the individual to ee-e book a travel himself. A capability which those travel, alongside least travel time or travel .The rationale of this mission is to broaden an easy-to-

The history of carrier reservations frameworks started within the late 1950s when American Aircrafts required a framework that would permit real-time get to flight subtle elements in all of its workplaces, and the integration and computerization of its booking and ticketing forms. As a result, Sabre(Semi-Automated Commerce Inquire about Environment) was created and propelled in 1964(C. Winston, 1995). Sabre's breakthrough was its capacity to keep stock rectify in genuine time, available to specialists around the world. Earlier to this, manual frameworks required centralized reservation centers, bunches of individuals in a room with the physical cards that spoken to stock, in this case, seats on airplanes. execution to compete in a detached showcase (Shon, 2003) . In this deregulated environment the ARS and its relatives have gotten to be vital to the travel industry. Within the early days of

use aircraft reservation machine, which contains those functionalities. In expansion, the machine must also be of utilize for travel offices. These must have the indistinguishable functionalities with interior the machine since the individual clients, be that as it may with the refinement of moreover having a negligible traversing tree at their transfer, as a result permitting them a more know-how of the combat organizes.

### LITERATURE REVIEW

American trade flying, travelers had been fantastically few, and each airline's courses and admissions had been firmly controlled through the Gracious Flight Board. These had been posted in a degree entitled The Official Carrier Direct, from which travel dealers or buyers ought to collect an schedule, at that point title or wire aircraft staff, which might check the reservation on a card and report it. As call for discuss travel extended and plans developed additional complex, this framework have ended up unreasonable. This gadget ended up utilized with interior the neighborliness industry. The deregulation of the carrier industry, with interior the Aircraft Deregulation Act, assumed that aviation routes, which had once worked underneath government-set passages making beyond any doubt aviation routes at the slightest broke indeed, presently had to upgrade.

### **Working component of Flight Booking**

The clients can effortlessly buy an e-ticket by aiming to the ticket deal site, looking and selecting the goal, entering the subtle elements such as title, way of travel, gear data and dates and at long last making the installment through bank cards, bank exchange or through online installment companies. The e-ticket is at that point messaged or texted on the phone of the client. Whereas already travel specialists and carriers helped clients in making ticket buys, nowadays with The cause why progressively more people are buying their flight tickets on line is due to the various gifts and comforts on line flight saving machine must offer. Contradicted to the ordinary way of buying tickets thru visit agents' office, on line reservation these days offers the get right of section to to masses of flight ways, their costs and diverse offerings at the squeezing of a button. This may be exceptionally basic for the buyer with a reason to find the quality doable bargain and the most extreme convenient association. Online machine of saving flight tickets offers additional oversee to the clients in expressions in their trip making plans and encourages them make learned choices. The machine of looking the flights is so clean, that all of us with a tablet and net get right of section to can without issues look for associations, look at costs and purchase any association they crave to. Not least difficult this, be that as it may this procedure could be a part speedier, less demanding, hassle-unfastened and convenient. Numerous flight bunches in recent times furthermore offer diverse offerings

This task is particularly implied for 2 sorts of groups of onlookers. One is the client or the conclusion individual and the inverse is the director of the site. A few of the foremost imperative highlights of the

The title of the computer program is "AIRLINE RESERVATION SYSTEM". This program gives alternatives for seeing distinctive flights accessible with distinctive timings for a specific date and gives clients with the office to book a ticket, alter or cancel

the made strides web framework, it is getting less demanding and simpler to book the flights on your possess. After the client makes the buy, the electronic record and the points of interest of the ticket are spared into airline's database. The database is coordinates with the traveler benefit framework, which is at that point associated to the airplane terminals, aircrafts, travel offices for sharing genuine time information.

### **Advantages of Airlines Reservation System**

together with air terminal exchange, lodging offerings, vehicle lease and airplane terminal stopping. The clients too can take favors of common rebates, advancements and distinctive gives from the aviation routes thru subscribing to their electronic mail or in reality through way of implies of seeing their site. The clients moreover can completely be mindful approximately the various rules of the association beside cancellation, gear directions and others. and may without problems make utilize of these offerings. Online flight saving presently now not least complex offers clean and fast offerings to the buyer from the ease of portable workstation from all over with interior the world, in any case regularly also offers offerings at additional affordable costs. Majority of aviation routes bunches also offer the offerings of on line check-in and after that the buyer can without issues print the boarding by skip at household and shop colossal time and hassles on the airplane terminal.

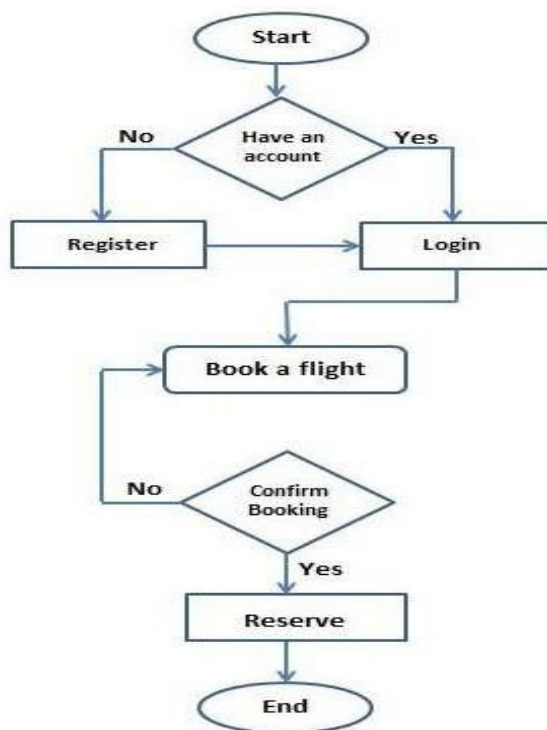
### **SYSTEM FEATURE**

framework may be classified below distinctive classes which can be for the director and the individual.

### **FUTURE SCOPE**

a specific reservation but it does not give the clients with subtle elements of fetched of the ticket and it does not permit the client to adjust a specific portion of his reservation and he/she can adjust all his subtle elements.

## Flowchart



## CONCLUSION

The computer program program bundle bargain “Airline Reservation System” gives helpful on line bringing in the archive from govt and seeing that archive with the help of utilizing the adapting with executive in a web fashion. To enter the realities in a outstandingly built up way and creating the remarkable reports, this incorporates complicated method that turned into being executed on fundamentally based completely way. This bundle bargain is planned and progressed in a compact way, which is ready to fulfill the user’s determination and to serve them in an capable in expansion to in an progressed way. The genuine bother has been found with enthusiastic leisure activity and it’s been depicted and analyzed in this sort of way that it by no implies reasons crave to the client. More ever the impediment

that has been winning withinside the show contraption were triumph over to solid the need of the client.

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# A Review On: Design and Development of Staircase Climbing Trolley

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## ABSTRACT

Many technologies are implementing in the industry and domestic applications in day-to-day life. This enactment glorifies the starvation for research in a variety of fields too. In this paper, the author wants to highlight the previous studies carried out in the sense of fabrication of stair climbing trolleys, their applications significance, and their consequence on the efforts required to perform the same task. This paper also consists of a summary of various techniques and methodologies used to develop the same system.

**Keywords:** *set of wheel, Stair Climbing system, design of the system, fabrication, wheel frame*

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## INTRODUCTION

In everyday life we may have to carry so many goods of various quantities through stairs especially in offices, schools, colleges, hotels, industries, apartments etc. where the lifts may not be available, may be full with the people or under repair. It is very tiresome to carry the various objects through stairs manually for higher floor for so many times. In most of building lifts are not installed so there only human labor is solution for carrying material. Labor is becoming costly as well as time consuming, where growth rate is getting negative. This problem can be solved if a trolley can lift loads while traveling through stairs.

The paper presents another choice for the transportation of the loads over the step. The vehicle is planned so that it has three wheels on each side. They are set in a three-sided design. This task centers around the greatest ergonomically useful to a person. The current venture is connected with stacking conveying gear of a sort that is naturally worked by moving upwardly and downwardly on a stairwell. A load transporter is a wheeled system gadget that is by and large used to convey loads. It lessens human endeavors.

## LITERATURE SURVEY

**Rohit Salunkhe** <sup>[1]</sup> this article point is fostering a component for the simple transportation of weighty burdens over a lopsided landscape. The requirement for such a framework emerges from everyday necessities in our general public. Gadgets, for example, hand streetcars are utilized to ease the pressure of lifting while on a level ground; notwithstanding, these gadgets normally bomb with regards to conveying the load over a short tallness. A few plans were considered that would permit a non-modern

hand streetcar to go over steps, controls, or lopsided territory while lessening the strain on the client. In our task, the streetcar is comprising the tri-wheel or tri-wheeled instrument that facilitates the development of the streetcar in unpredictable surfaces like openings, knocks, and so forth.

**Kyle A. Johnson et al** <sup>[2]</sup> additionally Portrayed Tumbling Mode, When more shaky obstructions (steps, flotsam and jetsam, free landscape, and so on) are experienced, Tumbling Mode gives a fueled means to keep a robot moving. In Tumbling Mode, a slowing down component is locked in to follow up on the equipping framework with the end goal that it powers the three wheels to pivot around the middle hub of the Tri-Wheel gathering and walk like a Whigs robot over deterrents. This tri-talked revolution purposefully happens in a similar bearing as individual wheel turn, assisting with pulling along the robot. The system instigating Tumbling Mode could be locked in inactively, through administrator order, or independently utilizing input from sensors showing a slow downstate, possible slippage, or a specific separation from the snag to be survived. The slowing down component on this vehicle is a little cam-worked drum brake, which is activated through administrator order. Tri-Wheel in Tumbling Mode rising steps. Due to its double capacity to roll and climb, the Tri-Wheel pivots about its focal hub to move toward a stage and afterward moves along the progression surface until it arrives at an ideal situation to flip over itself indeed and proceed with the climbing system.

**Mohammad A. Hosain et al.** <sup>[3]</sup>, expressed that in the underlying plan, each wheel contained an edge, a sun wheel, and three planetary wheels. The planetary wheel was associated with the sun wheel through an idler. The reason for utilizing the idler was to turn the planetary wheels in a

similar bearing as the sun wheel. Each planetary wheel was adjusted in an orderly fashion with the idler and sun wheel. The straight wheel outline takes more push to shift the wheel edge to draw in the following planetary wheel. The length of each arm is high and hence makes vibration and the vehicle would be shaky. In the current plan, the wheel outline was made bend so the front surface of the arm couldn't crash into the edge of the step.

**Prajan Pradip Gandole et al.** <sup>[4]</sup> have presumed that the step climbing hand truck is intended to lessen risk instead of expanding it. Traditional hand trucks function admirably on level ground, yet their convenience diminishes when it becomes important to move an article over an unpredictable surface. Bundle deliverymen, for instance, regularly track down it important to drag stacked hand trucks up short stairwells just to arrive at the front entryway of a structure. The whole motivation behind utilizing an ordinary hand truck is to try not to need to lift and haul weighty items around.

**Ravi Mishra** <sup>[5]</sup> Adjusted In the main plan, the power transmission to the single or twofold wheel streetcar is futile to climb the steps because of the tallness component of steps making tremendous hindrances on the method of the vehicle. Additionally, the plan of the straight wheel outline turned out to be more confounded and was should have been altered with its bend round shape to give appropriate drive, which makes more frictional power. Consequently, three wheel sets on each side of the vehicle appended with the edge were acquainted with giving smooth power transmission to climb steps without obstructions. Outline course of action is appropriate to send precise speed proportion moreover. It furnished higher effectiveness and minimized format with solid help.

**P. Jey Praveen Raj** <sup>[6]</sup> in the advanced world however there are numerous improvements in the field of designing. In any case, there are troubles to convey weighty burdens over steps. Improvement of lift works on the work of conveying weighty burdens over steps, it is unimaginable to expect to involve the lift in all spots like schools, school's constructional regions. This venture targets fostering a component for simple transportation of weighty burdens over steps. The requirement for such emerges from everyday necessities in our general public. Gadgets, for example, hand streetcars are utilized to alleviate the burdens of lifting while on level ground. Be that as it may, these gadgets generally bomb with regards to conveying the heap over a short armada of steps. Their undertaking endeavors to plan a step climbing streetcar that can convey weighty articles up the steps with less exertion contrasted with conveying them physically. The primary target of the undertaking is to track down a proficient and easy to use technique for bringing different articles through steps utilizing least exertion from the client and to likewise give a smooth development while climbing the step. Under this undertaking, we have fabricated a step climber with tri-lobed wheel outlines at the two sides. of the climber and three wheels on each side are utilized in the tri-lobed casing.

The wheel get together is pivoted by a stuff engine system where a DC gear engine is utilized to give the essential capacity to turn and a pinion gear network is utilized for diminishing the turning velocity of the wheel. The engine is associated with a lead-corrosive battery of comparative appraisals and they are thusly associated with a DPDT switch.

## CONCLUSION

In this paper, we carry out material taking care of with less human exertion in the least time without harming the material while transportation. In this idea, we find out the programmed streetcar and it works naturally. the idea of step climber material taking care of framework which offers the support to decrease the human endeavors in quite a large number fields like workplaces, universities, and businesses for dealing with material on the flight of stairs. It offers support to supplant the man in the hazardous climate to move material on steps and level surface, similar to underground stockpiling go down where oxygen is in less sum.

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# Analysis of Network Data Encryption & Decryption Techniques in Communication Systems

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## ABSTRACT

This paper promotes or prevents analysis of network data encryption as well as data decryption techniques used in the communication systems. In network communication systems, interchange of data mostly occurs on networked computers, mobile phones and all internet based electronic devices. Unsecure data that travels by distinct networks are unlocked to many types of cyber-attacks and can be read, change or forged by anyone who has access to that data or information. To prevent such cyber-attacks, data is employed by encryption decryption techniques. Discrete data block sizes were plotted as well as captured against total time response taken during the data encryption using Microsoft Excel. DES has worm holes in its security procedure whereas Blowfish, RSA and AES don't have any. Extra or additional analysis was made depends on the graph results obtained on each data encryption techniques.

**Keywords:** - *Encryption, Decryption. Symmetric Method. Key Size and File or Message Size.*

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## INTRODUCTION

Encryption technique is one of the particular elements of cryptography in which one hides information by modifying it into an illegal code [1]. Encryption typically uses a specified parameters to perform the data transformation. Some encryption algorithms need the key to be the paired or same length as the message to be encoded, even now other encryption algorithms can operate on much smaller or short keys relative to the message. Encryption is most used between the transactions over insecure channels of communication, such as the internet, mobile telephones, automatic teller machines (ATMs), and many others machines and devices. Encryption can used to generate digital signatures which allow a message to be authenticated [2]. Decryption is a completely opposite of encryption which converts the encrypted data into original or real form. The following block diagram shows the encrypting as well as decrypting Of the data process in the network communication systems or process.

## LITERATURE REVIEW

**Paper1:** A Database Record Encryption Conspire Utilizing the RSA Open Key Cryptosystem and Its Ace Keys This paper presents two distinctive encryption plans for database. Both plans utilize RSA calculation. The primary one is field based encryption framework. All areas are gotten to by ace key of client. Following, speaks to record situated encryption. Its employments as it were one ace key. This strategy connected in subsets and integrability gather. [18-22]To give security to the

database is one of the complicated issues. For this, topsy-turvy crypto framework is commonly utilized. Essentially encryption keys are utilized to type in information in secured areas. Decoding keys are utilized to examined the information. So, it gives the get to rights for client. The basic encryption strategy for database is RSA strategy. RSA ace key match contains two diverse keys. Encryption keys are used to speaks to the proper of type in operation. The correct of studied operation is speaks to by unscrambling keys. The key combine is keeps up by database records.

**Paper 2:**A System for Effective Capacity Security in RDBMS Day by day, development of E-business is colossally expanded. So, everyone ought to be mindful approximately information security and database security. Some RDBMS capacity models (such as the N-ary Capacity Show) stores records. Offset table is utilized at the conclusion of the page. It is utilized to find the beginning point of record. If inquiry is more delicate, NSM gives colossal execution. It is utilized to exchange information to and from auxiliary capacity. Typically, appropriate for online exchange handling. [25-28] This paper proposes a novel defensive show for capacity and key administration engineering. It comprises of different encryption methods. It guarantees tall level of database security. In this paper, TPC-H dataset is utilized with Segment Quality across(PAX). [29-31] A page will be isolated into scaled down pages. So, it increments cache execution. A mini-page contains one property of record. Depend upon plain and cipher content qualities, the plaintext and cipher content of PAX utilized to partition the page into two scaled

down pages. So, each record is partitioning into two subordinates

## EXISTING SYSTEM

In the existing framework the concepts of trait based encryption and unquestionable outsourced decoding is defined to exchange information from source to destination. There are two keys such as private and open key are advanced. And the combination of the keys creates the message that must exchange from one conclusion to other. The properties of the information as well as the ace mystery key are analyzed by the intermediaries so as to create a private key. The traits of the information as well as the ace key are scrambled straightforwardly by get to structure trait so as to create a public key. • The scrambled message should decode and the decoded data ought to check with the first information in arrange to guarantee the creativity after the encryption/decryption process. Hence the combination of private key with parameter qualities produces change and recover key.

Where change key creates halfway cipher key that should passed to the retrieve key so as to created the initial message. The fundamental downside over the existing framework is that there's no appropriate confirmation with the intermediaries. in case of common parametric information.

## PROPOSED SYSTEM

The proposed framework recommends an unused strategy of how the files are put away within the cloud by applying the existing encryption strategy and cloud computing framework. Most users are not comfortable by knowing that their amazingly private or secret records can be gotten to for different purposes by the cloud Server suppliers. This might be for maintenance purposes, security string claims or indeed customary record backup processes. Ordinarily, these reasons are total substantial in order to secure the cloud Server status and performance. However, clients are hesitant to transfer their confidential files into cloud servers

This proposed framework points to fill this hole by providing a progressed level of record security. RSA is known to be the strongest freely accessible encryption strategy. This algorithm works with both private key and open key. The only way of decoding the records which are scrambled with the open key is to utilize the private key. Users' record will be encrypted right some time recently the transfer prepares to the cloud Server. As it were the scrambled record will be transferred to the Server

In case where clients do lose the detachable gadget, a backup include must be accessible. In case the client loses the removable gadget without having a reinforcement, unfortunately, the records will not be able to be changed over to their original forms. Figure 1 outlines the generally see of the proposed concept clearly. gotten to since records

are put away decoded. Indeed when the records are scrambled; the unscrambling key is still put away in the cloud servers which still take off a follow to the first files. Based on these issues, the proposed framework was suggested and a conceptual drawing is illustrated

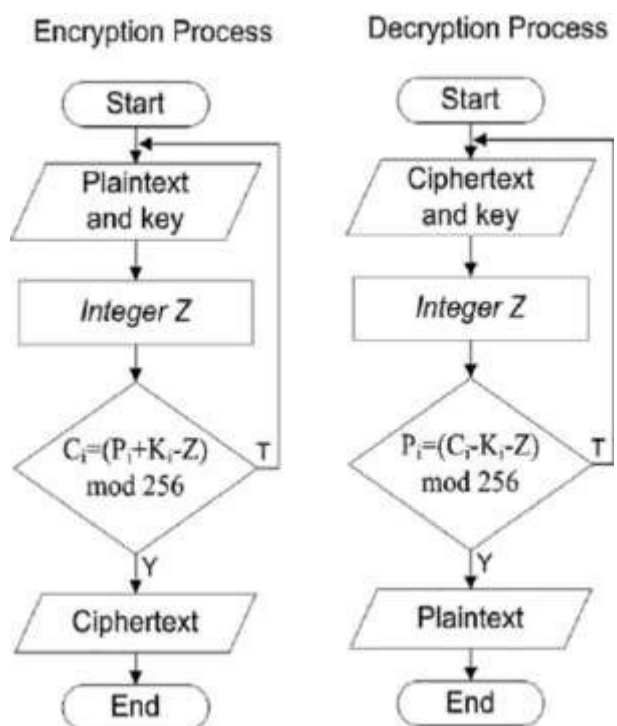
## IMPORTANT MODULES

To begin with, a few critical foundations on cryptography. Read the taking after enlightening carefully to create beyond any doubt you get it the method and what is being inquired of you. Encryption may be a strategy that's utilized to convert a message (alluded to as plaintext) in arrange to avoid anybody but the aiming beneficiary from perusing that information. The yield of the method is called ciphertext, and it ought to be incomprehensible without information of the key and unscrambling algorithm. Decryption is the invert method: the method of making the scrambled information discernable.

## ADVANTAGES

Encryption can secure information from programmers and other potential dangers. Here are a few particular benefits of utilizing encryption and decryption: It gives information security like login IDs, passwords and credit card data from hackers. It increments believe and gives secret ways for two parties to send information. It guarantees others are not altering with files. It can offer assistance dodge copyright infringement and shields mental property It guarantees secure communication between individuals and frameworks

## FLOWCHART





## OBJECTIVES

- Clarify common terms utilized within the field of cryptography
- Layout what components constitute a solid cryptosystem
- Illustrate how to scramble and unscramble messages utilizing the transposition and substitution method
- Bolster the part of cryptography in e-commerce systems
- Clarify the contrasts between symmetric and hilter kilter cryptography

## FUTURE SCOPE

In today's world the assurance of touchy information is one of the foremost basic concerns for organizations and their clients. This, coupled with developing administrative weights, is constraining businesses to ensure the judgment, security and security of basic data. As a result, cryptography is rising as the establishment for endeavor information security and compliance, and rapidly getting to be the establishment of security best hone. Cryptography, once seen as a specialized, obscure teach of data security, is at last coming of Age.No one would contend that cryptography and encryption are modern advances. It was genuine decades back and it is still genuine nowadays – encryption is the foremost dependable way to secure information. National security offices and major monetary teach have long secured their delicate information utilizing cryptography and encryption. Nowadays the utilize of encryption is developing quickly, being conveyed in a much more extensive set of industry segments and over an expanding extend of applications and stages. Put essentially,

cryptography and encryption have ended up one of the most smoking innovations within the IT security industry – the challenge presently is to guarantee that IT organizations are prepared to handle this move and are laying the foundation nowadays to fulfill their future needs.

## CONCLUSION

Hence, the extend entitled "Picture Encryption and Unscrambling was effectively completed. A complex extend including the change of picture into lattice frame, employing a scientific concept to scramble and unscramble it was instrumental in giving us a intensive understanding of how the concepts of ADA and Direct Variable based math together can actually be actualized within the genuine world by the conclusion of the venture we have picked up important abilities counting a establishing of how to connected with the working framework, record giving in java, optimizing algorithms, calculating the efficiencies, and learning how to make and control pictures.

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# Heart Disease Prediction Using Machine Learning

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## ABSTRACT

In this age of computer science each and every thing gets to be brilliantly and perform assignment as human for that reason there are different apparatuses, strategies and strategies are proposed. Support vector machine is demonstrated for Insights and computer science, to perform directed learning strategies that are utilized to create investigation of information and recognize designs. SVM (Support Vector Machine) is generally utilized for classification and relapse examination and within the same way K-nearest neighbor calculation could be a classification utilized to classify information utilizing preparing case. In this project we utilized SVM and KNN calculation to classify information and get forecast for target. Here we utilized therapeutic understanding ostensible information to classify and find. The information design to anticipate future illness employments information mining which is utilized to classify content investigation in future.

**Keywords:** *SVM, KNN, Machine learning, Disease Prediction, Dataset are some of the terms used in this paper.*

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## INTRODUCTION

The term "heart disease" refers to any condition that affects the heart. Heart disease has become a serious worry to address, as statistics reveal that the number of fatalities from heart disease has climbed dramatically in India over the last several decades, and it is now the top cause of death in India. According to a study, the death rate in India owing to cardiac disorders increased by 34% from 155.7 to 209.1 fatalities per one lakh people between 1990 and 2016. As a result, preventing heart disease has become more important than ever. Good data-driven systems for predicting cardiac illnesses can help to improve the overall research and preventive process, allowing more individuals to live a healthy lifestyle habit. This is when Machine Learning comes into play.

Machine Learning is a very effective testing method that is based on training and testing. It is a branch of Artificial Intelligence (AI), which is a large area of learning in which machines mimic human abilities. Machine learning is a subset of AI. Machine learning systems, on the other hand, are taught how to interpret and use data, hence the combination of the two technologies is known as Machine Intelligence. Machine learning, by definition, learns from natural phenomena and natural objects, thus in this project, we utilize biological parameters as testing data, such as cholesterol, blood pressure, sex, age, and so on,

and compare them in terms of accuracy.

In this project, we calculate the accuracy of two distinct machine learning algorithms and determine which one is the best based on the results.

## LITERATURE REVIEW

Because the nature of the heart is complex, it must be handled with care, or the individual will die. Various methods, such as KNN, decision tree, generic algorithm, and naive Bayes, are used to classify the severity of heart disorders.

Gavhane et al.[1] developed a multilayer perceptron model for predicting cardiac illnesses in humans and the algorithm's accuracy utilizing CAD technology. If more people use the prediction method to predict their conditions, disease awareness will rise, and the death rate of heart patients would decrease. Some researchers are working on one or two disease prediction algorithms.

Krishnan et al.[2] demonstrated that decision trees are more accurate than the naive Bayes classification approach. Machine learning algorithms are used to predict many diseases, and many researchers, such as Kohali et al., have worked on this. [7] Conducted research on heart disease prediction using logistic regression, diabetes prediction using support vector machines, and breast cancer prediction using

Adaboost classifier, and found that logistic regression has an accuracy of 87.1 percent, support vector machines have an accuracy of 85.71 percent, and Adaboost classifier has an accuracy of 98.57 percent, all of which are good for prediction.

Mohan et al.[3] outline how two independent approaches can be combined to form a single hybrid strategy with an accuracy of 88.4 percent, which is higher than all other approaches. Data mining has been used by some of the researchers to forecast cardiac disease.

Kumar et al.[5] have worked on a variety of machine learning and data mining algorithms, and the analysis of these algorithms was trained by the UCI machine learning dataset, which contains 303 samples with 14 input features, and they discovered that SVM is the best among them. Other algorithms included naive Bayes, KNN, and decision tree.

Kaur et al.[6] worked on this and defined how the interesting pattern and knowledge are extracted from the vast dataset. They compare the accuracy of 45 different machine learning and data mining algorithms to see which one is the best, and they conclude that SVM is the winner.

## BACKGROUND

Millions of individuals are affected by heart disease, and it is still the leading cause of mortality worldwide. To lower the effective cost of diagnostic testing, medical diagnosis should be proficient, reliable, and supported by computer approaches. Data mining is a type of software that aids computers in constructing and classifying numerous features. To predict cardiac disease, this study used categorization approaches. This part includes brief discussions of related issues such as machine learning and its methodologies, data pre-processing, evaluation measurements, and a description of the dataset utilized in this study.

### Machine Learning

Machine learning is a branch of artificial intelligence that is just getting started. Its main goal is to create systems that can learn and make predictions based on previous experiences. It creates a model by training machine learning algorithms with a training dataset. The model predicts heart disease using the new input data. It builds models by detecting hidden patterns in the input dataset using machine learning. For new datasets, it makes accurate predictions. The dataset has been cleaned, and any missing values have been filled in. The model is then tested for accuracy using the new input data to forecast heart disease. The following are the several types of machine learning techniques:

#### a) Supervised Learning:

The model is trained using a labelled dataset. It has input data as well as output data. The data is categorized and divided into training and test datasets. The training dataset is used to train our model, while the testing dataset is used to test the model's accuracy. There is a dataset comprising models and their output. Its examples include categorization and regression.

#### b) . Unsupervised Learning:

The dataset does not include any classification or labelling of the data used to train. The goal is to uncover hidden patterns within the data. The model has been conditioned to recognise patterns. It can readily anticipate hidden patterns for each new input dataset, but when it comes to describing hidden patterns, it draws conclusions from datasets. There are no responses in the dataset while using this strategy. Unsupervised learning techniques, such as clustering, provide an example.

#### c) Reinforcement Learning:

It doesn't use a labelled dataset, and the outcomes aren't tied to data, so the model learns from its mistakes. In this method, the model improves its presentation based on its relationship to the environment and determines how to address its flaws and achieve the best result by assessing and testing numerous options.

#### Algorithm used:

##### Support Vector Machine (SVM):-

SVM is a widely used supervised machine learning algorithm that may be used as both a classifier and a predictor. For classification, it locates a hyper plane in the feature space that distinguishes between the classes, and the SVM model represents the training data points as points in the feature space, mapped in such a way that points belonging to different classes are separated by as wide a margin as possible. The test data points are then mapped into the same space and categorized according to where they fall on the margin.

##### K-Nearest Neighbor (KNN):-

It is a slow supervised learning algorithm that takes longer to obtain contaminated classification than other algorithms. It is broken into two steps: data training and testing on new instances. Its functioning premise is based on assigning weight to each data item, referred to as a neighbor.

The KNN distance is calculated for each of the K-nearest data points in the training data set, and now classification is done based on the majority of votes. In KNN, there are three sorts of distances that must be measured. Euclidian, Manhattan, and Murkowski distances are calculated using the following formulas, with Euclidian being the most popular.

### Methodology

This study intends to forecast the likelihood of

developing heart disease as a probable cause of computerized heart disease prediction that is useful to doctors and patients in the medical profession. To achieve the goal, we covered the use of various machine learning algorithms to the data set, as well as dataset analysis. This also shows which characteristics contribute more than others to the prediction of higher precision. This could save money on different patient trials because all of the features may not have a significant role in predicting the outcome.

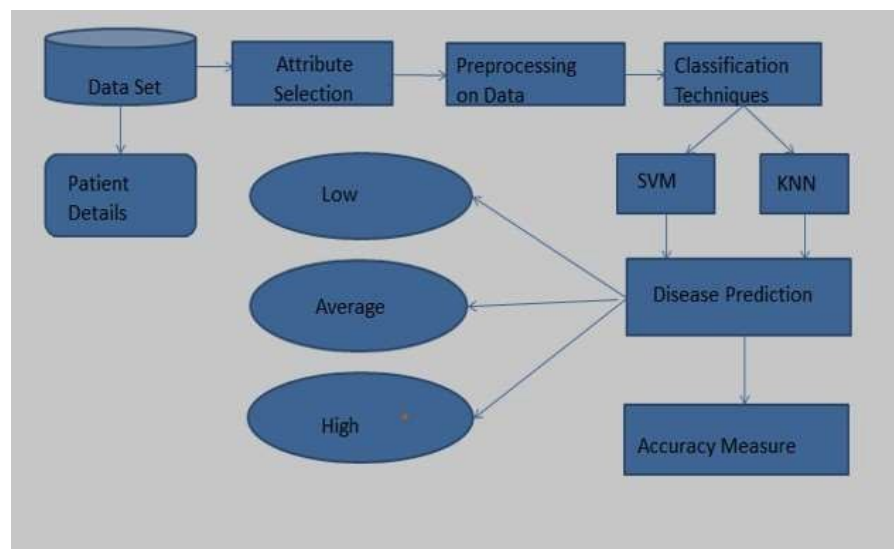


Fig: System Architecture

This research aims to estimate the possibility of acquiring heart disease as a likely cause of computerized heart disease prediction that will be valuable to doctors and patients in the medical field. We discussed the application of various machine learning algorithms to the data set, as well as dataset analysis, to achieve the goal. This also demonstrates certain characteristics are more important than others in predicting higher precision. Because many of the indicators may not play a substantial role in forecasting the outcome, this could save money on different patient trials.

### Data Set

I utilized a dataset from the UCI Machine Learning repository for my research. It includes an actual dataset of 300 data samples with 14 different features (13 predictors; 1 class), such as blood pressure, type of chest discomfort, ECG result, and so on. We employed four algorithms in this study to determine the causes of heart illness and construct a model that is as accurate as possible.

### Data Pre-processing

Large numbers of missing and noisy data are present

in real-life data. These data are pre-processed to eliminate these flaws and make confident forecasts. Noise and missing values are common while cleaning collected data. This data must be cleaned for noise and missing values must be filled in order to obtain an accurate and effective result. Transformation is the process of changing the format of data from one form to another in order to make it more understandable. It entails activities including as smoothing, standardization, and aggregation.

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# Finding The Properties Of Steel Fiber Reinforced Concrete

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## ABSTRACT

Concrete is one of the most widely used construction material in whole world since 1800's. This project investigated using steel fibers in concrete to increase the compressive strength of concrete. Steel fiber increase yield strength and reduce fire resistance also. project investigated using steel fibers in concrete to increase the compressive strength of concrete. Steel fiber increase yield strength and reduce fire resistance also.

**Keywords:** *Strength, Steel, Concrete, Fiber, Reinforcement*

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## INTRODUCTION

In the construction of any assiduity or structure there's a common material used as concrete. And concrete is used in veritably huge quantum in the construction and diligence. Numerous properties of the concrete like fineness occasionally fails to bear tensile cargo which is the cause of brittle failure. Since the fibre have the property to increase the durability of the concrete. In numerous trials it's plant that, sword fibre corroborated concrete has high resistance to cracking so the reason behind the adding uses of sword fibre corroborated concrete to increase the hardness or durability and to reduce the crack distortion characteristics.

## LITERATURE REVIEW:

1 Er Gulzar Ahmad, Er kshipra Kapoor (2016) et al Fthis exploration carried out test on sword fiber corroborated concrete to check the influence of filaments on strength of concrete. According to colorful exploration papers, it has been plant that sword filaments give the maximum strength in comparison to glass and polypropylene filaments. Now a days there exists numerous underpinning ways for perfecting the strength of those accoutrements which lacks cargo carrying and lower durable capacity. Use of sword fiber to enhance the strength and reduce conservation is an effective technology established in recent times. Fiber corroborated concrete has been successfully used in crossbeams on grade, shotcrete, architectural panels, precast products, coastal structures, structures in seismic regions, thin and thick repairs, crash walls, footings, hydraulic structures and numerous other operations. The utility of fiber corroborated concrete in colorful Civil Engineering operations is therefore irrefutable. This review study is a trial of giving some highlights for addition of sword filaments especially in terms of using them with new types of concrete.

2 Dr.K.Vidhya (2017) et al in this experimental it's shown that concrete is a fairly brittle material, when subordinated to normal stresses and impact loads. As a result for these characteristics, plain concrete members couldn't support loads and tensile stresses that passed, on concrete shafts and crossbeams. Concrete members are corroborated with nonstop buttressing bars to repel tensile stresses and compensate for the lack of rigidity and strength. The addition of sword underpinning significantly increases the strength of concrete, and results in concrete with homogenous tensile parcels; still the development of micro cracks in concrete structures must be checked. The preface of filaments is generally taken as a result to develop concrete in view of enhancing its flexural and tensile strength. M40 grade of concrete are arrived with the following constituents similar as Cement, Fine total, Coarse total, Water, Steel fiber, Fly ash, Silica smothers and Superplasticizers. Also variables in this study include the steel fiber (Hooked end and crimped) chance in addition to the weight of cement. The Compressive strength, tensile strength and flexural geste of sword fiber corroborated concrete ray with the varying chance of fiber of M40 grade of concrete.

3 Vasudev R,Dr. B G Vishnuram (2013) et al this paper aims to have a relative study between ordinary corroborated concrete and sword fiber corroborated concrete. The filaments which were used in the study were the turn filaments. They were the scraps from the lathe shops. Experimental examinations and analysis of results were conducted to study the compressive & tensile geste of compound concrete with varying chance of similar filaments added to it. The concrete blend espoused were M20 and M30 with varying chance of fibers ranging from 0,0.25,0.5,0.75 & 1. On the analysis of test results the concrete with turn sword filaments had bettered performance as compared to the concrete with conventional sword filaments which were readily available

in request. These sustainable advancements or variations could be fluently espoused by the common man in their regular constructions

4 Vikrant S Vairagade (2012) et al this paper deals with Experimental disquisition for M20 grade of concrete to study the compressive strength, and tensile strength of sword fiber corroborated concrete (SFRC) containing filaments of 0 and 0.5 volume bit of hook end Sword filaments of 50 and 53.85 aspect rate were used. A result data attained has been anatomized and compared with a control instance (0 fiber). A relationship between Compressive strength vs. days, and tensile strength vs. days represented graphically. Result data easily shows chance increase in 7 and 28 days Compressive strength and Tensile strength for M-20 Grade of Concrete.

5 Milind V Mohod (2012) et al in this experimental disquisition for M30 grade of concrete to study the compressive strength and tensile strength of sword filaments corroborated concrete containing filaments varied by 0.25, 0.50, 0.75, 1.5 and 2 by volume of cement cells of size 150mmX150mmX150mm to check the compressive strength and shafts of size 500mmX100mmX100mm for checking flexural strength were casted. All the samples were cured for the period of 3, 7 and 28 days before crushing the result of filaments corroborated concrete 3 days, 7 days, and 28 days curing with varied chance of fiber were studied and it has been plant that there's significant strength enhancement in sword fiber corroborated concrete. The optimum fiber content while studying the compressive strength of cell is plant to be 1.0 and 0.75 for flexural strength of the ray. Also it has been observed that with the increase in fiber content up to the optimum value increase the strength of concrete.

6 Prasad Karunakaran.R. (2017) et al This paper deals with experimental study on behaviour of steel fiber reinforced concrete for M25 grade having mix proportion of 1:1:2 with 0.44 water cement ratio to study the Compressive strength, Split tensile strength, Flexural strength of steel fiber reinforced concrete (SFRC) containing fibers of 0.5% volume fraction of hook end Steel fibers of 50 aspect ratio were used. A result data obtained has been analyzed and relationship between Compressive strength, Split tensile strength, Flexural strength vs. days represented graphically.

7 Abdul Ghaffar (2014) et al this exploration is grounded on the disquisition of the use of sword filaments in structural concrete to enhance the mechanical parcels of concrete. The ideal of the study was to determine and compare the differences in parcels of concrete containing without filaments and concrete with filaments. This disquisition was carried out using several tests, compressive test and flexural test. An aggregate of eleven blend batches of concrete containing 0 to 5 with an interval of 0.5 by wt. of cement. „ Hooked “ sword filaments were tested to determine the improvement of mechanical parcels

of concrete. The plasticity of concrete significantly reduced as the fiber lozenge rate increases.

8 A.M. Shende (2012) et al Critical disquisition for M-40 grade of concrete having blend proportion 1:1.433:0.4 with water cement rate 0.35 to study the compressive strength, flexural strength, Split tensile strength of sword fiber corroborated concrete (SFRC) containing filaments of 0, 1, 2 and 3 volume bit of hook. Steel filaments of 50, 60 and 67 aspect rates were used. A result data attained has been anatomized and compared with a control instance (0 fiber). A relationship between aspect rate vs. Compressive strength, aspect rate vs. flexural strength, aspect rate vs. Split tensile strength represented graphically. Result data easily shows chance increase in 28 days Compressive strength, Flexural strength and Split Tensile strength for M-40 Grade of Concrete.

9 Pramod Kawde (2017) et al, in this exploration it's shown that ordinary cement concrete possesses veritably low tensile strength, limited rigidity and lower resistance to cracking. The concrete shows the brittle geste and fails to handle tensile lading hence leads to internal micro cracks which are substantially responsible for brittle failure of concrete. In this period, RCC constructions have their own structural and continuity conditions, every structure has its own willed purpose and hence to meet this purpose, revision in traditional cement concrete has come obligatory. It has been proved that different type of filaments added in specific chance to concrete improves the mechanical parcels, continuity and utility of the structure. As compared to other filaments it's now established that one of the important parcels of Steel Fiber Reinforced Concrete (SFRC) is its superior resistance to cracking and crack propagation. In this paper History studies grounded on the Steel fiber concrete is studied in detail.

## METHODOLOGY:

The thing of the design was to assess the parcels of Steel fiber and how can affect concrete fusions. To negotiate this thing, the following objects were established.

- Produce a blend design for the concrete with sword filaments
- Assess strength
- Give recommendations for use.

This blend design takes from Milind V Mohod (2012) et al in this experimental disquisition for M30 grade of concrete to study the compressive strength and tensile strength of sword filaments corroborated concrete containing filaments varied by 0, 1.00, 1.50 and 2.00 by volume of cement cells of size 150mmX150mmX150mm

**Mixing procedure of RPCs is explained as follows:**

(a) First all introductory ingredients were mixed in the dry condition.

(b) Latterly, half volume of the total water was added to the mixer with the half volume of super plasticizer.

(c) In the third stage, needed amounts of filaments were added to the mixer with the remaining amounts of water and plasticizer. In the case of plain-RPC composites, only remaining amounts of water and plasticizers were added to the mixer in the third stage. The first stage, alternate and third stages lasted for 2, 6, and 6 min, independently. In the first and alternate stages, mixing speed was maintained at 80 rpm, whereas, in third stage mixing speed was increased to 120 rpm.

**OBJECTIVES:**

1. Improve structural strength
2. Reduce steel reinforcement requirements
3. Reduce crack widths and control the crack widths tightly, thus improving durability
4. Improve impact- and abrasion-resistance
5. Improve freeze-thaw resistance

**CONCLUSION:**

1. It is found that the adding of steel fibre in concrete increases the strength and toughness as compared to plain concrete.
2. Steel fibre reinforced concrete give results for improve abrasion, flexural strength, impact resistance, high flexural and fatigue flexural with durability.
3. Steel fibre reinforced concrete is very economical design alternative in this time.
4. By addition of steel fibres in concrete increases the ductility.

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# Additive Manufacturing In Production

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## ABSTRACT

Added substance fabricating, characterized by its inherent layer by layer creation strategy has been coined by many as the most recent transformation within the fabricating industry. Due to its enhancement of Materials, forms, system technology and applications, Added substance Fabricating has been synonymized with wording such as Rapid prototyping, 3D printing, free-form creation, Added substances Layer Fabricating, etc. A tremendous media and open intrigued in the innovation have driven to an inventive endeavor of investigating the innovation for applications past the scope of the traditional building industry. By the by, it is accepted that a basic figure for the long-term victory of Additive Manufacturing would be its capacity to fulfill the necessities characterized by the conventional fabricating industry. A parallel advancement in advertise patterns and item prerequisites has moreover lead to a more extensive scope of openings for Additive Fabricating. The displayed paper examines a few of the key

**Keywords:** *Added substance fabricating, generation administration, item life cycle, mass customization, manufacturing trends, challenges and openings*

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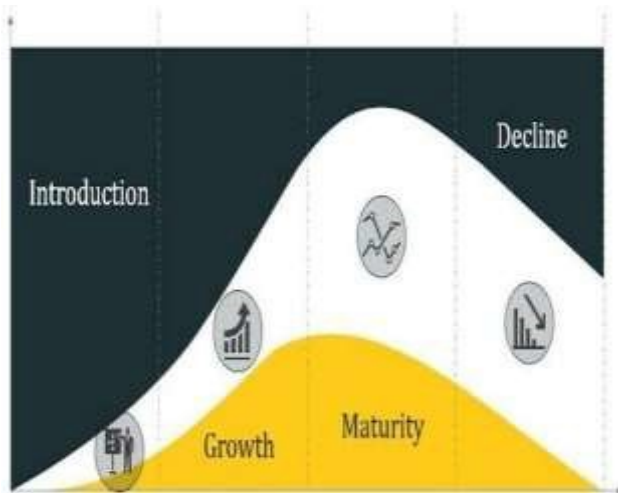
## INTRODUCTION

Fabricating forms give the devices that empower generation of merchandise. These devices of industry extend the exertion of individual laborers and turn crude materials into reasonable, quality products fundamental to the society. These devices make possible present day communications, reasonable rural items, productive transportation, imaginative medical procedures, space investigation and other regular ease. Additive fabricating moreover includes fabricating a portion in a layer-by-layer design. These forms fundamentally differ from ordinary fabricating forms such as diminish , developmental and joining processes . Manufacturing companies must calculate numerous contemplations for deciding in the event that added substance fabricating is consistent with their businesses. Handle varieties that can manufacture layer-by-layer incorporate wire expulsion, particular combination in a powder bed, binder or fabric streaming, specific photo-polymerization and sheet cover. Each AM prepare has its own manufacture. The demonstrated patterns and changing elements of the fabricating industry has made a gigantic opening for the Additive Fabricating industry. A more nitty gritty talk on the openings and challenges made by these dynamic changes takes after

## MOTIVATIONS DRIVING ADOPTION OF ADDITIVE MANUFACTURING

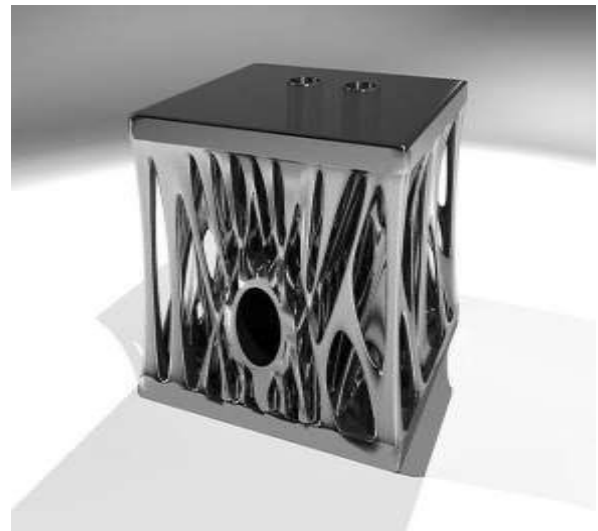
### 1. Product life cycle, mass customization and design complexity

Fabricating companies get it the significance of item life cycle, which the items they make have a constrained life expectancy. This empowers them to contribute in unused item improvement and subsequently make beyond any doubt that the businesses opportunities proceed to grow. Various stages within the item life cycle can be broadly classified as Presentation Stage – the foremost costly for a company propelling a modern item. Amid the presentation arrange, the estimate of the advertise for the item is little but the fetched of assets required for presenting the item such as inquire about and development, product testing, and showcasing can be exceptionally tall. These varieties ended up more noteworthy for a competitive segment. The second organize of item life cycle is the Development Arrange – which is ordinarily characterized by a solid development in deals and profits for the item. Amid the development organize, the company can conceivably begin to advantage from economies of scale in production and benefit edges.



Current designs in thing life cycle illustrate a critical diminishment inside the thing life span. Subsequently, the significantly high fetched amid the product presentation stage must be over set with a littler development and development arrange. Dynamic businesses have subsequently adjusted to the showcase patterns by more noteworthy item varieties and adjusting manufacturing processes for productivity with low group . The recommended drift is every so often alluded to as mass customization as against mass generation. The term mass customization alludes to the fabricate of comparative but not indistinguishable products, thus empowering a special customizable include in a perfect world personalized to the customer. Cases of mass customized product can be seen within the hearing aid and the dental prosthesis industry.

Routine fabricating is majorly centered on mass fabricating. These items are ordinarily having an assembly of a few fewer complex parts and no customization in arrange to diminish costs by empowering the next production rate. In arrange to empower a proficient mass production, significant speculation is fundamental to form get together lines and production centers. Presale wander to boot required for tooling and fixturing coming around in both lead times and venture<sup>10</sup>. Tooling and fixturing can be costly but in a mass generation situation, the costs are amortized over total units of parts manufactured. In this manner, the conventional trade demonstrate for mass generation is taken a toll viable to undertake the tall beginning speculation. With the advancement of modern showcase patterns and the request for higher customization and complexity of each portion, it gets to be fundamental that fabricating forms financially attainable for moo volume production, mass customization and free frame creation are considered



## 2. Sustainable production and environmental implications

The digitalization and democratization of fabricating is considered a vital perspective of the “Third Industrial Revolution”. The primary and the moment mechanical transformations are regularly related with the mechanization of fabrication and improvement of mass generation methods individually. In spite of the fact that not formally announced, the third industrial revolution is regularly related with supportability and digitization of fabricating. The Third Mechanical Transformation is predicted as an economy fueled by renewable vitality and online exchange of information. Manufacturing technologies would have to be revolutionize their relationship with materials, vitality and Green House Gas-intensities with the same significance as was seen with labor efficiency increments amid the Primary Mechanical Insurgency. The plausibility of democratizing fabricating forms through online-distribution of plan and localized generation is anticipated to be a key angle of the third Mechanical Revolution. Advanced

## ADDITIVE MANUFACTURING IN PRODUCTION

Within the current time of industrialization, fabricating forms have appeared a quick advancement. To keep up with the demands of maintainability, environment and changing advertise flow, existing forms and hones are being improved and unused advances are being presented coming about in a massively extension to the estimate and scale of industrial production. This has moreover led to an advancement within the relative share of crude materials, vitality and labor in manufacturing items. The change of matter, vitality and labor into merchandise, administrations, squander and ambient emissions moreover known as Mechanical digestion system, has accounted for an expanding human impedance with the biosphere in expansion to the tall levels of riches that it has generated. The mechanical division ought to be considered as one of

the major segments where transformative changes are required towards sustainability.

### **1. Additive Manufacturing in production: Key challenges for implementation**

**Key components:** The aim to contribute in a modern fabricating innovation is regularly connected to the advertise flow and specific item characteristics. In perfect cases speculators look for tall utilization of the innovation as the key inspiration for investment. In arrange to legitimize speculation, the require for numerous items subsequently gets to be fundamental in case the method will not be significantly utilized on one item. Items reasonable to AM generation are craved to have one or more of the following characteristics: tall degree of customization, expanded plan optimized usefulness and moo volume production. In perfect cases, the execution of Added substance Fabricating is based on a clear understanding of the business, fabricating and R&D procedure. In a few cases speculation in Added substance Fabricating is seen as a technology-push methodology. This is often an auxiliary venture pointed to examine and get it the potential of the new manufacturing capabilities and consequently make future trade openings.

**Mechanical components:** Well-known innovation benefits from execution of Added substance Fabricating include elimination of tooling and fixturing, plan adjustment for adaptability and work, lower fabric wastage and inventory etc. In any case it is additionally fundamental that the execution of Added substance Fabricating is performed with a clear understanding of the restrictions such as restricted fabric alternatives, generally tall machine and fabric costs, maximum build estimate confinement and generally moo prepare speeds. The usage of Added substance Fabricating in generation is also hampered due to the need of specialized standards.

**Organizational components:** Organizational variables: Execution of unused fabricating innovation can at some point be subordinate on the estimate of an organization. It has been contended that little undertakings cannot continuously be substituted for scaled-down forms of larger ones. This can be since the working culture and arrangements demonstrated in huge undertakings are not continuously appropriate for small business, It is subsequently, exceptionally likely that the approach to execute Added substance Fabricating in an SME would differ from that in a huge multinational company. Organizational structure of a company, frequently characterized by its measure, is the key calculate to fruitful execution of modern innovation and so it can be fundamental for an organization to begin with re-design organizational structures and forms some time recently embracing a modern manufacturing technology. It ought to hence be caught on that a alter in work hones and structure and subsequently a alter in jobs and errands would be fundamental for the fruitful execution of Added substance Fabricating. A key requirement from designers and engineers in an organization would be their capacity to get it the

method and in like manner re-think the concept of plan for fabricating (DFM). This hence requires the architects to coordinate item plan with process capabilities. Consequently a key figure in AM usage is the workforce encounter and ability.

### **2. Future opportunities for Additive Manufacturing in production**

**Plan for Added substance Fabricating:** One of the first points of interest with Added substance innovations is its ability to manufacture complex plans with perplexing inside structures. The plausibility to plan ultra-lightweight structures and realize their manufacture has been the essential fascination to the plan community. With affect on sustainability, asset utilization, natural emanations and usefulness, plan for added substance fabricating has become the corner stone of intrigued. In any case, there's still not sufficient application of the innovation in conclusion utilize products for tall energy utilization businesses like car and aviation. This will be mostly credited to technological limitations such as construct terms and wanted mechanical characteristics, but a noteworthy figure is additionally the Need of understanding and appreciation for plan for added substance fabricating. The plan for added substance fabricating is complicated by a few principal varieties between the forms such as the prerequisite for back structures for processes such as Laser Pillar Dissolving and Stereolithography. It is hence recommended that advance investigate and skill development within the field of plan for added substance fabricating can lead to a critical positive affect and development of modern applications . Openings within the field of bionics and plan motivated by genuine life organic objects have been lifted by advancement of filtering innovations like 3D white light checking. In this manner future improvement in plan for added substance fabricating must moreover consider interchange data creation and adjustment conceivable outcomes.

### **CONCLUSION**

From the displayed paper it has been endeavored to set up an understanding of prerequisites and challenges that Additive fabricating faces for its advance acknowledgment within the ordinary generation industry. The inspirations driving the future usage of added substance fabricating relate to the watched advertise patterns of shorter item life cycle, need for mass customization and plan complexity. In expansion, developing accentuation towards maintainable production complemented by natural direction is acting as a catalyst for encourage utilize of Added substance fabricating. In spite of the fact that there are solid inspirations for usage of Added substance Fabricating, the current patterns recommend that there still exist issues that restrain the total acknowledgment of the innovation. These issues extend from organizational to operational and incorporate themes such as supply

chain and mental property. The impediments existing within the current scenario too make openings for encourage inquire about and improvement in Added substance fabricating. These opportunities include modern fabric advancement, understanding of plan for added substance fabricating and usage of process monitoring and quality administration procedures.

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# An Overview on Implementation and Impact of BS-6 in India

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## ABSTRACT

BS-VI has been implemented in India since April 2020. It is almost a year after implementing the BS-VI in India. It is the best time to take a look at the impact of BS-VI at the moment. Bharat stage VI emanation standards are the 6th stage for vehicular outflows in India. The BS-VI emanation standards are genuinely necessary for a country, for example, India to hold contamination under tight restraints. BS-VI standards are stricter and more prohibitive as far as BS-IV standards considering cleaner air and less contamination all the while. The new BSVI discharge standards would require both the car areas as well as oil organizations to make progressions and changes to their separate items. For the best outcomes and the better exhibition of the vehicle the BSVI based motors should run on BSVI fuel. The new age current motors which are running on inferior quality fills will emanate more poisonous gases contrasted with those produced by the BSIV motors. The advanced age motor diagrams for the most part require low Sulphur content to keep a solid presentation. This examination targets fathoming data on another viewpoint of understanding the idea and how accommodating it will be in understanding the shift from BHARAT STAGE IV TO VI for different partners. This is trailed by techniques embraced by the main five Indian-based vehicle producers.

**Keywords:** *Bharat Stage VI, Strategies, Sulphur, Car Manufacturers*

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## INTRODUCTION

The nature of air has forever been an issue of concern worldwide in the milieu of developing vehicular air contamination. While contamination can normally happen from different sources, the contamination which is typically brought about by vehicles and their exhaust framework is generally exceptionally unsafe and is viewed as a critical wellspring of contamination and legitimate measures must be set up to check vehicular contamination. In this way, the Bharat stage outflow guidelines and the essential discharge principles gave by the Indian Government direct and control the air contamination that is brought about by the fumes of vehicles and internal ignition motors these norms are normally set by the focal contamination control board. The guidelines depend on guidelines set by European nations and were first acquainted with the world in 2000. The Bharat Stage IV outflows standards have been set up since April 2010, and it had been authorized for the whole country in April 2017. In the year 2016, the Government of India reported that the nation would skip Bharat stage V standards by and large and would carry out the BS-VI by 2020. The new rule passed by the high court said that they would boycott the deal and enlistment of engine vehicles that are coordinated with the BS-IV discharge standards in the entire country by April first, 2020. Essential Sources of Pollutants and Its Effects on Human Health are mostly a result of gas powered motors (ICEs) which are chiefly infamous for the creation of carbon monoxide, carbon dioxide (CO<sub>2</sub>), oxides of nitrogen, and Hydrocarbons. Particulate matter (PM), or carbon ash, is one more side-effect of diesel as well as immediate infusion petroleum motors as of now discharged by BS-IV vehicles.

## REVIEW

In this topic, author has expressed the reviews about BS VI in the point of view of different stakeholders.

### Customer Point of View:

The majority of the urban areas in India have begun selling and executing BS-VI energizes so the clients who are proprietors of the more seasoned age vehicles that is the vehicles that adjust to Bharat stage IV principles can decide to choose BS-VI fuel at the gas stations. This will deliver an alternate outcome that is there is an immediate interrelationship between the sulfur content that is available in the fuel and the outflow created by it in basic words the lesser the sulfur in the fuel the vehicle will discharge lesser particulate matter (PM) which converts into cleaner ignition simultaneously. Petroleum generally has less sulfur content in it, so it ordinarily transmits lesser carbon monoxide, NO<sub>x</sub> and other harmful hydrocarbons. Late examinations likewise recommend that a BSIV viable vehicle alongside BSVI fuel can diminish the particulate matter (PM) discharges into half. A decrease in the sulfur content in the fuel can cut down the quality and energy content in the fuel and furthermore cut down the productivity all the while. ULSD powers could likewise decrease the proficiency of the fuel because of low sulfur content however the greater part of these powers are spiked with added substances to address, these worries this can cause an intense increment, in the cost of the energizes in the service stations the vast majority of the organizations are deciding to put resources into oil organizations that are executing BS-VI powers. Potential purchasers are additionally wanting to keep down on buying another vehicle and furthermore the majority of

them chose to stand by and buy the new BSVI consistent vehicles the following year. It is very normal for a reasonable client to sit tight for a couple of months and put resources into new BSVI vehicles than to think about putting resources into BSIV agreeable vehicles right now. The choice by the client to sit tight for putting resources into another vehicle has been bringing a lot of hardship for vehicle producers on the grounds that the loads of unsold BSIV vehicles have been stacking up and they can't offer the BSIV vehicles because of low client interest. To clear request took on appealing promoting procedures to draw in clients.

#### **Manufacturer's Point of View:**

Driving vehicle makers, for example, Maruti Suzuki have currently began declaring their arrangements to begin producing BSVI vehicles before the finish of 2019 with their responsibility towards a cleaner and greener climate the BSVI vehicles that are delivered by Maruti Suzuki will have a redesigned equipment and programming framework alongside an updated fumes too the vehicles which are agreeable with BSIV standards can run on BSVI fuel as well, and there is no functional worry simultaneously. The main vehicle organizations needed to expand their venture to overhaul the current accessible models and make them BSVI viable the quantity of new item dispatches by the main auto producers have fallen throughout the most recent year. A large portion of the vehicle firms are taking a gander at the items that don't need a lot of progress before the new BSVI standards produce results. Bikes and four-wheeler makers have pulled limit augmentation plans, as they guess that solicitation could fall.

#### **Government's Point of View**

The oil and the flammable gas service told the court that the vehicles which are not viable with the BSVI principles would not be permitted to run on the Indian streets. This assertion had made a lot of disarray in the personalities of the auto vehicle creators, and the service has informed the automobile producers that they would get three months to deplete their whole stock comprising of BSIV viable vehicles after the new BSVI standards are authorized. The court likewise said that the vehicle producers would not have the option to enroll for BSIV agreeable vehicles after 31st March 2020.

#### **Environmental Aspect:**

The spot we live in that is our regular territory is turning into a less well-disposed spot to attempt way of life exercises. Air contamination is an immense issue looked by our nation, and appropriate measures must be set up to control air contamination. Thus, the Indian government had chosen to carry out a more thorough emanation standard that is the shift from BSIV standards to BSVI discharge standards. The BSVI discharge guidelines are comparable to Euro-VI Norms which is set up in a large portion of the European nations the public authority is in the process to

foster vehicles with the furthest down the line innovation to ensure the vehicles produce fewer poisons in the air and furthermore thinking about towards further developing the air quality in the metropolitan urban areas also.

The Indian government has likewise presented a cutoff time of April 2020 wherein the automakers need to roll out vital improvements to their items that is ensuring that the consent of the vehicle to the BS-VI standards which,

Revise the exhaust arrangement of the vehicles to diminish the arrival of unsafe gases, for example, Hazardous NOx and particulate matter that emerges from the course of burning. The general target of the BSVI standard is to decrease the arrival of NOx and particulate matter from both petroleum as well as diesel vehicles and advance a cleaner and greener climate all the while.

#### **BS VI STRATEGIES BY DIFFERENT MANUFACTURERS**

##### **Tata Motors:**

Goodbye has as of late sent off another stage which assists it with teaming up with new companies and plans of action in the auto space. The Tata engines auto-versatility joint effort network 2.0 will permit the organization to collaborate with fire up's and innovation-based organizations to concoct new arrangements in the portability biological systems and investigate cooperative energies. Goodbye is principally searching for business open doors in individuals and the freight utility space, and the tac net 2.0 subject depends on the areas wherein goodbye engines are intrigued. Shailesh Chandra, the leader of electric versatility business and technique as of late said that the car area is going through a change ease in which there is the presentation of new and trend-setting innovations in the assembling area and furthermore digitization of answers for streamline the tasks of the organization too and furthermore creating imaginative as well as cutting edge project advances to draw in the client as well as the partners. The CNET activities will likewise assist the rest of the world with interfacing with Tata for advancement and coordinated effort amazing open doors too. The organization is additionally seeking foster answers for the utilization of block chain innovation in the auto business, request expectation calculation and constant observing of BSVI fuel quality, and furthermore to see whether the extra parts are real.

##### **Maruti Suzuki Strategies to Conform with BSVI Norms-**

Maruti Suzuki as of late reported in the press meet that it had gotten a decent reaction from its clients for its new BSVI scope of vehicles which are now accessible in the market now. The BSVI vehicles which are sold by Maruti Suzuki comprise around 70% of the absolute petroleum vehicles which are sold on the lookout. Maruti Suzuki is going on with its obligation to send off climate well-

disposed vehicles, Maruti Suzuki presented its first BSVI agreeable petroleum vehicle Baleno in April in the year 2019. This was trailed by the send-off of BSVI agreeable petroleum variations of Alto 800, Wagon R (1.2 liters), Swift Dzire, and Ertiga much before the given date for the execution of BSVI guidelines. The impending XL6 multipurpose vehicle (MPV) will likewise adjust with the BSVI guidelines.

Diesel vehicles may likewise lose the edge over their petroleum partners in any event, for those with the high normal running numbers. In the event that we consider the expense referenced above of updating the petroleum and the diesel motors to the BSVI guidelines, then, at that point, the value distinction between the Venue Petrol E-variation and the Venue-diesel E variation will go up from the current 1.25 Lakh to Rupees 2.05 lakh. Hyundai likewise offers a 1.0-liter turbocharged direct-infusion petroleum motor on the Hyundai setting which is pricey contrasted with the 1.2-liter petroleum motor. The distinction in cost between the Venue 1.0S petroleum variation and the setting 1.4S diesel is around Rupees 24000 in the BSVI period. The distinction in costs between the 1.0 liter controlled setting and 1.4-liter setting could go up to Rupees 1 lakh which is something very similar in the current situation. Hyundai's auxiliary Kia engines is set to enter the Indian vehicle market with a Hyundai Creta rival soon sufficient it will control its first SUV which has a 1.5-liter diesel motor. This motor could be the main diesel motor for Hyundai's little vehicle portfolio while supplanting both the 1.4 liter and 1.6-liter motors.

### Ashok Leyland BSVI Strategies-

Ashok Leyland as of late reported that its whole scope of hard core business vehicles is presently BSVI agreeable. The substantial business vehicle producer has as of now gotten the BSVI affirmation. It is likewise the primary business vehicle maker to accomplish this accomplishment. The Indian auto market is moving towards the cutoff time for the execution of BSVI discharge standards, which is comparable to the Euro-VI emanation standards. To refresh from BSIV outflow standards to BSVI, all the car makers are intending to execute huge motor changes in their item diagram and furthermore are investing many amounts of energy to update and redesign explicit parts of their vehicles to adjust with the BSVI emanation standards. In a portion of the cases, the organizations are unloading the more seasoned motors and creating and redesigning new ones. Ashok Leyland is way in front of the remainder of the auto organizations with regards to the execution of stricter discharge guidelines. BSVI standards will come right into it on April first 2020, and Ashok Leyland is seven months ahead of schedule to the party [25].

### CONCLUSION

The recently presented BS-VI standards will get an extreme change the Indian car area industry. India will likewise get low discharge delivering and more eco-friendly

vehicles soon. Diesel motors will be more costly when contrasted with that petroleum motors since they need greater change and after-medicines to remain clean. Along these lines, this will make a point to draw in the first gear producers (OEM) towards crossover energizes and another climate agreeable elective innovation arrangement giving organizations are likewise going to help a great deal from the change. On account of fuel particulars as far as BSVI, the primary agreement is that the outcome of the fuel impacts on the emanation of controlled air poisons has diminished in view of the new progressions in motor after treatment advancements. The advanced age motors normally require extremely low sulfur content in the fuel to keep a solid presentation during their need. The endeavors put in for the progress from BSIV to BSVI can unimaginably help in the decrease of air contamination from cars. This will acquire a significant improvement the air nature of profoundly populated urban areas as exhaust discharges from vehicles are the essential wellspring of air contamination in urban areas. The scientists could discover more with regards to the systems took on by the unfamiliar vehicle producers to adapt to the progress from BSIV to BSVI. Specialists can additionally explore the deal techniques took on by top vehicle makers to sell their BSIV consistent vehicles existing in their stock.

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# Big Data Analytic

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## ABSTRACT

Enormous information draws a parcel of consideration within the it global. the quick rise of the web and the advanced economy has fueled an exponential development in request for information capacity and analytics, and its division are confronting huge challenge in securing and analyzing these expanded volumes of data. the reason organizations are collecting and putting away more information than ever some time recently is since their trade depends on it. the sort of data being made is no more conventional database-driven information alluded to as organized information or maybe it is information that include records, pictures, sound, video, and social media substance known as unstructured information or huge information. assist this paper analyzes the appropriation, usage and effect of enormous information analytics to the commerce esteem of an undertaking to progress its information calculations for expansive information sets such as hadoop .

**Keyword :-** *Huge information analytics; Hadoop; Enormous information; Structured information; Unstructured Information.*

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## INTRODUCTION

Enormous Information is an imperative concept, which is connected to information, which does not adjust to the typical structure of the conventional database. Enormous Information comprises of diverse sorts of key innovations like Hadoop, HDFS, nosql, mapreduce, mongo dB, Cassandra, PIG, HIVE, and HBASE that work together to attain the conclusion objective like extricating esteem from information that would be already considered dead. Concurring to a later advertise report published by Straight forwardness Advertise Inquire about, the whole esteem of enormous information was evaluated at \$6.3 billion as of 2012, but by 2018, it's anticipated to reach the amazing level of \$48.3 billion that's nearly a 700 percent increment [29]. Forrester Inquire about gauges that organizations effectively utilize less than 5 percent of their accessible information. This is often since the rest is basically as well costly to bargain with. Enormous Information is determined from numerous sources.

It includes not fair conventional social information, but all standards of unstructured information sources that machine-derived information duplicates rapidly and contains wealthy, assorted substance that must be begin. Another illustration, human-derived information from social media is more printed, but the important experiences are regularly over-burden with numerous conceivable implications.

Enormous Information Analytics reflect the

challenges of information that are as well endless, as well unstructured, and as well quick moving to be overseen by conventional strategies. From businesses and inquire about teach to governments, organizations presently routinely produce information of uncommon scope and complexity. Gathering significant data and competitive points of interest from enormous sums of information has gotten to be progressively imperative to organizations all inclusive. Attempting to proficiently extricate the important bits of knowledge from such information sources rapidly and effectively is challenging. Hence, analytics has ended up inextricably vital to realize the total esteem of Huge Information to move forward their trade execution and increment their advertise share. The apparatuses accessible to handle the volume, speed, and assortment of huge information have improved significantly in later a long time. In common, these innovations are not restrictively costly, and much of the program is open source. Hadoop, the foremost commonly utilized system, combines product equipment with open source program. It takes approaching streams of information and disperses them onto cheap disks; it too gives instruments for analyzing the information. Be that because it may, these developments do require an ability set that's modern to most offices, which can have to be work difficult to coordinated all the significant inside and outside sources of information. In spite of the fact that consideration to innovation isn't adequate, it is continuously a vital component of a huge information methodology. This paper talks about a few of the foremost commonly utilized

enormous information innovations generally open source that work together as a huge information analytics framework for leveraging expansive quantities of unstructured information to create more educated choices.

## LITERATURE REVIEW

Big Data is a records evaluation technique enabled via way of means of latest advances in technology that aid high-speed records capture, garage and evaluation. Data reasserts increase past the conventional company database to encompass emails, cellular tool outputs, and sensor-generated records in which records is now not restrained to established database facts however as a substitute unstructured record having no preferred formatting [30]. Since Big Data and Analytics is a fantastically new and evolving phrase, there may be no uniform definition; diverse stakeholders have supplied numerous and now and again contradictory definitions. One of the primary extensively quoted definitions of Big Data resulted from the Gartner document of 2001. Gartner proposed that, Big Data is described via way of means of 3 V's volume, speed, and variety. Gartner extended its definition in 2012 to encompass veracity, representing necessities approximately agree with and uncertainty touching on records and the final results of records evaluation. In a 2012 report, IDC characterized the 4th V as value—highlighting that Huge Information applications have to be bring incremental esteem to businesses. Enormous Information Analytics is all almost preparing unstructured information from call logs, mobile-banking exchanges, online client produced substance such as web journal posts and tweets, online looks, and pictures which can be changed into important trade data utilizing computational procedures to divulge patterns and designs between datasets.

Another measurement of the Enormous Information definition includes innovation. Enormous Information isn't as it were huge and complex, but it requires inventive innovation to analyze and handle. In 2013, the National Begined of Standard and Innovation (NIST) Huge Information workgroup proposed the taking after definition of Enormous Information that emphasizes application of unused innovation; Enormous Information surpass the capacity or capability of current or ordinary strategies and frameworks, and empower novel approaches to wilderness questions already blocked off or unreasonable utilizing current or customary strategies. Commerce challenges rarely show up within the appearance of a idealize information issue, and indeed when information is copious, specialists have troubles to join it into their complex decision-making that includes trade esteem. As this study

comes about appear, the address is not whether enormous information can offer assistance trade, but how can commerce determine greatest comes about from enormous information.

## BIG DATA APPLICATIONS:

### Government :-

Huge information analytics has demonstrated to be exceptionally valuable within the government division. Enormous information investigation played an expansive part in Barack Obama's effective 2012 re-election campaign. Too most as of late, Enormous information examination was majorly capable for the BJP and its partners to win an exceedingly fruitful Indian Common Decision 2014. The Indian Government utilizes various procedures to find out how the Indian voters is reacting to government activity, as well as thoughts for approach increase.

### Social Media Analytics:-

The approach of social media has driven to an upheaval of enormous information. Different arrangements have been built in arrange to analyze social media action like IBM's Cognos Shopper Bits of knowledge, a point arrangement running on IBM's big insights Enormous Information stage, can make sense of the chatter. Social media can give profitable real-time experiences into how the showcase is reacting to items and campaigns. With the assistance of these experiences, the companies can alter their estimating, advancement, and campaign situations in like manner. Sometime recently utilizing the big information there ought to be a few preprocessing to be done on the enormous information in arrange to infer a few brilliantly and profitable comes about. Hence to know the shopper mentality the application of shrewdly choices inferred from huge information is vital.

### Extortion detection.

For businesses whose operations include any sort of claims or exchange preparing, extortion discovery is one of the foremost compelling Huge Information application cases. Verifiably, extortion location on the fly has demonstrated a slippery objective. In most cases, extortion is begun long after the reality, at which point the harm has been done and all that's left is to play down the hurt and alter arrangements to avoid it from happening once more. Huge Information stages that can analyze claims and exchanges in genuine time, distinguishing large-scale designs over numerous exchanges or identifying odd behavior from a person client, can alter the extortion discovery amusement.

**Marketing-**

Marketers have started to utilize facial acknowledgment program to memorize how well their publicizing succeeds or comes up short at invigorating intrigued in their items. A recent consider distributed within the Harvard Trade Survey looked at what sorts of notices compelled watchers to proceed observing and what turned watchers off. Among their devices was “a framework that investigations facial expressions to uncover what watchers are feeling.” The inquire about was outlined to find what sorts of advancements actuated watchers to share the advertisements with their social organize, making a distinction marketers make notices most likely to “go viral” and make strides deals.

**ADVANTAGE :-****Chance Administration.**

Enormous Information Analytics offers significant bits of knowledge on buyer behavior and advertise patterns that offer assistance businesses to evaluate their position and advance.

**Item Improvement And Advancements.**

Huge Information Analytics too makes a difference business to choose on the fabricating and gesturing for an item to go ahead within the showcase.

**Speedier and Superior Choice making.**

The global has ended up speedier and so has gotten to be the method of choice making. Huge Data Analytics has fueled the method of choice making.

**Move forward Client Encounter.**

When businesses can analyze client behavior so regularly, they can make strides the client involvement which as well on an individual level.

**DISADVANTAGE:-****Security Concerns**

One of the outstanding impediments of Enormous Information centers on developing concerns over security rights and security. Indeed huge trade organizations such as Yahoo and Facebook have figured in various occasions of information breach. With information security laws getting to be more rigid as exemplified by unused arrangements such as the Common Information Assurance Direction or

GDPR of the European Union, organizations looking for to create and keep up Enormous Information capabilities moreover got to contribute on conventions, forms, and begination pointed at ensuring information and relieving security dangers.

**Specialized Challenges and Requirements**

Big Information requires both preparing capabilities and specialized capability. In other words, for an organization to have the capacity to mine expansive volumes of information, they have to be contributed in data innovation begination composed of huge databases, processors with adequate computing control, and other IT capabilities. Moreover, they got to have a certain degree of competency that would permit them to address more particular issues such as information capacity and transportation, database administration, information gets to and sharing, quality and legitimacy affirmation, and adaptability of the begination, among others. Note that these challenges and necessities require significant speculation.

**Issue Over The Esteem of Huge Data**

Another issue with Enormous Information is the tirelessness of concerns over its real esteem for organizations. As specified, settling the challenges and reacting to the prerequisites of its execution include venture. Not all organizations can bear these costs. Huge organizations can effectively create Enormous Information capabilities, hence putting their littler partners at a drawback.

**Made Strides Retention**

One of the focal points of utilizing huge information analytics in HR is to distinguish when representatives take off and why they remain with the organization. Different apparatuses like representative fulfillment overview, execution appraisal, exit interviews, HR can anticipate and after that anticipate representative whittling down. For case, Xerox, Utilizing Huge information analytics was able to cut its steady loss rate by 20% at all its branches.

**FUTURE SCOPE AND IMPROVEMENT**

Nowadays, Enormous Information is impacting IT industry like few technologies have done some time recently. The gigantic information produced from sensor-enabled machines, portable gadgets, cloud computing, social media, satellites offer assistance distinctive organizations progress their choice making and take their commerce to another level.

## **The forecasts from the IDC Future Scope for ENORMOUS INFORMATION AND ANALYTICS ARE:**

1. Visual information disclosure devices will be developing 2.5 times faster than rest of the Commerce Insights (BI) showcase. By 2018, contributing in this enabler of end-user self-service will gotten to be a necessity for all enterprises.
2. Over the another five a long time investing on cloud-based Huge Data and analytics (BDA) arrangements will develop three times speedier than investing for on-premise arrangements. Hybrid on/off preface organizations will end up a requirement.
3. Deficiency of gifted staff will hold on. Within the U.S. alone there will be 181,000 probe gin analytics parts in 2018 and five times that numerous positions requiring related abilities in information administration and translation
4. Development in applications joining progressed and predictive analytics, counting machine learning, will accelerate in 2015. These apps will develop 65% quicker than apps without prescient usefulness.
5. 70% of huge organizations as of now buy outside data and 100% will do so by 2019. In parallel more organizations will start to monetize their information by offering them or giving value-added substance.

## **CONCLUSION:-**

Today's innovation scene is changing quick. Organizations of all shapes and sizes are being constrained to be data driven and to do more with less. Indeed in spite of the fact that enormous information advances are still in an incipient arrange, moderately talking, the effect of the 3V of enormous information, which presently is 5v'cannot be disregarded.

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# Management Systems in Dubai International Airport- A Case Study

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## ABSTRACT

Dubai international airport (DXB) is considered one of the busiest airports in the world. The rapid expansion of the Qatar, Etihad and Emirates Airways, the passenger traffic is surging through the areas. The management of the airport services becomes a critical part of the satisfactory experience for all the passengers. This paper focus on the main four management systems: security management, service quality management, noise control management and customer satisfaction system. The security system will include the checkpoint system and also the several other technologies ( Skytrax system) developed for protection from eminent threats. The service quality system looks upon the model for a satisfactory level of service quality in traffic control, basic necessities for customers and many more. The noise pollution through the aircraft engines has led to some major problems. This paper will discuss some of the techniques used by Dubai international airport for reducing the noise intensity. The customer satisfaction part will deal with the aspects of passenger behaviour towards the innovative technologies used in airport. This is a case study on management technique which will increase the impact of readiness, crisis awareness, crisis control, constant effort for customer happiness and sound journey, crisis response on management in Dubai International Airport (DXB).

**Keywords :** *service quality, customer satisfaction, management system.*

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## INTRODUCTION

Dubai International Airport was established in 1959 and is operated under the Department of Civil Aviation. Dubai's aviation industry provides over 300,000 jobs and produces over USD24 billion annually. The purpose of this paper is to discuss management system of Dubai International Airport. Management's system of airport strives constantly to identify the needs and expectations of passengers and plays a key role in satisfying them so they have pleasant and memorable experience.

A small mismanagement can bring a huge down fall in the aviation industries. Security system, service quality, customer satisfaction and noise control management has been discussed in this paper. The objective of this paper is to identify various methods of management styles of Dubai international airport, which can play a role model for other airport globally and implement its style of airport management.

## LITERATURE REVIEW

Elen Paraskevi Paraschi , Antonios Georgopoulos , Panagiotis Kaldis (2019).This paper proposed a

theoretical premises and gave a detail idea about the key performance areas (KPA's). The pyramidal structure produced dictates us the multidimensional airport business system with complex networks and linkages. It also reveals the analysis of employee result and leadership. [1]

Artur Kierzkowski , Tomasz Kisiel (2016).This article explained in brief about the security management system and its model applied in airports. There are two basic patterns used in security control process : single and double lane counters. Further the security counters are divided in different sectional areas. This management model was implemented in Wroclaw airport. This paper also discusses about the amount of time the passengers are present in the security management system.[2]

Samia Bouyakoub, Abdelkader Belkhir and Wassila Guebli (2017).This article grabs our attention to the smart airport concept. The rapid increase in traffic should be handled through evolution of airport management system. The smart management system aims to automate passenger processing for improving the service they provide.

It will make the passenger journey smooth by introducing new technologies.[3]

Sreenath Sukumaran , K. Sudhakar (2017). The cochin airport case study aims to analyze the management of the operational performance of the solar powered airport of cochin international airport limited (CIAL). the 12 MWp solar power plant helps in reducing the green house effects and reduces the carbon footprint leading to zero emission. The mandatory vast and free space areas around runways can be utilised for utility scale solar PV power plants. [4]

Aghahowa ENOMA , Stephen ALLEN and Anthony ENOMA (2009). the case study used enthnographic approach to research and also developed KPI for airport and security especially to focus on facilities management. This study developed a AAA model (Airport - Aircraft - Airport) and also a 3 stage approach of 3 Scottish airports. It was supported that as no airports are similar, hence, the airport safety and security model differ by size, mode of operation and passenger type, etc. [5]

Ludovica Adacher a , Marta Flamini b , Manuele Guaita a , Elpidio Romano b (2017). This paper main objective is to provide an optimization model which includes passenger flow layout, number of check-in and security checkpoints in order to minimize the cost function. This optimization model has also developed a simulation module which reproduces real scenario of the airport passenger behaviour and also the operations and then calculates the value of the cost function. [6]

Stef Janssen , Alexei Sharpanskykh, Richard Curran (2019). This case study analyzes security, efficiency, and the relationships between them through agent based methodology which combines agent based security risk assessment and agent based efficiency estimation. This methodology is also applied for Improvised Explosive Device (IED) attacks, different efficiency performance indicators like queuing time for passengers, etc. They figured out that reducing queue time of passengers will help in reducing security risks and the impact of IED. [7]

Jacek Skorupski, Piotr Uchroński (2018). This study presents methodology using inference system which checks the overall effectiveness of prohibited items during screening of passengers and baggage. The results say, screening system efficiency can be leveled up from medium to high by upgrading screening devices of baggage checkpoints. Also increasing frequency of training sessions will help. During the terrorist attacks 20 percent passengers' control will be manually and 30 percent metal

detector sensitivity will be observed for leveling up at high level detection. [8]

Hongwei Jiang, Tianhui Liang (2019). the study purpose was to investigate airport service quality at two airports (Pudong and Hongqiao). The results reveal that there are significant differences between gender, nationality and main travel purpose groups: women tend to assign significantly higher scores than men; domestic travelers reported high satisfaction than international ones; and passengers travelling for holiday and academic-related purposes reported higher satisfaction than those travelling for business. [9]

Mahmoud Awad, Ayman Alzaatreh, Alia AlMutawa, Hind Al Ghumlasi and Mariam Almarzooqi (2019).This paper represents factors that influence Airport Service Quality (ASQ) and evaluates the Dubai international airport (DXB) terminal 3 travelers. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) of the service quality of DXB revealed that travelers are satisfied mainly on the check-in, assurance and empathy, and availability.[10]

## SECURITY SYSTEM

Safety and security are the major requirement in a transport system such as air transport. Dubai has one of the biggest and busiest aviation industries. Tourism is an important engine of Dubai's economy.

Managing such, a complex airport system is challenging for safeguarding the safety system. Several crises occur with a small mistake. Crises management becomes difficult when there are number of information sources, especially in world of high technologies where the information of any crises spreads quickly as it happens. Crises management and protection of information spreading is the huge concern for the airport managers. [11]

Technology has both positive and negative effect on managing the safety of airport and passengers. One such recent technology is Unmanned Ariel Vehicle called as Drones. The incursion of drones into airports has resulted three shutdowns in2016 Flying drones near airport is prohibited by DCAA. On 22 September 2019, Dubai airport was shut- down for 15 minutes due to suspected drone activities near the airport. The flights were made to land at nearby airports. Similarly, in the month of February 2019, the airport was shut-down due to drone activities. [12]



To counter the problems of drone intervention, Dubai Civil Aviation Authority (DCAA) has implemented a system called as Skytrax. Skytrax monitors domestically registered drones nearby airport. It has a fixed tracker weighing 58 grams (2 ounces), tracks ever licensed drone of emirates. DCAA monitors 24 hours a day, if a drone strays closer to no fly zone like Dubai International Airport, the system sends test alerts to DCAA officials and drone operators to change the course. It is observed that, after implementation of Skytrax, there has been no incidents recorded.[13]

Drones are much cost effective as compared to any satellite system, but using drones for security purposes at airport would lead to several accidents and drones are usually disturbing for the passengers at airports. Despite the increased attention is now paid in airports on risk of drones, the existing solutions are still not perfect solution.

DNATA is the air service provider has taken several measures to ensure safety of airport staff and passengers. It has run several health wellness programs during co-vid, such as disinfectant program, protective measures and further aircraft cleaning services. In addition, the data has supplied employees with PPE kits, face masks and sanitizers. Check-in desks installed with protective barriers and the airport system is made such that it follows all the social distancing criteria.[14]

#### **Communication system for safety purpose:**

The rescue and fire safety services at Dubai International Airport deals with any incidents and emergency occurring at airport, it uses TETRA radio communication system to communicate with airport, pilots, air traffic, ground-crew and with other fire stations in Dubai. Using TETRA, it is easier to transfer message through broadcasting in team members' phone at once. They also use images and videos to understand the situation and pass it on to all the team at once.[15]

**Surveillance System:** Dubai international airport has over 65,00 cameras of Omnicast System. This system has the ability to maintain high level of system availability. There is a multicast system on each terminal, which helps to minimize network traffic allowing multiple users to access same live video source. Omnicast has also enabled integrate with third party access control system such as denied card holders,

forced door opening, all these are monitored by the surveillance team. [16]

Dubai International airport was built with several special facilities and services that makes it one of the best in the world. The management of Dubai international airport is considered as a role model that could influence other airports globally. [17]

Services provided in Dubai International Airport:

**Health Care:** AMC (Airport Medical Center is a health care unit provided by the Dubai Health Authority, established in 1971. It provides health care to all the staff, passengers and crew. AMC provides state-of-the-art medical service in full basic concept. AMC contains certified, well-trained and experienced staff that provides urgent access to health facilities. It conducts various medical fitness programs for the staff and health awareness for the travelers. [18]

**Special needs services:** The airport aims to provide satisfying services to every traveler including the people who need special services. The airport has desks designed for people with special needs and electric carts are made available for their transport within the airport. All boarding gates departure, check-in desks and counters, parking, drinking fountains are wheelchair accessible. Most of the doors in airport automatically operated. [19]

**Private airport transfers:** The airport provides transport service through pre-booking of the vehicle. This service removes the stress of finding local taxis or buses. Dubai Metro directly links with the airport providing easy and convenient service.[20]

**Passenger Services:** There are four online services available in Dubai International Airport: Al-Majlis: Provides passenger with special immigration, baggage clearance, check-in facilities; Airport Pass Management System (APMS), Executive Flight Services (EFS), and Dubai International Hotel (DIH). [21]

Dubai Duty Free is the biggest duty free operation worldwide, has variety of products for travelers wishing for shopping. Dubai international airport has a smoking free environment, it has ventilated - smoking rooms. There are separate prayers rooms for women and men. In all the terminals have variety of food outlets, have a wide choice of continental and fast food restaurants. There is also a play zone for children and mother's lounge between gate 12 and 14 also G-Force Health Club with swimming pool, massage and gym facilities. [22]

**Baggage:** Dubai international airport has a well-maintained baggage system. Number of trolleys and conveyer belts run during number of flights arriving at a time. Porter services available with luggage shrink wrapped if needed. The signs are in Arabic and English language.

The airport has lost and found office situated underground level of terminal 1 departures. It is controlled by Dubai Police 24\*7.

### SERVICE QUALITY

Service quality is defined as amount of costumer's satisfaction. The quality of the service is such that it fulfills their expectations. The service quality is designed in such a way that it is less time consuming, easily accessible, cost efficient and provide comfort to the passengers. The focus should be on the quality of the service, if the number of services is big and quality is less, then customer satisfaction is hard to achieve.

The quality of service is evaluated using a procedure known as SERVQUAL. It contains six dimensions for airline services:

**Reliability-** It is the ability to provide the service as promised without any failure or delay. It is operationalized using four items- check-in process efficiency, accurate flight schedule, reaching destination at expected time, and managing missing luggage.

**Responsiveness** - It is the ability to handle queries of passengers and delivering the announcements or special notices accurately.

**Assurance-** it is the ability of the employees to gain trust and confidence of travelers.

**Tangibility-** It is the ability of appearance of the services or physical equipment or communication material. It depends on cleanliness, durability, installation etc.

**Safety and security-** It is measured using two factors: personal safety and luggage handling.

**Communication-** It includes transfer of necessary information to the travelers by the cabin crew, pilot and employees in different languages. [23]

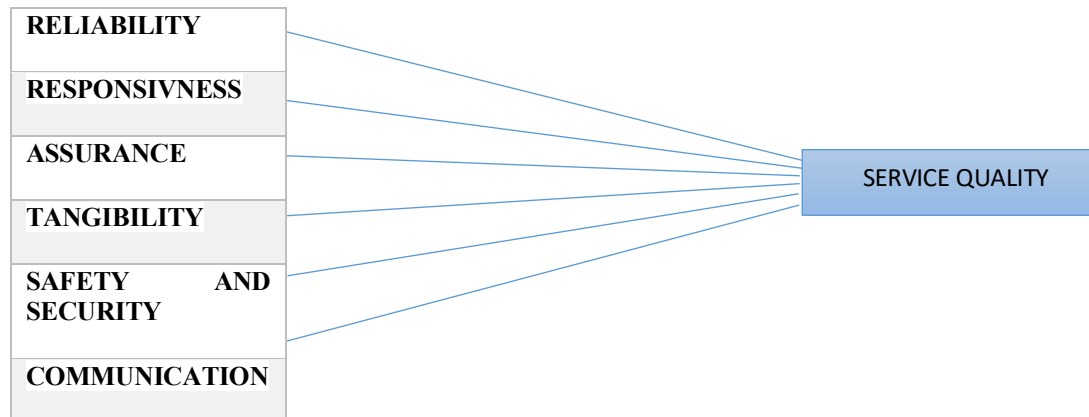


Fig 1. Parameters of service quality at Airport.

## AIRCRAFT NOISE AND EFFECT

When the pressure waves generated due to the movement of different aircraft engines (propeller engine and jet engine) are strong enough, they create a sensation of hearing. The noise created by aircraft can be due to several sources such as

1. Noise due to aerodynamics
2. Mechanical noise due to engine and other parts
3. Aircraft system noise

The airflow around the fuselage and control surfaces of the aircraft ( wings, rudder, elevator ) is termed as the aerodynamic noise. This aerodynamic noise increases as the speed of the aircraft increases at low altitudes. Low flying aircraft create a large amount of aerodynamic noise which should be controlled in the residential areas. The shape of nose section, aircraft's windshield or canopy area plays the lead role while noise production. This high intensity noise can have adverse effects on the health of many.

The next is the engine noise which is of more intensity in the propeller engine than that of the jet engine. Every aircraft system like cabin pressurization, cockpit, etc. make a unique level of noise which can be found in both civilian and military aircraft. Auxiliary Power Unit (APU) (a unit to generate the electrical power at the ground for starting the main engine) is termed as of the noisiest jet aircraft system. The noise generated through APU can reach up to 113 dBA [24]

Civil aviation industry is considered as one of the main environmental pollution creators and the one who is leading human life to many environmental problems. Hence, International Civil Aviation Organization (ICAO) consisting of more than 190

memberships and works with UN body, have noted the major 3 environmental goals:

- ❖ Reduce the affected count of people due to the noise impact of aircraft.
- ❖ Limit the aviation emissions which impacts adversely on the local air quality
- ❖ Limit the emission of the environmental greenhouse gas in the global climate.[25]

### Effects of noise on human body:

1. **Blood pressure** - a prolonged period of exposure of the aircraft noise can give the signs of permanent effects of hypertension, cardiovascular and heart disease which occur due to exposure of high sound level

2. **Mental illness** - it is not been proved yet that noise can cause mental illness but it is seen that it will accelerate the development of latent mental disorder.

3. **Annoyance** - it is the feeling of impatience and mild anger.

4. **Sleep interference** - The primary effects of aircraft noise is difficulty in falling asleep; awakenings and alterations of sleep stages or depth, increased blood pressure, heart rate and finger pulse amplitude; vasoconstriction; changes in respiration; cardiac arrhythmia; and increased body movements, etc.

5. **Effects on performance** - the tasks which includes the auditory signal that are carried out by humans can be impacted by the sufficient intensity aircraft noise. Yet, it is difficult to understand how these different intensity level of noise interrupts the tasks performed.

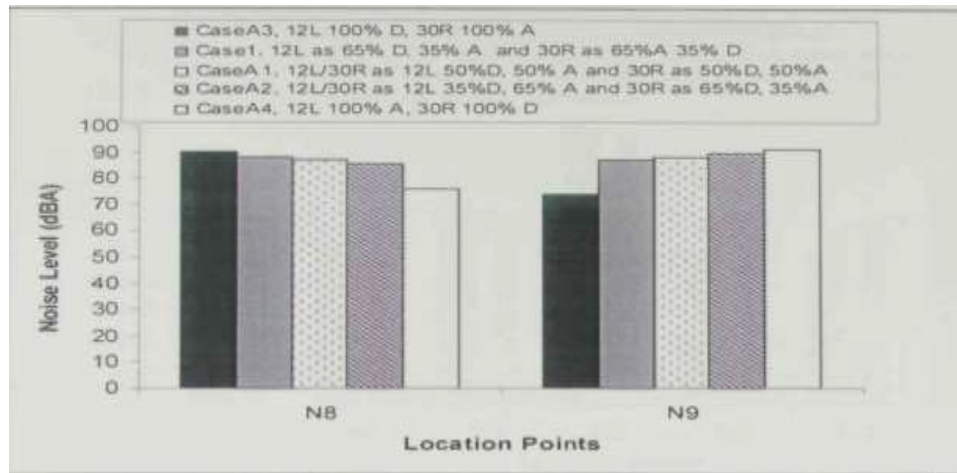
**Noise level at airport and the vicinity:**

Figure 2: Impact of different percentage of departure and arrival on the noise level at the runway end points [26]

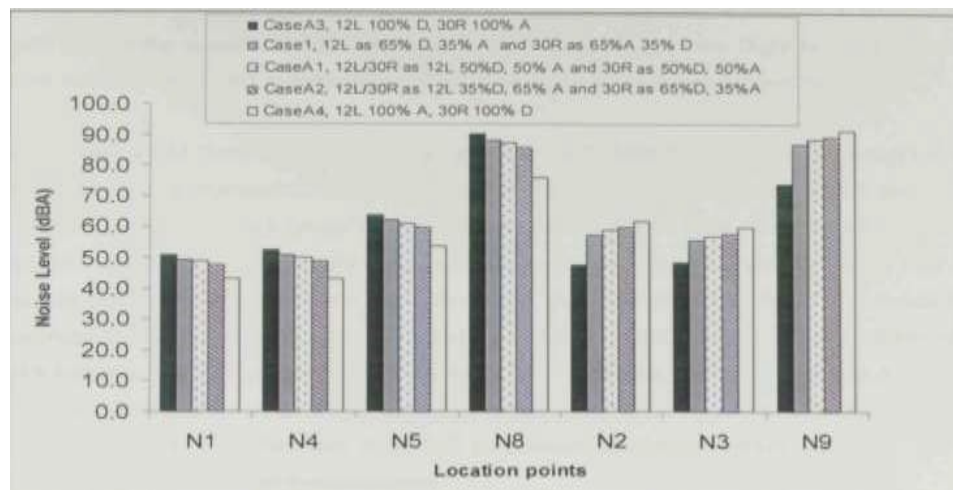


Figure 3 : Impact of different percentage of departure and arrival on the noise level at community locations in the vicinity of DIA [26]

Fig 2 and 3 present the noise data which were measured in the vicinity of DIA at the 7 community locations (N1 (AI Garhoud)-N7 (AI Hamrriya) of Figure 3 .23). The tables present two main noise matrices used in this study;  $L_{Aeq}$  and  $L_{Amax}$ . The tables show that the measured noise level varies at some locations during day and night time. However, at N1 (AI Garhoud) the difference in the noise level between day and night time was small (1 dBA) for  $L_{Aeq}$  but high (8 dBA) for  $L_{Amax}$ . The number of passing cars near the measurement location was 19-25 during the normal flight hours and 102-198 during the busy flight hours with the higher number recorded during night time. This indicates a high interference of noise due to road traffic at this location. The same also applies at the N5 (AI Khabaisi) location during day time.

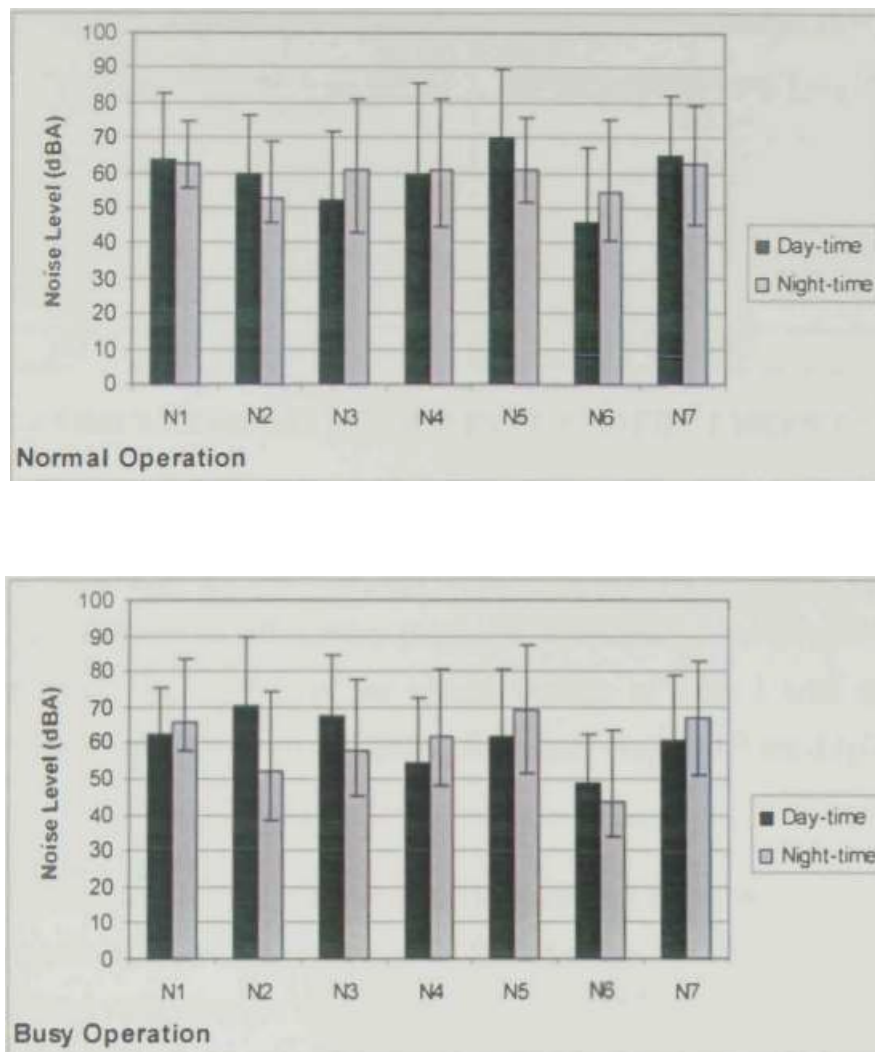


Figure 4: Noise level at normal (top) and busy (bottom) operations at DIA, 21<sup>st</sup> Jan 2008 [26]

Figure 4 shows variations in the measured noise level between day and night times at the community locations. The y-bar represents the range of noise levels during the measurement period at each location. It is noticed that there are variations in the noise level between normal and busy operation at certain locations. For example, the noise level at N5 (AI Khabaisi) is higher in the night time than in the day time during the busy operation duration, while the opposite is true at N2 (AI Rashidiya) and N3 (Mirdif) locations.

## CONCLUSION

The main aim of this research paper is to acknowledge the different management systems of Dubai International Airport. The Dubai International Airport have been growing traffic by cannibalizing the traditional traffic flows between the primary cities of Asia and Europe and by connecting secondary cities which did not have many long-haul services. Gulf based airlines have

forecast that traffic will surge through their hubs over the next few decades and, in anticipation, they have invested heavily by procuring large volumes of aircraft. One of the primary mechanisms by which the Gulf airlines will grow traffic and fill the capacity at the airports is by developing their hub and spoke network. This will make the management system suffer due to extreme crowded conditions. The security and noise pollution are the major management system which we need to make strong enough.

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# Occurrence Rate of Super-Earths Around Binary Star Systems

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## ABSTRACT

The Planetary Habitability Laboratory at the University of Puerto Rico cataloged 60 exoplanets as habitable, 36 of which are Super-Earths or Mini-Neptunes. According to the Kepler survey, the occurrence rate of super-Earths around Sun-like stars is approximately 30%. This rate is significantly higher in the vicinity of less massive M stars. In addition, binary or higher-order multiple systems are detected in 70% of massive early-type stars, 50%–60% of solar-type stars, and 30%–40% of M-stars. Chemical composition of the exoplanet along with its distance from the stars enables us to draw conclusions about its habitability. Our research seeks to conduct a comprehensive analysis of the occurrence rate of Super-Earths around distinct binary star systems, as well as deduce other correlations with their host stars, in order to learn more about their nature and habitability.

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## INTRODUCTION

Following the discovery of the first exoplanet in 1988 [1] new technologies and surveys have uncovered numerous more exoplanets. Within these discovered worlds are two categories of planets that do not exist in our solar system, Hot Jupiters, a type of Gas Giant, and Super-Earths. Jupiter-type planets, on the other hand, are very uncommon, with only around 10% of stars housing gas giants [2,3]. A gas giant is a massive planet that is largely made up of helium and/or hydrogen. These planets, like Jupiter and Saturn in our solar system, contain swirling gases atop a solid core rather than hard surfaces. Exoplanets that are gas giants can be considerably larger than Jupiter and far closer to their stars, which is unlike anything witnessed in our solar system [4]. Hot Jupiters are gas giant planets with orbits that last less than ten days. Because of their brief period, Hot Jupiters are indeed very close to their host stars, typically less than 0.1 AU, or one-tenth the distance between the Earth and the Sun [5]. Neptune-like exoplanets are similar in size to our solar system's Neptune or Uranus. Neptunian planets' atmospheres are generally dominated by hydrogen and helium, with cores of rock and heavy metals [6]. Super-Earths are a type of planet that is unlike any other in our solar system. They are larger than Earth but lighter than ice giants like Neptune and Uranus, and they can be formed of gas, rock, or a mix of the two. They range in size from twice the size of Earth to ten times its mass [7]. Statistical models, on the other hand, have found that 33–50% of all stars host super-Earths within a 100-day

period [8]. As a result, super-Earths are the most common type of planet [9]. Terrestrial, or rocky, planets in our solar system include Earth, Mars, Mercury, and Venus. Terrestrial planets are those planets that lie between half the size of Earth to a radius that is twice as large as Earth's. Others may be much smaller. Exoplanets twice the size of Earth and greater may also be rocky, although they are referred to as super-Earths [10]. While a handful of binary star systems have been discovered to have exoplanets, those systems are relatively uncommon when compared to single star systems. According to Kepler satellite telescope observations, most single stars of the same kind as the Sun contain many planets, but just one-third of binary stars do, making investigating exoplanets in binary star systems much more intriguing. The term binary was first used for star systems by Sir William Herschel in 1802. He hypothesized that binary stars are held together by their mutual gravitational attraction to one another and that any two stars that are mutually coupled constitute the binary sidereal system [11]. The vast majority of solar-type stars [12] are found in binary systems. In reality, up to 70% of all star systems in our galaxy may not be single-star systems but multi-star systems [13], with Binary Stars being a major component of them. Binary stars, according to the currently accepted definition, are stars that revolve around a common center of mass [14]. The brighter star in the system is referred to as the primary component, while the other is referred to as the secondary component. Planetary orbits around a binary star system can be divided into two main categories: (1) S-Type orbits, which are



associated with planets that orbit one of the binary star system's components while the other component acts as a perturber, and (2) P-Type orbits, which are related to planets that orbit around both components of the binary star system [15]. The planetary formation and its stages after the huge explosion of big bang and completely accepting the nebular hypothesis. This hypothesis is mostly accepted explanation for how the sun and the planets and solar system may have formed. The mostly accepted was “The Big Bang”, that is the universe started out as a hot and dry mass [45].

## METHODOLOGY

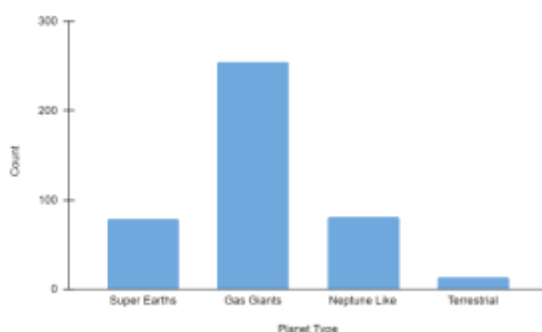
We acquired data from the NASA Exoplanet Archive [16], NASA Exoplanet Catalog [17], The Extrasolar Planets Encyclopaedia [18], Catalogue of Exoplanets in Binary Star Systems [19], Open Exoplanet Catalogue [20], and ExoKyoto [21]. To avoid mistakes, data from these databases were collected and cross-matched. We gathered all available information on 315 Binary Star Systems with 428 exoplanets from these databases.

Our primary objective is to determine the rate of occurrence of Super-Earths in Binary Star Systems. In addition, we graphically evaluate data on exoplanets in Binary Star Systems in general and draw crucial findings and inferences, with an emphasis on Super-Earths. Our paper is divided into three primary sections. The first part examines various occurrence rates, such as Super Earth occurrence rates in Binary

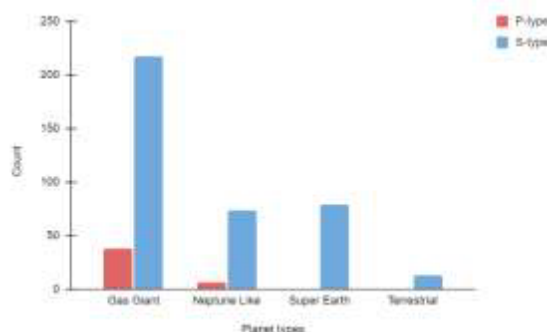
Star Systems and observations on eccentricity, orbital radius, and time-period. In the second section, we present graphs linked to the stellar type of the host star in Binary Star Systems, and in the third section, we look at the relationships between exoplanets and their habitability in Binary Star Systems.

## OCCURRENCE RATES

A number of initiatives, including radial velocity programs [22], transit discoveries [23], and direct imaging surveys [24, 25], have searched for planets in and around Binary Stars, resulting in the discovery of a number of planets in both S-type and P-type orbit. It has been discovered earlier that more massive host stars are more frequently found in binary configuration, and that planet-containing stars in multiple systems are typically seen to be the most massive component of stellar binaries. According to studies by Bonavita and Desidera, Giant planets were solely found to be populating multiple star systems [26]. About 70% of massive early-type stars [27, 28] and 50%–60% of solar-type stars [29, 30] have been detected in Binary or Multiple Star Systems. Approximately 44% of FGK stars have been found in multiple systems, 33% in binary systems, and 11% in higher-order structures [30]. As a result, about half of prospective planet hosts are in multiple-star systems, implying that the percentage of large planets orbiting a star of a Binary Star System is unlikely to be insignificant [31].

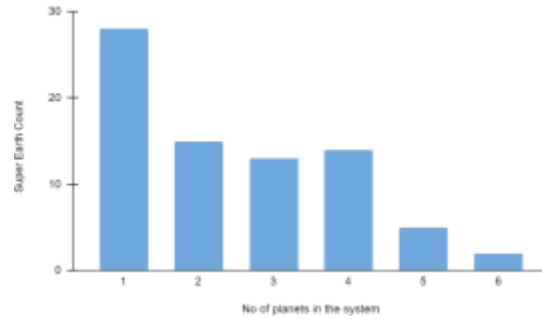


**FIGURE 1a.** Number of Planets belonging to each type



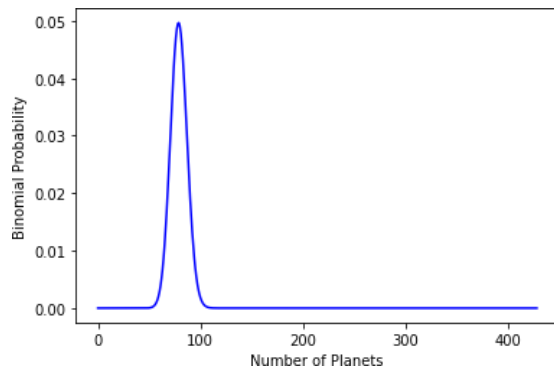
**FIGURE 1b.** Number of Planets belonging to each type with orbit type

Binary Star Systems with one exoplanet have the greatest number of exoplanets, which is much more than the number of exoplanets in systems with more than one exoplanet, which might be owing to the fact that exoplanets become more difficult to detect the farther they are from their host star. The proportion of Gas Giants in systems with one exoplanet is ~75.8%, which is much greater than the proportion of any other planet type.

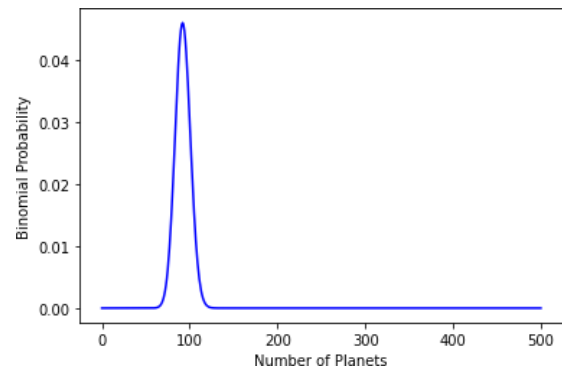


**FIGURE 5.** Number of Super Earths versus the number of exoplanets in a Binary Star System

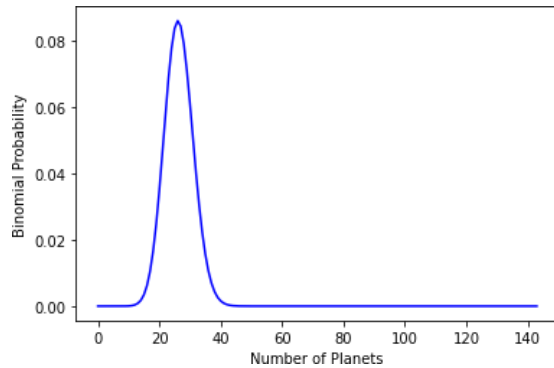
Binary Star Systems with one exoplanet has the greatest number of Super-Earths. The fraction of Super-Earths remains nearly constant in Binary Star Systems with two, three, and four exoplanets, and it reduces drastically in systems with more than four exoplanets.



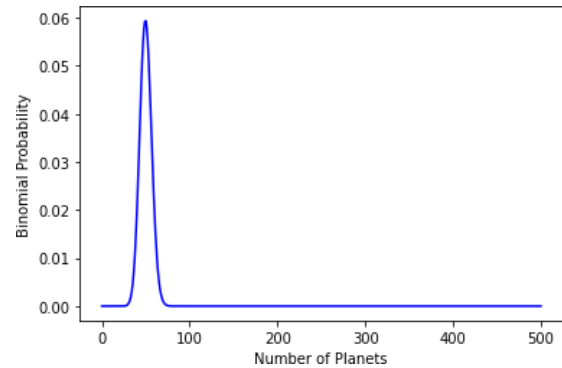
**FIGURE 6a.** Probability of Super-Earths with 18.4579% occurrence rate among 428 planets



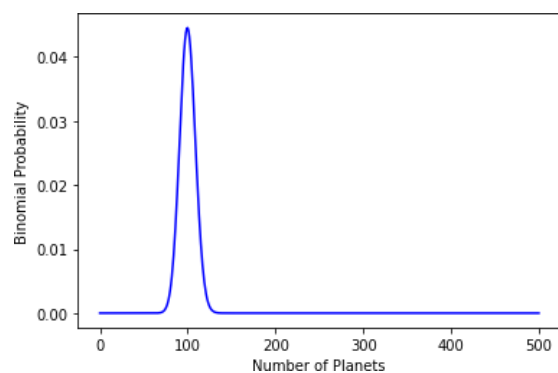
**FIGURE 6c.** Probability of Super-Earths with 18.4579% occurrence rate among 500 planets



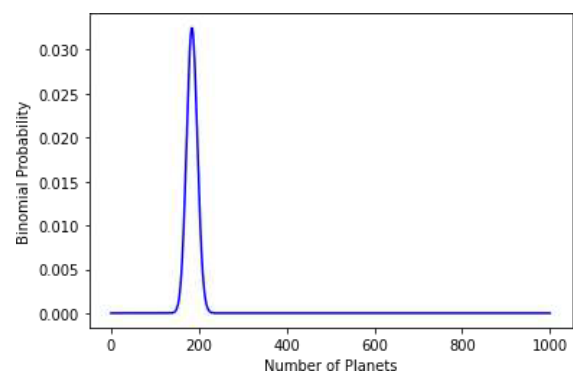
**FIGURE 6b.** Probability of Super-Earths with 18.4579% occurrence rate among 143 planets.



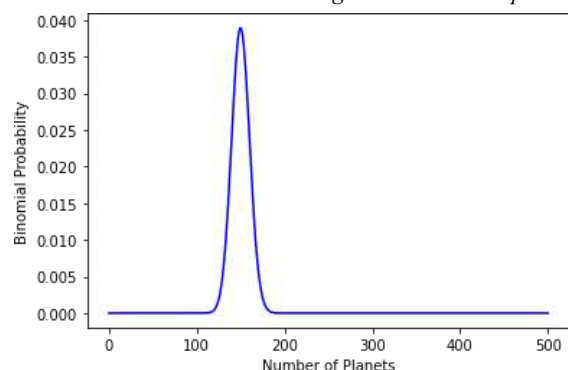
**FIGURE 6d.** Probability of Super-Earths with 10% occurrence rate among 500 planets



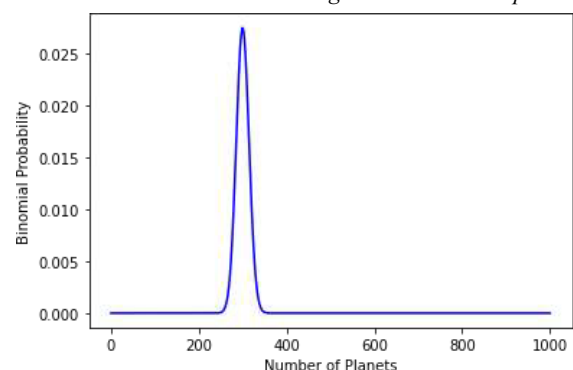
**FIGURE 6e.** Probability of Super-Earths with 20% occurrence rate among 500 planets



**FIGURE 6g.** Probability of Super-Earths with 18.4579% occurrence rate among 1000 planets

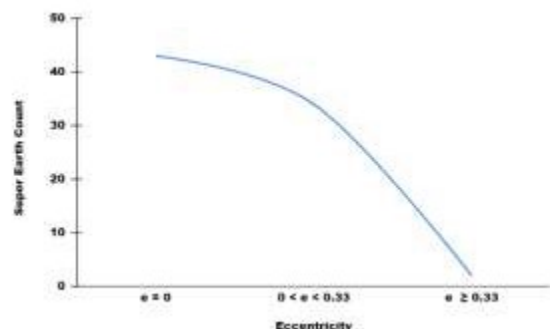


**FIGURE 6f.** Probability of Super-Earths with 30% occurrence rate among 500 planets

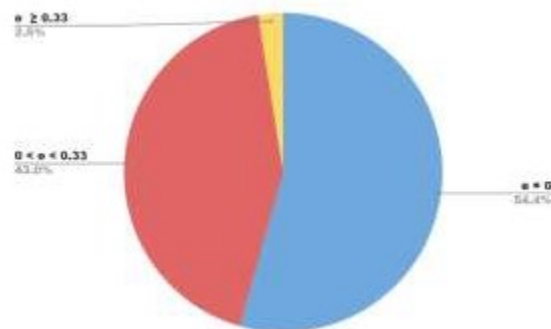


**FIGURE 6h.** Probability of Super-Earths with 30% occurrence rate among 1000 planets

We attempted to provide a range of probabilities for the occurrence rate of Super-Earths in Binary Star Systems from FIGURE 6a to FIGURE 6h. The occurrence rate of Super-Earths is 18.4579% based on data from TABLE I., which comprises 428 exoplanets. If we take an occurrence rate of 18.4579 percent, the probability of 79 Super-Earths in 428 exoplanets in Binary Star Systems is 0.049651049893918296. (FIGURE 6a.). Astronomers had discovered 143 planets around Binary Stars as of July 2019. When the number of Super-Earths in that system is 26, we discover that the maximum probability of occurrence of Super-Earths in that sample is 0.0858956524391321 when the occurrence rate is the same (FIGURE 6b.) From FIGURE 6c through FIGURE 6f, we attempted to model future possibilities by assuming a total of 500 exoplanets in Binary Star Systems. Using the same occurrence rate, we find a maximum probability of 0.04597470731947923 when the number of Super-Earths is 92 in FIGURE 6c. In FIGURES 6d, 6e, and 6f, we investigate occurrence rates of 10%, 20%, and 30%, respectively, and find that the probability of occurrence is highest (0.05937067027042826) when the occurrence rate is 10% and decreases as the occurrence rate increases. We modeled the situation when there are 1000 exoplanets in FIGURES 6g and 6h. If the occurrence rate is 18.4579%, the number of Super-Earths with a maximum probability of 0.032506216914481786 is projected to be 184. The greatest probability is 0.02752100382127235 if the incidence rate is 30%. In FIGURES 6f. and 6h., we used a 30% occurrence rate since, as of 2020, 30% of the 4000 exoplanets found by the Kepler Space Telescope are Super-Earths [36].

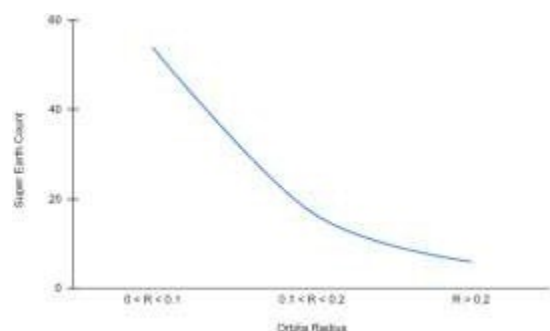


**FIGURE 7a.** Number of Super Earths versus eccentricity

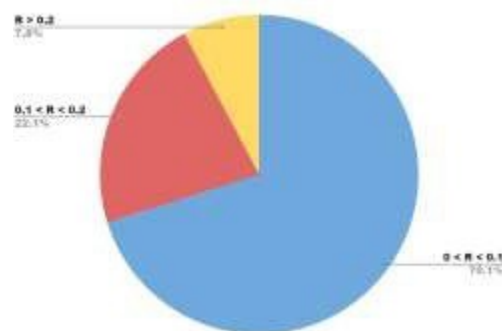


**FIGURE 7b.** Number of Super Earths versus eccentricity

Approximately 54.4% of Super-Earths observed in binary star systems have an orbital eccentricity of zero, indicating that their orbits are totally circular. A circular orbit implies that the planet will have more or less constant climatic conditions throughout the year because the planet is equidistant from its star. It should be emphasized that this is an unusual event, as most exoplanets rotate in an elliptical orbit around their star. In the binary system, the eccentricity range of 43.0% of the Super-Earth populations is 0 - 0.33. Only 2.5% of Super-Earths have eccentricities larger than 0.33. As a result, only a very tiny fraction of Super-Earths has elongated orbits.

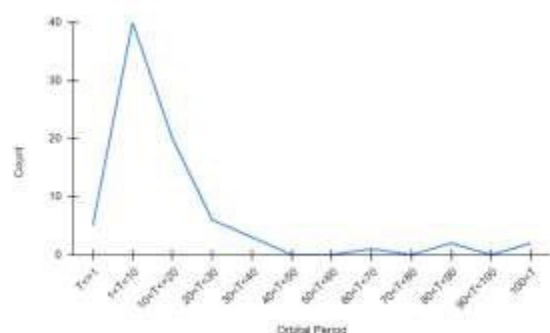


**FIGURE 8a.** Number of Super Earths versus orbital radius (in AU)

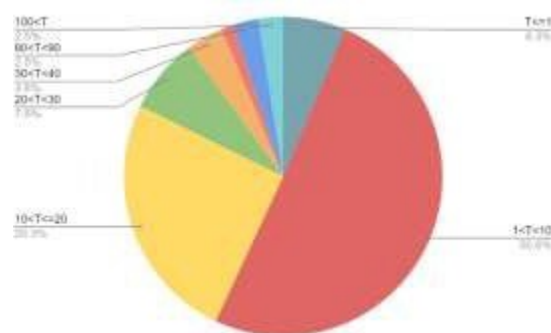


**FIGURE 8b.** Number of Super Earths versus orbital radius (in AU)

Almost ~70.1% of all the Super-Earths found in Binary Star Systems are observed to have an orbital radius of 0 - 0.1 AU.



**FIGURE 9a.** Number of Super Earths versus orbital period (in days)



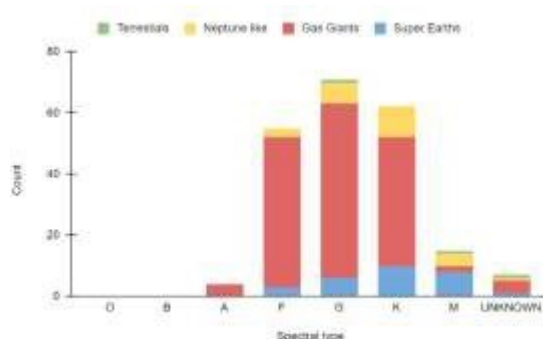
**FIGURE 9b.** Number of Super Earths versus orbital period (in days)

A major proportion of Super-Earths (~50.6%) have orbital periods ranging from one to ten days. Around 25.3164% of Super-Earths have orbital periods ranging from ten to twenty days, and the frequency of Super-Earths with longer orbital periods reduces significantly after that.

Considering the Figures from FIGURE 7a. to FIGURE 9b., it is possible to conclude that most Super-Earths in Binary Star Systems revolve in circular or near-circular orbits relatively close to their Host Star. Because they are near to their Host Star, there are fewer gravitational disturbances, which may explain why most Super-Earths in Binary Star Systems have circular orbits.

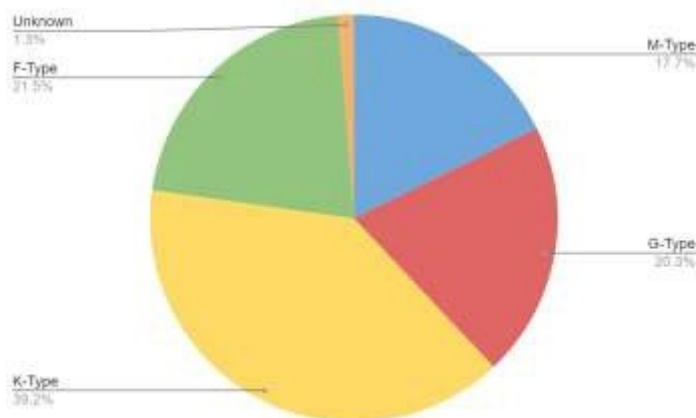
## BINARY STELLAR TYPES AND PLANETS

Angelo Secchi, an Italian astronomer, identified four major spectral types of stars in the 1860s. During the creation of the Henry Draper Catalogue of stars at Harvard College Observatory in the 1880s, more kinds were differentiated and were assigned by letter in alphabetical sequence based on the intensity of their hydrogen spectral lines. The kinds were reorganized in a nonalphabetical sequence as the investigation continued to put them in order by surface temperature. The stellar kinds are listed in the following order, from hot to cool; O, B, A, F, G, K, M [37].



**FIGURE 10.** Number of exoplanets with host star of each spectral type with planet type

The majority of Binary Star Systems with only one exoplanet have Spectral Type G, which is consistent with the findings of Quintana [12]. According to NASA, the proportion of K-type stars is 13% [38], yet according to FIGURE 10, the percentage of K-type Host stars of exoplanets in Binary Star Systems with just one exoplanet is 28.9719%. While Gas Giants are found to be the sole residents in the vicinity of A spectral type Host Stars, they are substantially less prominent in the vicinity of M-type stars. M-type stars, as seen in FIGURE 10., are mostly populated by Super-Earths. It has been shown that F-type stars have the same number of Super-Earths and Neptune-like planets. A similar phenomenon is observed with K-type stars.



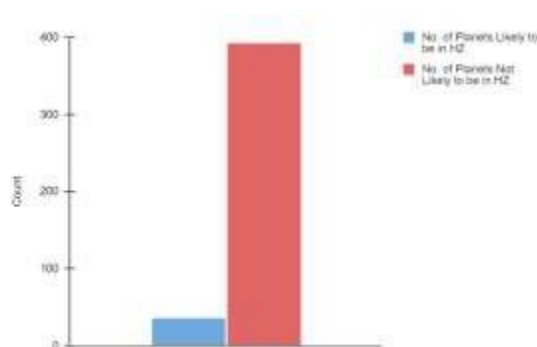
**FIGURE 11.** Number of Super-Earths with host star of each spectral type

According to FIGURE 11, most Super-Earths in Binary Star Systems are most noticeably found around K-type Host

Stars. K-type stars can be found on the main sequence for an extremely long time (18 to 34 billion years, compared to 10 billion for G-type stars like the Sun). [39] They, like M-type stars, have a relatively tiny mass, resulting in an extraordinarily long lifespan with plenty of time to form orbiting Earth-like planets [40], which might explain why the greatest number of Super-Earths have been discovered near K-type stars.

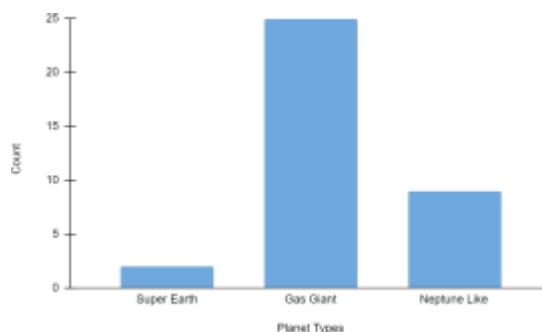
## HABITABILITY OF PLANETS IN BINARY STAR SYSTEMS

In general, a circumstellar habitable zone is considered to be the region where the presence of liquid water on the planet's surface is conceivable. [41]. Prior studies on habitability have mainly concentrated on Binary Star Systems which primarily consist of stars of spectral type F, G, K, and M because their lifetimes are long enough to allow the development of life on the planets, or their satellites present in the habitable zone [42].



**FIGURE 12.** Number of planets likely or not likely to be in the habitable zone

Only ~8.41% of the planets in Binary Star Systems were found fully or partially in the habitable zone.



**FIGURE 13.** Number of exoplanets in the habitable zone according to planet type

Despite popular belief that Super-Earths are strong candidates for habitable exoplanets, the graph shows that relatively few Super-Earths are in the habitable zone. Despite the fact that Super-Earths and Neptune-like exoplanets have almost identical occurrence rates in Binary Star Systems (18.4579% and 18.9252%, respectively), the number of Neptune-like planets inhabiting habitable zones is significantly larger than that of Super-Earths. It has been discovered that the transition of a Super-Earth from a rocky planet to a gaseous one occurs at just twice the mass of the Earth. If they are twice the mass of Earth and receive the same amount of energy from their star, they will be

able to hold onto a significant hydrogen-and-helium envelope of gas, creating atmospheric pressure hundreds or even thousands of times greater than what we have on Earth's surface [43]. Gas giants have been discovered in every zone of their planetary systems, and according to FIGURE 13, a significant percentage of them are also located in the habitable zone. Gas giants in the habitable zone can have habitable satellites with rocky surfaces, even if they cannot support Earth-like life since they lack a solid surface and are largely made up of hydrogen and helium, as opposed to carbon-based life forms on Earth. None of the Terrestrial planets in Binary Star Systems were

discovered to be in the habitable zone of their host star, which is consistent with the findings of Menou and Tabachnik [44], who investigated the influences of other planets on Terrestrial planets and concluded that a substantial chunk of the identified exoplanetary systems is unable to harbor habitable terrestrial planets.

## DISCUSSION AND CONCLUSIONS

The primary objective of our investigation was to find the occurrence rate of Super-Earths around binary star systems. Our investigation and observations are based on 315 Binary Star Systems containing 428 planets (TABLE I.). In our initial studies, we find that 18.457% of the total exoplanets around Binary Star Systems are Super-Earths, although 30% of the 4000 exoplanets discovered by Kepler till 2020 were Super-Earths. Interestingly, all the Super-Earths that have been found, are orbiting around one of the stars of the binary system, which further signifies that none of the Super-Earths has a P-type orbit. In our further investigations, we include various parameters like eccentricity, orbital radius, orbital time-period, stellar type, and habitable zone to determine the occurrence rate of Super-Earths.

In our study based on the eccentricity of Super-Earths, we found that around 54.4% of the Super-Earths have eccentricity equal to '0' which signifies that orbit of these Super-Earths are circular. 43% of the orbits of Super-Earths are found to have significant elliptical orbits with their eccentricities not exceeding the value of 0.33. Only 2.5% of Super-Earths are found to have highly elliptical orbits with eccentricities of more than 0.33.

From our studies based on orbital distances, we found that most of the Super-Earths (70.1%) are present in regions having a distance less than 0.1 AU from their host stars. A significant number of Super-Earths (22.1%) are found to be present in regions having a distance between 0.1 AU & 0.2 AU from their host stars. Only 7.8% of Super-Earths are found to be in the region having a distance more than 0.2 AU from their host stars.

K-type host stars are found to have the maximum number of Super-Earths around them (39.2%). Also, F-type, G-type, & M-type host stars are found to have 21.5%, 20.3% & 17.7% of the Super-Earths around them respectively. More than half (50.6%) of the Super-Earths are found to have an orbiting time period between 1 day to 10 days which suggests that most Super-Earths form and orbit very close to their host stars. This has a profound effect on their habitability. Through our investigation based on habitability, we found that most of the Super-Earths are unlikely to be present in the habitable zone around their host stars.

Only 2.531% of the Super-Earths are found to be present inside the habitable zone of their respective host stars. However, 8.411% of the total planets are found to be inside the habitable zone which is 3.323 times more than that of Super-Earths.

After investigating different parameters regarding Super-Earth, we simulate future conditions with the occurrence rates of Super-Earths around the binary star system and found that with an occurrence rate of 10%, we get the maximum probability for the occurrence of Super-Earths, around 0.05937067027042826 when the number of exoplanets is 500. We also found that the probability may decrease with the increase in the rate of occurrence.

## ACKNOWLEDGMENTS

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## AUTHORS' CONTRIBUTIONS

Sanjana Gupta, Ishan Kaushal and S. Majal Shiny have contributed equally to the paper. Rishab Gupta has supervised and guided the team.

## CONFLICT OF INTEREST

All authors declare that they have no conflicts of interest.

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# A Review On: Mechanical Characterization of Polymer Based Composite Material

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## ABSTRACT

The polymer business is probably the quickest business in India. As for extraordinary businesses, it has a lot of waste as well. So this paper is mostly focused on the manufacture of composite from squandering polymer materials notwithstanding Epoxy gum and other important glues. For the most part, these composites are valuable in protections or hotness safe applications, thus warm investigation has been considered as the main component for it. The paper comprises regular polymers, for example, bamboo and flex as a principal constituent in the arrangement, and Polyester is an added substance. Epoxy is utilized as a projecting material in an assortment of rates according to the applications. This paper attempted to zero in on the properties and qualities got from the warm investigation of polymer-based composite rather than any item or part.

**Keywords:** *Natural Polymers, Epoxy Resin, Waste Polymer Utilization, Fabrication of Composite Material*

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## INTRODUCTION

A considerable lot of the engineers and scientists have done their examination on composite materials and they observed that the composite which is produced using two unique materials with various synthetic and actual property that, when joined, produce a material with attributes not quite the same as individual parts.

In this undertaking, we will involve both fake and normal filaments for the planning of tests. We will make the example from epoxy, bamboo, flax, glass strands by utilizing hand layup strategy. Then, at that point, we need to play out a warm trial of fiber by performing thermo gravimetric investigation (TGA) and bending temperature examination (DTA). There are many cycles to manufacture a composite material, for example, hand lay-up, mechanized lay-up, splash up, fiber winding, pultrusion, gum move forming and so forth however hand layup technique is simple and financially savvy. We will utilize this cycle to manufacture this composite material. In the wake of manufacturing the example, you really want to play out the ductile test and Compressive test by making standard examples of test in Universal Testing Machine.

There are number of uses of composite materials in step by step life. In the wake of conveying the tests we can at last close the area of use of this pre-arranged example based on acquired properties and qualities. We are playing out this examination to characterize an option for existing materials.

## LITERATURE SURVEY

X.Q. Pei, K. Friedrich, in Reference Module in Materials Science and Materials Engineering, 2016[1] Excellent scraped spot and wear execution has been found in polymer composites after progress with practical filler and support. This benefit makes them adaptable in numerous modern applications. The current article manages religious alterations in polymer materials; joining of fiber-built-up polymer composites and grating components, wear properties of polymeric Nano-composites, and momentarily wearing the properties of polymer composites. Firmly connected with one another, various focus on the contact and wear of the polymer composites gathered in every space. At last, open inquiries with high need.

Ravi Shukla, Dharmendra Kumar Singh, Kamal Kanaujia, A. K. Srivastava [2] Hybrid composite materials are an extraordinary potential for designing material in numerous applications. Mixture polymer composite material offers the architect to get the necessary properties to a controlled impressive degree by the selection of filaments and framework. The properties are custom-fitted in the material by choosing various types of fiber joined in a similar tar grid. In the current examination, the mechanical properties of Bamboo and flax mat built up epoxy half breed composite were considered. The hand lay-up method was taken on for the manufacture of mixture composite materials. The warm properties, for example, DSC, TGA of the half and half still up in the air. The warm properties were improved as the mat support content expanded in the grid material.

C. M. Meenakshi A. Krishnamoorthy [3] expressed that Composites are the materials of this century, among fiber-supported polymeric composites track down more extensive applications both in underlying and nonstructural fields. In the majority of the instances of polymeric framework composites, the support is glass fiber, which is going through an extreme survey for its engineered nature constraining the specialists to move towards non-manufactured building up strands like regular filaments. Here in this work, a portion of the normal filaments like Flax, Sisal, Kenaf, and Aloe Vera are joined with Glass fiber in an epoxy grid to frame a half and half fiber-supported composite cover, and their mechanical properties like ductile, flexural, and sway strength are looked at. From the relative review, it is perceived that Kenaf/glass half breed tests are having mechanical strength esteem 40-half higher than that of different kinds of tests tried.

Parmeet Singh Saluja, J.K.Tiwari, Gaurav Gupta [4] another class of composite material is ready by utilizing titanium dioxide (TiO<sub>2</sub>) particles as a filler material in Thermoset polyester framework. The powerful warm conductivity (K<sub>ef</sub>) results got from tests are contrasted and other laid out models like Rule-of-Mixture (ROM), Maxwell's model, Geometric Mean Model, and Lewis Nelson model. For trial investigation Titanium dioxide (TiO<sub>2</sub>) supported polyester composites are manufactured utilizing the hand lay-up procedure and the warm conductivity values are estimated with the Unitherm TM model 2022 analyzer as indicated by the ASTM standard E-1530. It is seen that the K<sub>ef</sub> values got from the hypothetical model are in great concurrence with the deliberate qualities for composites with TiO<sub>2</sub> fixations up to 25 wt%. This study shows that the expansion of TiO<sub>2</sub> particles works on the viable warm conductivity of Polyester-TiO<sub>2</sub> composites. Aside from upgrading warm conductivity, the joining of TiO<sub>2</sub> brings about the progress of glass change temperature (T<sub>g</sub>) and a decrease in the coefficient of warm development (CTE).

Ajay Sahu, Dilbag Singh Mondloe, Satish Upadhyay [5] Heat dispersals in electronic gadgets have turned into a test and area of examination for warm administration. Warm connection point materials are utilized to further develop the hotness move in electronic gadgets. Epoxy pitch is generally utilized as a warm connection point material due to its astounding property over other warm points of interaction materials. The past explores show that the fuse of filler materials of high warm conductivity works on the warm conductivity of epoxy composites, thus further developing the hotness move in electronic gadgets. In this survey paper, the requirement for warm connection point material and epoxy as a warm point of interaction material are examined. The audit paper likewise incorporates the different kinds of filler material utilized for warm conductivity improvement of epoxy composites and their impact on the warm properties of epoxy composites.

Sakamma and Prasanna Kumar (2019) have concentrated on the conduct of composite material; under various stacking conditions. The composite has been made with the Epoxy Resin, E-Glass Fiber and Fly Ash having various sytheses like C1 (70% Epoxy, 20% E-Glass, 10% Fly Ash) , C2 (70% Epoxy, 20% E-Glass, 10% Fly Ash), C3 (70% Epoxy, 20% E-Glass, 10% Fly Ash). Nonetheless, their review is led for the creation of spring or vehicle applications and contrasts it and the most normally utilized Steel Material. Toward the finish of the review, creators have been perceived that their arrangements improved a few outcomes with regards to yield strength and extreme qualities. They likewise presumed that the composite material was tracked down better in all perspectives in correlation with produced steel.

Dr. N. A. Wankhede, Suchita Ingale, surrenders a paper attempt to design and inspect the interfacing pole used in a diesel engine in the setting of the equal bending powers acting along its length during the example of it The sidelong bowing tension is routinely called as whipping strain and this whipping strain outlines the underpinning of evaluation of the execution of various materials that can be used for collecting of the associating pole. The normal material used is steel which is an arrangement using CAD device which is CATIA IV5 land in like manner researched for curving strain circling back to it in the field of restricted part assessment using ANSYS workbench 14.5 and these frameworks are followed for different materials which are aluminum 7075, aluminum 6061 and High strength carbon.

## CONCLUSION

Composite materials are having very much highlight now a day. There are variety of polymers available in the surrounding, however, many of these are waste polymers. The fabrication of composite material is one of the best way to utilize the waste composites. The composite of natural and artificial polymer provides wide range of application in variety of conditions.

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## A Review Paper on 5<sup>th</sup> Generation Networks

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### ABSTRACT

5G Innovation stands for 5th era portable innovation. 5G signify another major stage of versatile media transmission benchmarks past the up and coming 4G measures. 5G innovation will alter the way most tall transmission capacity clients get to their phones. With 5G pushed over a VOIP empowered gadget, individuals will involvement a level of call volume and information transmission never experienced some time recently.

**Keywords:** 5G-System, 5G, communication, wireless, capacity.

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### INTRODUCTION

In Mobile Communication And Wireless Networks is ever-growing And also Increase in Demand Services And Specially For Multi-media And high Quality Of Services And This Article We Are Generally Discussed About 5G Technology And the Cellular companies Starts in 5G Technology In 2019. And 5G Technology Developed By 3GPP Which Is Introduce in July 2016. In Telecommunication Industries . The 'G' in 5G Stand for Generation and 5 is The Advancement Denoted Through A number And This Technology Technically Enter With 1G In 1990s And Then It Upgrade to 2G But Now Companies Enabled People To send Text message Between 2 Cellular Devices In 3G We can make Phone calls , Send Text Messages And Browse The Internet At Fine Speed Then 4G is Arrive to Enhanced many of Capabilities , People Could Browse The Web At Very Fast speed and Send Text Messages and Make Phone calls and they Even Download And Upload Large Videos Without Any Issues , Then Companies Added LTE . In LTE 4G Become Faster. And the 5G Technology will Make Easy To Download And Upload An Ultra HD And 3D Videos Faster.

### LITERATURE REVIEW

Writing Study Farris [1] et.al. said that, The Web of Things (IoT) environment is advancing towards the deployment of coordinates situations, wherein heterogeneous gadgets pool their capacities together to coordinate wide-ranging client and benefit requirements. As a result, arrangements for efficient and synergistic participation among objects secure incredible pertinence. Along this line, this paper centers on the selection of the promising MIFaaS (Mobile-IoT-Federation-as a-Service) worldview to back delay-sensitive applications for high-end IoT gadgets in next-to come fifth era (5G) situations. MIFaaS cultivates the provisioning of IoT administrations and applications with

low-latency necessities by leveraging participation among private/public clouds of IoT objects at the edge of the organize. An execution evaluation of the MIFaaS paradigm in a cellular 5G environment based on both Long Term Advancement (LTE) and the later Narrowband IoT (NB-IoT) is displayed.

### EXISTING SYSTEM

- This Is an Enhanced Mobile Broadband and To Making Our Smart Phones Faster AS well as Better in Speed. This Technology Provide Such A Better Experience In VR And AR Which Faster.
- The High Data Rate.
- Lower Cost Per Bit.
- 5G is Used in automotive & transportation.
- Smart Buildings.
- Smart Cities.

### PROPOSED SYSTEM

Savvy homes, synced observe and phone gadgets, and wellness apps are commonplace presently and will develop with the speed and execution capabilities of 5G. With an overwhelming dependence on portable IoT on such an amazing scale nowadays, within the another 20 or so years, the 5G future will look totally distinctive. We'll see the large-scale computerization of vehicles and utility administrations like squander administration and vitality generation through shrewd frameworks and smart natural observing to cut down nursery gasses and contamination. Envision being able to stop a shrewd car in a stopping

carport and pick up remote charging through the city framework whereas you work and after that informing your vehicle to drive itself from the stopping carport to your office door. Farmers in country regions will be able to screen and track crops, animals and apparatus more effortlessly through rambles and super-dense sensor systems.

### ADVANTAGES

- Increase Speed And Bandwidth.
- Low Latency Capabilities For Branch Officers.
- Enhanced Security With Hardened Endpoint.
- All determination and bi-directional expansive transfer speed shaping.
- Technology to assemble all systems on one platform.
- More successful and efficient. Technology to encourage endorser supervision apparatuses for the fast action.

### DISADVANTAGES

#### Prompt Out of date quality

The move to the 5G arrange will require gadgets that can back it; current 4G gadgets don't have this capability and will gotten to be instantly out of date.

#### Technological prohibition

The usage of the 5G arrange moreover suggests a need of quick availability for normal pockets, combined with a delay in its usage due to a need of implies for its utilization.

#### • Deficiently Framework.

For the 5G arrange to operate appropriately will require an entirety ambitious investment in foundation to extend transmission capacity and extend scope, and typically not cheap.

A few Inquiries about and talks are going on over the world among technologists, analysts, academicians, sellers, administrators, and governments approximately the developments, execution, reasonability, and security concerns of 5G. As proposed, stacked with numerous development highlights beginning from the super tall speed

web benefit to smooth omnipresent benefit, 5G will open numerous of the issues. Be that as it may, the address is — in a circumstance, where the past innovations (4G and 3G) are still beneath prepare and in numerous parts however to be begun; what will be long haul of 5G?

### FUTURE SCOPE

The foremost important scope of the 5G cellular arrange encompassed scheme hypotheses approximately Covid-19. A few claimed the organize was planned to debilitate our safe frameworks, whereas others thought it straightforwardly transmits the infection. Sensible minds — the tremendous larger part of the human populace, one would trust — caught on the schemes for what they were. They knew 5G was essentially the following overhaul to our cellular organize. But indeed they missed the point. 5G goes distant past what we think of nowadays as cell phones. We're at the begin of a transformation within the world of connected things, with the primary steps toward actualizing 5G — the most current era of telecom systems — as of now in full movement. To a few, 5G guarantees to essentially make strides cellular capabilities, giving improved broadband control and boosting versatile capacity and information rates. In truth, 5G is 10 to 50 times speedier than past eras of cellular systems.

### CONCLUSION

In conclusion, 5G will lead to one of the greatest mechanical changes of our lifetime, with boundless conceivable outcomes. Not as it were will it change lives, but it'll moreover offer assistance spare them with optimized crisis administrations and the decrease of car mischances.

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# A Hybrid Fake Banknote Detection Model Using OCR, Face Recognition and Hough Features

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## ABSTRACT

Banknote's duplication remains an emergent concern among nations due to the advancement of copy and examine machinery. Multiple note detection systems are present in banks but they are many costly and often inaccurate. The fields of image processing, neural network and machine vision have possible to seriously control this matter. This paper proposes a type comprised of Optical Character recognition (OCR), Face Recognition and Hough transformation algorithm. The micro printing, water-mark, and beyond violet lines property of American notes are take out for trial of real notes. The Fact finding results of the proposed model give accuracy as highest as 93.33% which makes it suitable for deployment on a mobile Apps. Moreover, the come b ow that the Put forward algorithm gives the high accuracy.

**Keywords:** *Digital image processing; fake currency; Face Recognition; Hough Transformation; Optical Character Recognition.*

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## INTRODUCTION

Always since the creation of banknotes, the notion of counterfeit currency has been around . Large before notes were used as a form of money, counter would alter others forms of banknote to gain many value than the traded item was worth . Ever since, counter cash has evolved into a huge black market. Some of the effects that counter cash has on society include a reduction in the value of real cash ,inflation due to more cash getting circulated in the society for economy; which in turn dampen our economy and growth- an unauthorized artificial increase in the money supply, a Reduce in the accept of paper money and losses. People might assume that counterfeit currency is not an issue anymore due to advance in security features and Observation technology, but it is even the other way around. Today the cheap cost of inkjet printers has made it easier for more public to attempt forged. In 2016, 12 people were arrest along with a huge supply of counterfeit notes from difference places of London counterfeit currency of worth 6.6million Taka, five laptops, and six printers, two stacks of security threads used in 1,000 bank notes and a haul of fake banknote making materials were detained from them. Therefore, the right kind materials were detained from them. and some special icon like commas, question marks as well as difference characters. The teaching of machine is performed by showing machine examples of characters of all difference classes. Based on these E.g. The machine make.

## BACKGROUND STUDY IN INDIVIDUAL MODEL

**A. Optical Character Recognition (OCR)** Optical character recognition (OCR) is process of classification of optical patterns contained in a graphic image communicate to alphanumeric or other characters. The nature identification is achieved through major steps of separation, feature removal and classified . The main concept in automatic identification of patterns is first to teach the instrument which class of patterns that may take place and what they look like . In OCR patterns are number, letters prototype or explanation of each class of characters. During identification the unknown characters are compared to previously obtained explanation and assigned to class that gives the best match. In American bank notes, many microprinted letters are present. To extract that feature from the notes, OCR has been considered due to the mentioned advantages.

### B. Face recognition

Face recognition systems make use of an algorithm that can see a face match based on many points on an independent's face, given a set of dataset. It calculate the general facial structure, counting space between eyes, mouth, and jaw edges . These measurements are retained in a database and used as a compared when a user stands before the camera. American banknotes contain the face of which can be a used as instruction dataset and apply for face recognition. Among primary basic Analysis and Mean and Standard Difference (MSD), the latter was choose for the model of this paper cause the MSD technique is more efficient than PCA and the rate of success of MSD technique is better

than PCA. Moreover, the MS technique is fast cause PCA involves calculating the eigenvectors of a big covariance matrix. In image processing, mean is used for noise depletion in images. Mathematically, mean is shown as, Inside image processing, standard difference is used in edge sharpening, as strength level get changes at the edge of image by large value as it has ability to calculate the variability. Standard difference displays how much difference occurs at mean value. A low standard difference states that the data points tend to be very close to the mean, where higher standard difference specifies that the data points are spread out over a long range of values. Mathematically, standard difference is a calculate of how spread out the data set from the mean.

### C. Hough Transformation

The Hough convert is a method which can be used to seprate features of a particular form within an image. The Hough change can be used to identify the parameter of a loop which best fits a set of given edge points . This edge explanation is common obtained from a feature detecting operate such as the Robert, Sobel or Canny edge detector and may results in noisy images. Therefore, the sole use of edge detecting technique may hinder the accuracy of the results. Furthermore, as the output of an edge detector defines only where features are in an image, the work of the Hough transform is to determine both what the features are and how many of them exist in the image.

The classical Hough transfer is most regularly used for the detection of common curves such as circles, ellipses, etc. in our case .This paper focuses on observation of lines, since the American bank notes contain ultraviolet lines which can only be detected using an ultraviolet light. Hence, classical Hough transfer should prove optimal in this case. The spite of its empire reduction, the classical Hough transform diction retains very applications as most make parts contain feature boundaries which can be described by regular curves. The main advantage of the Hough transform method is that it is tolerant of gaps in feature boundary descriptions and is relative not changed by image sound. Also, they are conceptually simple, easy implemented, handles missing and occluded data clever and can be adapted to many types of forms, not just lines.

### PROPOSED MODEL

In order to perform MATLAB environmental operations, the hybrid algorithm follows six basic steps: data collection, pre-processing of the collected data, edge detection, feature extraction, identification and output results as depicted in Fig.1

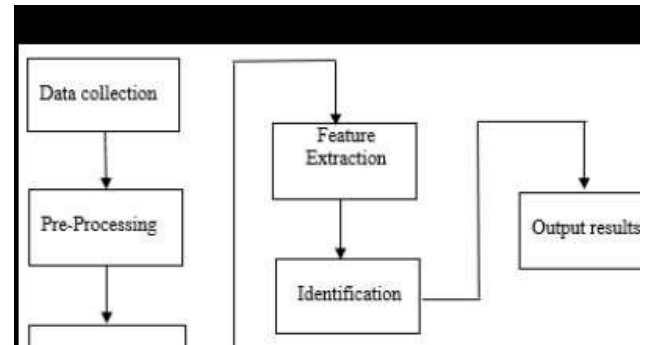


Figure 1. Block diagram of proposed model

The data collection step is performed using a smartphone with 16megapixel camera. The pre-processing stage revises the existing image to attain greater precision of features. Edge detection amplifies the precision by detecting edges. The following stage extracts the features and identifies the notes as either fake or real. MATLAB version 8.4.0 (64bit) was employed for the purpose of this paper on an Asus Intel Core i3-5010U CPU 2.10 GHz, 4 GB DDR3 1333MHz. Micro-printing feature of banknotes can be extracted using this technique which is included in the proposed algorithm. The watermark of constitutes as a strong feature of American bank notes and can be extracted using a simple face recognition model which consists of MSD method. MSD method prevails over PCA in terms of accuracy and speed . Therefore, application of MSD method augments the reliability of the proposed model. Ultraviolet lines are not available in counterfeit note, hence the consideration of Hough transformation as feature extractor of ultraviolet lines is validated .

### IMPLEMENTATION OF PROPOSED MODEL

Table 1 shows the input image to detect the feature of micro printing which is basically image acquisition. A picture of 1000 taka note is taken using smartphone.

TABLE 1.MICRO PRINTING

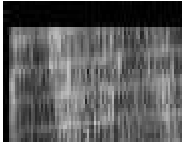


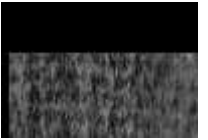


Feature title	Input image	Gray scaled
Real note		
Fake note		



TABLE 2. WATERMARK

Feature title	Input image
Real note	
Fake note	

The test set contains 30 input images and each will be tested for accuracy. Additional macro lenses were used to obtain such images because the micro printing cannot be detected using normal camera. In the case of fake notes, no micro . The preprocessing part of the OCR is correspondingly presented in the table which performs delousing, rotating and gray scaling for applying the feature extraction. Table 2 shows the input image of face recognition for the proposed algorithm for the similar image acquisition part. For the face recognition part, an additional training image set has been developed beforehand. In that part, 10 images of Bangabandhu have been trained and stored in database of MATLAB. Then, after the test face is given, a comparison takes place with pictures of the database. Upon using it as test face, no faces have been detected. Therefore,

MATLAB classifies it as a fake note.

TABLE 3. ULTRAVIOLET LINES


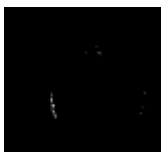


Feature title	Input image	Edge detected image
Real note		
Fake note		

Table 3 shows the input image for extracting ultraviolet security lines. An additional ultraviolet light was used to capture such images. For the fake image, no lines of

ultraviolet were detected, whereas for real notes, there were many security lines observed. The table also illustrated the edge detection part where Roberts's edge detection is performed in order to detect the lines better. It should be mentioned here that gray scale conversion was also performed before the edge detection, for better line detection.

## PERFORMANCE ANALYSIS OF THE IMPLEMENTED

### MODEL

The result of the image processing model to detect fake banknotes as summarized by comparison between four different algorithms indicates an encouraging overall performance. A detail statistics of outcome presented in Fig. 2 demonstrates the performance of the proposed system when compared to individual implementations on the same platform. It illustrates that OCR on its own achieved the lowest accuracy (73.33%) amongst all the models, while the other two techniques displayed accuracy of 76.67% (Face Recognition) and 80% (Hough Transformation). Our proposed algorithm has highest accuracy.

The unsubstantial accuracy rate of OCR might be caused by quality micro-printing which get faded easily. Due to numerous texts and symbols encompassing note, the Hough transformation algorithm may detect lines other than security ultraviolet lines. when the models were combined, higher precision emerged. On the other hand, sure that the fake notes were not being recognized as real .

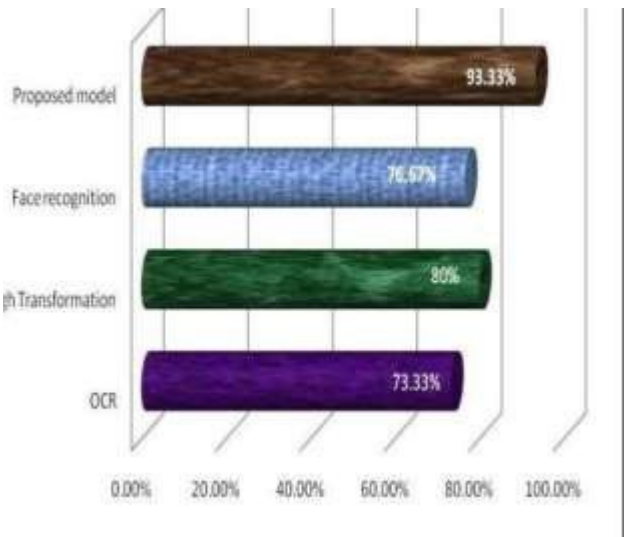


Fig. 3 further illustrates that the execution time of the model that remains between 6seconds to 7seconds. Since numerous factors are affiliated comprising of the input image, the execution on MATLAB may face some error, thus absorbing time to sort out the noise and error involved. The accumulation of the three individual models equally constitute to the longer time.

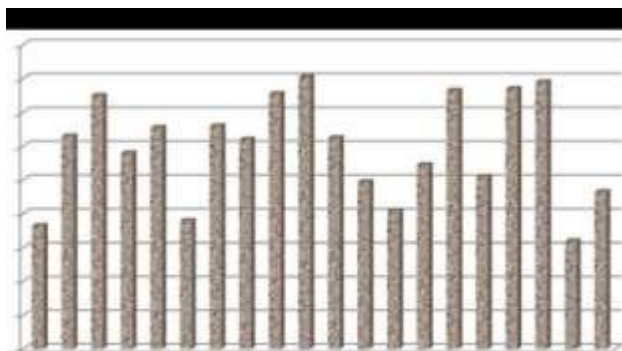


Figure 3. Run time of proposed model

## CONCLUSION

In this paper, a hybrid fake currency detection model was proposed and implemented on MATLAB. In the proposed model, three image processing algorithms were chosen to get enhanced results. Then, the results of the proposed model were compared with each individual model used. The acquired comparison was tabulated. It was inferred that the ,although the proposed model took slightly longer

to process, it displayed 93.33% accuracy which was significantly higher compared to the individual algorithms applied. The proposed model may be developed as interactive software which will be user-friendly thus contributing significantly against counterfeiting.

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# Digital Wellbeing and Parental Control

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## ABSTRACT

There is growing concept that technology is forcible and hastily use as an emerging form of problematic behaviour that affect personal, emotional, social and occupational health.

In this paper we analysis the quality of digital wellbeing and parental control smartphone application by Google. We report on the factors that acts on users' acceptance and rejection for digital wellbeing application, identify potential challenges, opportunity to improve their design and role in future publication. This model considers the digital wellbeing and actual state of tomorrow the balance between connectivity and disconnect that depends on the collection of individual device and reference specific element. Digital wellbeing is a new concept which is the lack of balance that we can experience with respect to mobile connectivity.

**Keywords:** *Digital detox, Screen time, Addictive design*

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## INTRODUCTION

In most cases like we use android and there are lot of features we don't use in daily life, but there are many features which is available in our smartphones which helps us to manage our time and distracting notification and all which will allow us to manage customize our mobile completely. This is one of the best features in the smartphone that can help us to see the statics that how many notifications are received and how many hours we are spending in a particular application. In this paper we conduct a qualitative study and analyse their user, review of popular digital wellbeing application aiming to uncover the acceptance and rejection factors of such application. Digital wellbeing and parental control manage the app as well as website that child uses. With digital wellbeing, we get control and feature for any activities in daily life: relaxing, working or we checking how to you are checking your mobile phone in during the day such as productivity applications, balance feature and parental control. This feature well be required on all Google-certified android phones. Android digital wellbeing tool give us a daily view of how to often you check your phone and how frequently you use different apps.

## LITERATURE REVIEW

Tabulated Literature review has been done in hierarchical way finding research scope in every article and then summarizing it for problem and then using proper technique to solve this problem with algorithm, design and special technique. All Manufacturers can keep their own similar solutions so long as they meet certain requirements & implementation of these features is required including OTAs to Android 9 and 10 operating systems.

To enhance wellness pleasant of lifestyles together with social connection, intellectual fitness and depression. The arrival of records era is used. We commenced to look that means of era to assist consumer alter their virtual use, and it emerged. If it has the cappotential to apply a virtual footprint starter to alternate the degree of virtual software with the assist of different knight rises together with on-display time, sequences and the virtual welfare software manner is optimized.

Google has been released Digital Wellbeing as a Pixel characteristic and simplest currently has started to open it easily on authorized android phones. But with the requirement to encompass those Digital Wellbeing and parental manage capabilities throughout the Google-licensed Android ecosystems, Google will glaringly be capable of begin touting this as a great characteristic regardless of what smart phones you buy. & with properly reason having those capabilities (specially parental controls) for handling smart phones usage

Digital Wellbeing is a set of functions and dashboard that offers you visibility into how a great deal you are the usage of your phone, which apps are notifying you the most, and gives a fixed of equipment that will help you control that use in case you so choose. Family link is, understandably, a piece greater restrictive in that it offers a parent the capacity to completely limited diverse components of tool utilization for a child.

## WORKING:

When it involves our phones, all of us wishes something different. But all of us need the identical thing to cognizance on what matters. Digital Well Being changed

into constructed only for that. In Digital Wellbeing, you may see which apps and web sites you operate most, and set every day limits. Once you hit the limit, the ones apps and web sites pause and notifications move quiet. So you may spend the time which you want.

### PROCESS

- Open your mobile setting app.
- Click to digital wellbeing parental control focus mode.
- Choose which app you want to pause. When focus mode is on. You can't use this app and won't get notification from them.
- Use focus mode when you want to avoid distraction.

**Dashboard:** you can completely monitor how many hours, how many time you are using your application you can set completely you can see completely detail.

**Bedtime (Wind down):** if you are going to sleep on any time then set the time and then end of time. In this hour you are selected time not going to receive any kind of notification.

**Focus mode:** focus mode helps use when you need time to focus you can push distracting apps and hide their notification.



*Fig. Digital wellbeing and parental control*

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# Finite Element Analysis of Hybrid Intra Composite Wing for UAVs

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## ABSTRACT

Today, the main challenges in the aircraft industry were to design complex structure with less weight and high strength to make it fly for long durable with easily available material replacement. Aircraft industries are using different types of composites which consist of different laminates and fibre orientation. This paper deals with the finite element analysis of hybrid intra composites wing NACA 4415 which designed for UAVs. Static structural analysis of wing is done combination of carbon fibre, glass fibre and Kevlar fibre material and the combination of all three. The main objectives of this analysis were to study and compare the result of all the composite combinations properties. The thickness of each composite is maintained throughout the process. It is found that the carbon/glass fibre exhibits better performance with reduction in 18.64 % of stress and increase in 55.91 % of deformation than Al alloy and high stress value of 117 Mpa is found in the carbon/Kevlar fibre. The deformation does not affect much in composites except carbon/Kevlar fibre which has high value than others. The presence of glass fibre affects the composite properties and it is found to reduce the stress and deformation is maintained. The material cost of glass fibre is also found to be easily available and affordable in the industry.

**Keywords:** *Finite Element analysis, Hybrid intra composite, NACA 4415 Wing, UAV*

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## INTRODUCTION

Aircraft industries usually uses composite for complex structure manufacturing. Unmanned Aerial Vehicles (UAVs) becomes more popular due to its size and portability to carry anywhere. UAV has been used for applications like surveillance, mapping, photography and military. In order to improve UAV design, composites were introduced in the structure design.

A composite material is described as a substance made up of two or more materials that has greater qualities than the individual components when utilized separately. Unlike metallic alloys, each substance keeps its own chemical, physical, and mechanical characteristics. A reinforcement and a matrix are the two components. When compared to bulk materials, the key advantages of composite materials are their high strength and stiffness paired with low density, allowing for a weight reduction in the finished item. Strength and rigidity are provided during the reinforcing phase. The most common man-made composites are classified into three categories: Polymer Matrix Composites (PMCs) are composites made of polymer matrices. These materials, also known as FRP – Fiber Reinforced Polymers (or Plastics), use a polymer-based resin as the matrix and a variety of fibers such as glass, carbon, and aramid as reinforcement. Others are

Metal Matrix Composites (MMCs) and Ceramic Matrix Composites (CMCs) – These materials, which are becoming more common in the automotive and aerospace industry.

Fiberglass is commonly used in secondary aircraft structures such as B. fairings, radoms, and wing tips. Fiberglass is also used in the manufacture of helicopter rotor blades. Carbon fibers are 3 to 10 times stiffer and stronger than glass fibers. Carbon fiber is used in structural parts applications such as floor beams, stabilizers, flight controls, and primary fuselage and wing structure. Kevlar is lightweight, strong, and good resistance to abrasion. In the aviation industry, two types of Aramid fiber are used. The stiffness of Kevlar 49 is high, while that of Kevlar 29 is low and there are few natural fibers available in the industry. Now, the industry upgrading the composites by combining different types of fibers with matrix in the ply laminates to improve strength, stiffness, strength-to-weight ratio, and other mechanical properties than conventional type. This type of composites is called hybrid composites.

NACA 4415 wing with Carbon fibre and Kevlar material for UAV is designed using solid works and performed analysis in ANSYS. In the conclusion, tubercles wing at leading edge showcased a reduction of displacement and maximum stress [1]. Similarly, another paper used NACA0012

(symmetrical) CFRP wing for UAV model in subsonic wind tunnel test and created composite model in ANSYS 19.2 ACP module for numerical analysis. For normal wing 1 mm thickness can be used which exhibits minimum deformation and stress [2]. In another paper, fabrication of carbon and glass fibre hybrid composite with different sequences of different fibre materials were developed using VARIMC technique. Later it is found that laminate with sequence (GC2GC2G)3 showed highest values and better performance for both hardness and impact strength [3].

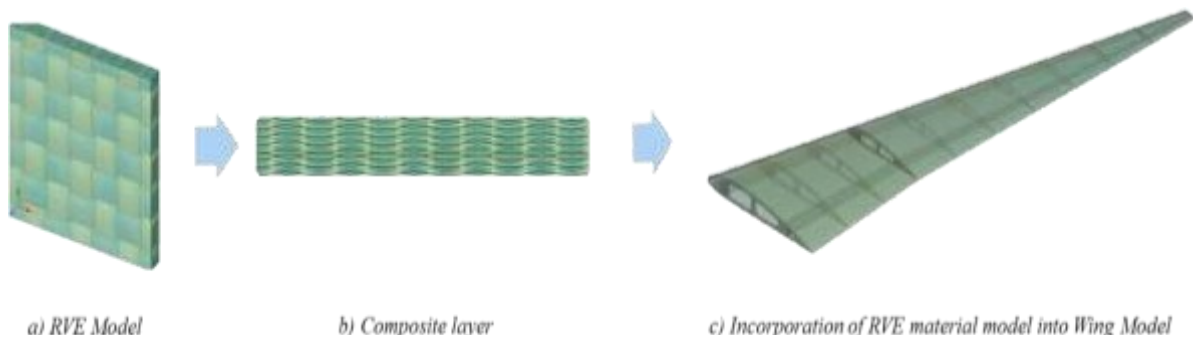
Inter Laminar Hybrid Composites and Intra Laminar Hybrid Composites of carbon fibre and glass fibre were studied and proved that Glass-intra composite provides higher mechanical strength under both tension and flexure loading conditions [4]. Natural fibres jute and combination of carbon, glass, and jute were hybridized. It is evidently clear that the presence of carbon improves the mechanical properties and outer layer containing jute-jute having low strength property [5]. Titanium alloy and CFRP skin wing is found that, for an applied uniform load on the bottom of the aircraft's skin, a weight, deformation and stress reduction is observed in favour of CFRP in ANSYS [6]. The properties of reinforced Aluminium, stainless steel wire mesh with glass fibre epoxy hybrid composites wing is analysed in ANSYS. Aluminium showed high tensile strength [7]. CFRP and GFRP with Al alloy to select a suitable material for trainer aircraft wing in ANSYS. It is found that the Epoxy-Carbon UD has less deformation, high strength, and light weight as compared to Aluminium 2024 T3 [8].

The properties of hybrid epoxy reinforced composite and were compared with Cessna 172 wing material Aluminium. The hybrid composite showed a higher performance than Al and both of the results were found to be closer in ANSYS [9]. The mechanical properties of FML (fibre metal laminate) show improvements over the properties of both aluminium alloys and composite materials individual but the moisture absorption in FML composites is slower [10]. NACA 4412 UAV Al - 2024 T351 wing material is used for whole wing assembly. FEA analysis is done using an ABAQUS solver with equal rib spacing and their main objective is to maximize torsional frequency and

bending frequency ratio [11]. It is found that the composite wing with ply orientation of 45 and 90 deg give the best mechanical properties than others [12]. Fibre composite wing with polyurethane foam using a nonlinear structural system. The endurance and the weight increased compared to the design point in NASTRAN FX and ABAQUS [13]. Ankit et.al reviewed about nanocomposite materials implementable for aerospace applications. In this research four different parameters are been discussed as- weight reduction, thermal characteristics, electronic properties and impact toughness. The properties of materials depend on several factors such as thermal conductivity, glass transition temperature, strengths, resistance etc. that are responsible for the variation in composite matrices [28].

Dynamic and static transverse behaviour of thin woven Carbon/Aramid hybrid laminates for UAV application and found that addition of hybridisation layers in carbon composite improved impact strength [14]. CFRP/GFRP hybrid composite containing elastomer layer and thin steel layer improved damage resistance [15]. Shape memory alloy wire nitinol and copper wire were embedded within the carbon laminate and smaller delaminated area is recorded [16]. Hybrid laminate experienced less damage and more tensile strength at bottom than non-hybrid laminate due to addition of glass plies [17]. The flexural strength and modulus of hybrid carbon/glass fibre reinforced polymer composite increased than plain GFRP [18]. The ultimate strain is improved by 60 -75% compared to normal CFRP due to hybridization and addition of aramid enhances the toughness of hybrid composite without any compromise [19]. Hybrid composites Glass/Jute revealed higher mechanical properties than jute composite. Therefore, the position of glass fibre plays a major role in hybrid composite [20].

Hybrid composite with Kevlar as back and front layer showed higher impact energy than normal composite. Kevlar, Glass, Carbon fibres were used for both hybrid and non-hybrid composite with different stack sequences [21]. The interface properties between aluminium and glass fibre were revealed by increasing the interface roughness increases interface strength properties [22].



*Fig 1 Methodology of wing analysis*

Flax/Glass, Hemp/Kevlar and Abaca/Carbon have highest stress, strain and deformation compared to other composites [23]. SAN based matrix showed higher strength with cost efficiency [24]. It is observed that crack initiates at the top flange of spar for carbon epoxy material. The result of carbon epoxy and graphite epoxy were close to each other [25]. Carbon fibre composite wing structure used for UAV application. It is found that the maximum deflection took place at wingtip [26]. Similarly, another paper proved that the maximum deformation is found at the wing tip and structure deformed after unloading [27].

## METHODOLOGY

In this investigation, finite element analysis method is done using ANSYS workbench 2020 R1 and model is imported. Initially, Representation Volume Element (RVE) model of different hybrid intra composite ply material is designed and its mechanical properties is numerically calculated in the material designer module.

Subsequently, Composites were modelled using ACP pre module with decided ply laminates and fiber orientations. Later, UAV wing model is designed with internal structure wing component to get precise result. The modelled hybrid composite is

incorporated into the whole wing structure including the skin. Finally, Static Structural Analysis is performed to validate and discuss the equivalent stress and total deformation result. The overall process of analysis methodology is showed in Fig 1.

## Design Specifications

In this study, the wing is design using SOLIDWORKS and NACA 4415 airfoil is used to design. Initially, the design is considered zero thickness i.e., 3D surface model. Later, the thickness is assigned to model the composites and 2mm of thickness is kept constant for all structural components in the wing. NACA 4415 is the most preferred airfoil for UAVs and other small fixed wing aircraft the wing span is consider as 2.4 m.

The major wing components are wing skin, wing spars and wing ribs. It consists of 10 wing ribs, one front spar (C-section) and one rear spar (C-section). The ten-wing rib is spaced equally along the wing span. Wing designed to be tapered and swept back for more longitudinal stability performance. The small sweep angle 18 deg is assigned to the model. The wing is designed such that the maximum stress take place at the root chord so that it is made less taper to cover more area to some extent length as shown in Fig 2. The main specification of UAV wing is shown in Table 1.



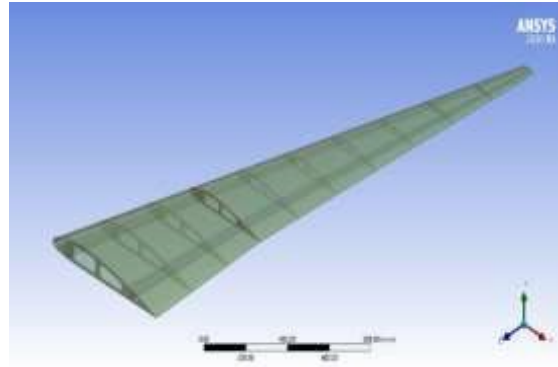


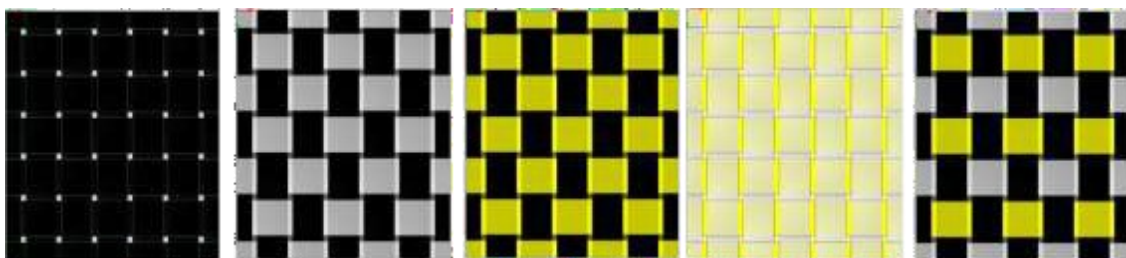
Fig 2 Wing Design

Table 1 Wing Specifications

Parameter	Value
Wing half span	2400 mm
Root Chord	700 mm
Tip Chord	70 mm
Skin Thickness	2 mm
Rib Spacing	240 mm
Sweep Angle	18 deg
Spar C Section Thickness	2 mm
Rib Thickness	2 mm
Airfoil	NACA 4415

### Material Design

All the main structures of NACA 4415 UAV wing were assigned to intra hybrid composites with equal thickness. In this stage, RVE model is created for assigning the material for each woven composite fiber. The material used for creating intra hybrid composites are Carbon fiber, Glass fiber, Kevlar fiber as reinforcement fibers and Epoxy resin as matrix which is available in the ANSYS engineering data. The hybrid composites were Carbon/Epoxy, Carbon/Glass Epoxy, Carbon/Kevlar Epoxy, Glass/Kevlar Epoxy, Carbon/Glass/Kevlar Epoxy as shown in above Fig 3.





Each property of these combination of material were calculated separately in the ANSYS Material Designer. The properties include young modulus, shear modulus, Poisson ratio and density as shown in Table 3.

### Hybrid Composite Laminate

Hybrid Composite laminate is modelled using ACP pre module. In this module, five samples of composite laminate were created. Each samples represent 10 layers of lamina and 0.2 mm thickness each. Total thickness 2 mm is kept constant for all samples to compare the final result. Ply orientation for each layer ((0/-45/+45/90/0)s were given in the input data. Direction of fibres is given to each component structure of the wing individually to make it more accurate result in the final stage. The samples and ply orientation were shown in Table 4.

### Mesh Generation

Meshing process plays major role for finite element analysis and finer mesh gives more accurate result but take times to divide model into small elements. Here, the whole wing is meshed into 10 mm size and mixed mesh is used. Number of element and number of nodes is depicted in Table 2. It is made sure that aspect ratio is minimum. In case of composite laminate, each laminate ply orientation and thickness of each ply is decided. The properties of each ply were calculated in the previous module.

Table 2 Mesh Details

Mesh	Value
Mesh Size	10 mm
No of elements	33621
No of nodes	34838

Table 3 Properties of Hybrid Intra Composites

Properties		Carbon	Carbon/Glass	Carbon/Kevlar	Glass/Kevlar	Carbon/Glass/Kevlar
Young Modulus (Pa)	XY (E1)	5.5657E+10	4.4059E+10	5.3406E+10	1.34E+11	4.8718E+10
	XZ (E2)	5.5658E+10	1.9611E+10	8.7429E+09	2.49E+10	1.2404E+10
	YZ (E3)	1.0035E+10	1.0596E+10	5.9741E+09	6.44E+09	8.2982E+09
Shear Modulus (Pa)	XY (G12)	4.4382E+09	7.4181E+09	3.1178E+09	7.25E+09	4.4853E+09
	XZ (G23)	2.6972E+09	2.7827E+09	2.2204E+09	3.97E+09	2.4685E+09
	YZ (G31)	2.6973E+09	2.9602E+09	2.2009E+09	4.07E+09	2.58E+09
Poisson Ratio	XY (ν12)	0.1491	0.2071	0.2057	0.2581	0.2103
	XZ (ν13)	0.4009	0.3106	0.3602	0.3245	0.3281
	YZ (ν23)	0.4008	0.3705	0.4607	0.3891	0.3855
Density (kg/m <sup>3</sup> )	ρ	1479.9	1654.8	1396.7	1725.2	1525.7

Table 4 Material and Fibre Orientation of Hybrid Composites

Samples	Materials	Laminate Combination	Ply orientation	Thickness of each ply	Total Thickness
1	Carbon Epoxy	(C)10	(0/-45/+45/90/0)s	0.2 mm	2 mm
2	Carbon/Glass Epoxy	(CG)10	(0/-45/+45/90/0)s	0.2 mm	2 mm
3	Carbon/Kevlar Epoxy	(CK)10	(0/-45/+45/90/0)s	0.2 mm	2 mm
4	Glass/Kevlar Epoxy	(GK)10	(0/-45/+45/90/0)s	0.2 mm	2 mm
5	Carbon/Glass/Kevlar Epoxy	(CGK)10	(0/-45/+45/90/0)s	0.2 mm	2 mm

### Boundary Conditions

In this static structural analysis, the boundary conditions decide the type of analysis performed. It is required to assign types of force, support and pressure acting in the UAV wing structure and it is decided according to the function of UAV wing. When it comes to UAV, the wing act like cantilever beam and the root chord of wing is attached or fixed with fuselage (body) of the aircraft and the tip is free end. So, the displacement of wing at root chord is set to  $U_x = U_y = U_z = 0$

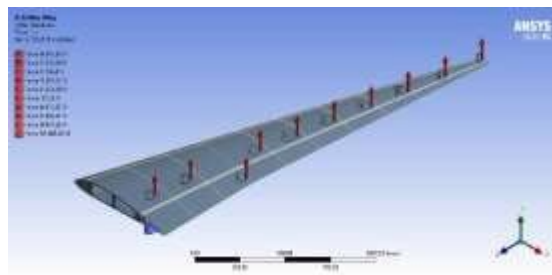


Fig 4 Boundary Conditions

Next, the wing has to undergo maximum loading conditions [26]. The wing is subjected to the concentration load at each rib position with increasing order of force as shown in Table 5. The direction of force is acting in the positive y axis as lift act in the perpendicular to the surface of the wing as shown in Fig 4.

Table 5 Wing Loading Conditions

S. No	Load (kg)	Load (N)	Wing Location
1	0	313.6 N	240 mm
2	32	382.59 N	480 mm
3	39	382.59 N	720 mm
4	39	392.4 N	960 mm
5	40	402.21 N	1200 mm
6	41	412.02 N	1440 mm
7	42	421.83 N	1680 mm
8	43	431.64 N	1920 mm
9	44	441.45 N	2160 mm
10	45	451.26 N	2400 mm

Sample s	Composites	Mass (Kg)	Maximum Stress (Von Mises) (Mpa)	Total Deformatio n (mm)	Difference %	
					Stress	Deformatio n
1	Carbon Epoxy	6.5452 kg	107.3	152.33	+ 27.41	+ 70.75
2	Carbon/Glass Epoxy	7.3187 kg	69.847	158.44	- 17.05	+ 77.60
3	Carbon/Kevlar Epoxy	6.1772 kg	117.77	306.18	+ 39.85	+ 243.21
4	Glass/Kevlar Epoxy	7.6301 kg	115.02	120	+ 36.58	+ 34.51
5	Carbon/Glass/Kevlar Epoxy	6.748 kg	105.9	306.18	+ 25.75	+ 243.21

Table 6 Summarize result of Maximum stress and Total deformation

## RESULT AND DISCUSSIONS

### Stress Analysis

Prior to move further for analysis, initially it is important to validate the available paper to perform FE analysis. After validation, assign all the conditions for analysis and hybrid composites samples were compared with conventional aluminium alloy wing. The percentage difference of each material is studied and plotted in graph for better visualization. The force is applied directly on the bottom skin of the wing and analysis is performed on five samples of hybrid composites with same wing model. It is very important to consider same thickness for all samples analysis to differentiate the other main parameter which create more strength and cause damage. Each ply sequence represents the stiffness and strength of fibre directions. The fibre orientation is kept same for all the samples to validate the common difference of all hybrid intra composites. The properties of each material were calculated and included in the static structural analysis.

From the observations, normal carbon epoxy composite result showed increase of 27.41% and 70.75% of maximum stress and total deformation respectively when compared with aluminium alloy in Fig 5. The maximum stress occurred at the top skin of the wing and deformation occurred at the wing tip. The result is similar to the aluminium alloy but the weight of the structure reduced to 46.57% which helps for the wing functions and to make it light.

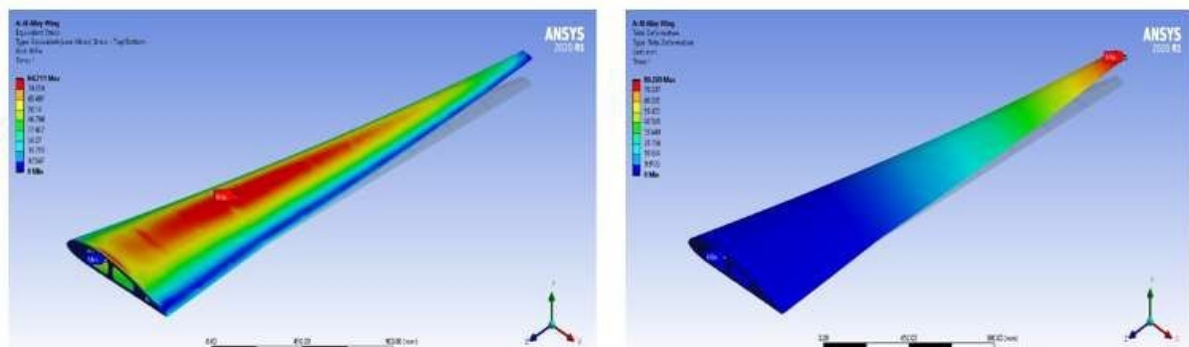


Fig 5 Al Alloy wing Stress and Total deformation

Hybrid intra composite Carbon/Glass Epoxy showed least result of all samples i.e., decrease of 17.05% of maximum stress and increase of 77.60% of total deformation as shown in Fig 6. Inclusion of glass fibre reinforcement affects the stress result tremendously. The maximum stress acts in the root chord of the wing because of joining point. Carbon/Kevlar epoxy has very less weight compared to others but stress result is increase of 39.85% which gives similar value to others. The total deformation is increased to 243.21% which is similar to Carbon/Glass/Kevlar result as shown in Fig 7s. From this, it is known that presence of Kevlar increases the deformation very highly. Glass/Kevlar reduces the deformation to 120 mm which is very less than others. The stress result shows almost same as previous sample and the weight also increases to maximum of 7.6 kg than others.

The combination of three material i.e., carbon/glass/Kevlar stress results show 25.75 % increase of conventional material used in the aircraft which is similar to the carbon sample. There is not much stress difference between these two samples but the deformation becomes large i.e., 243.21% increases. So that, it is recommended to use normal carbon composite in place of hybrid. The summarized result is shown in Table 6.

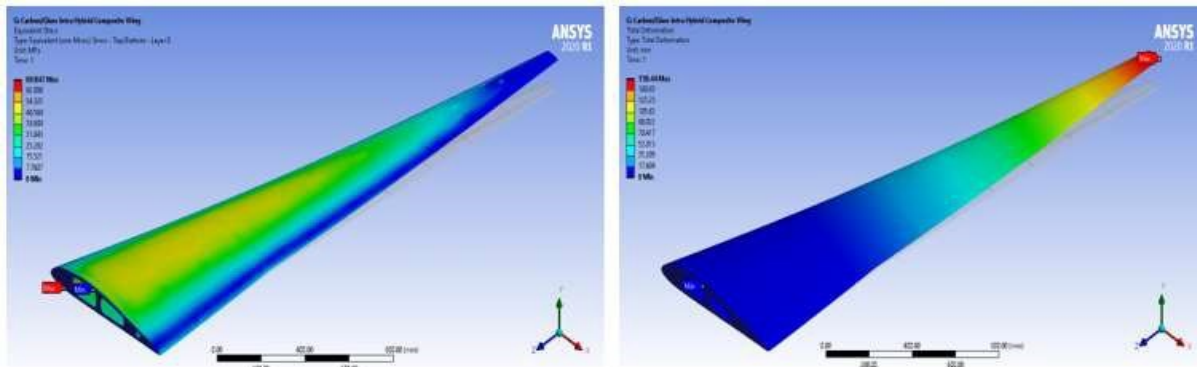


Fig 6 Carbon/glass Composite Stress and Total deformation

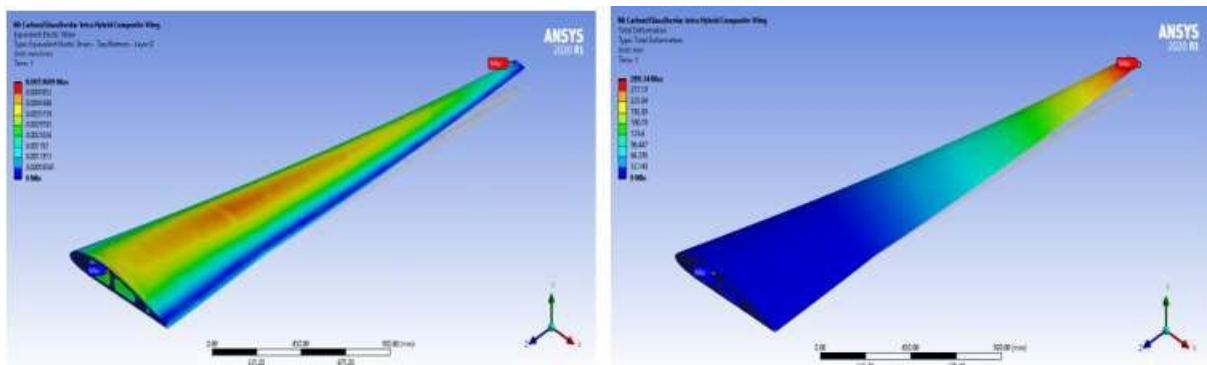


Fig 7 Carbon/glass/Kevlar Composite Stress and Total deformation

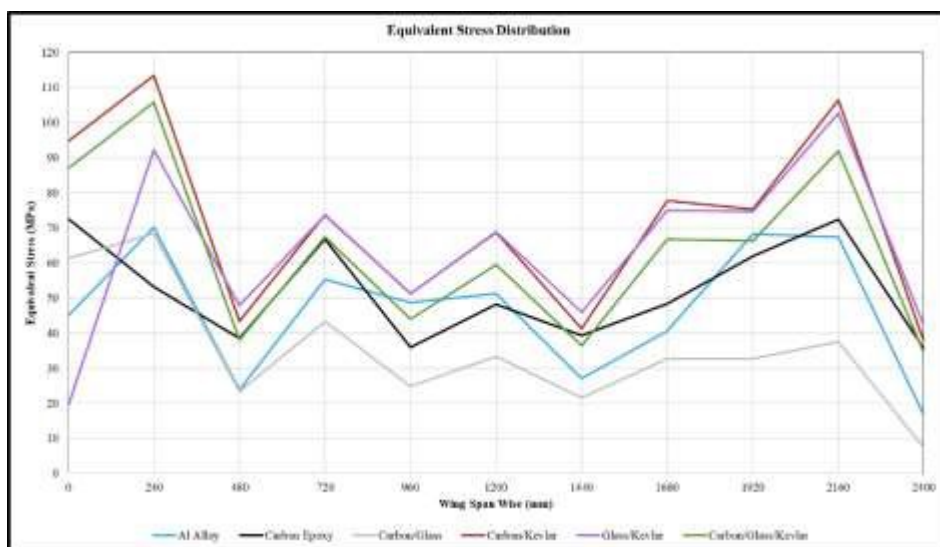


Fig 8 Equivalent stress Distribution

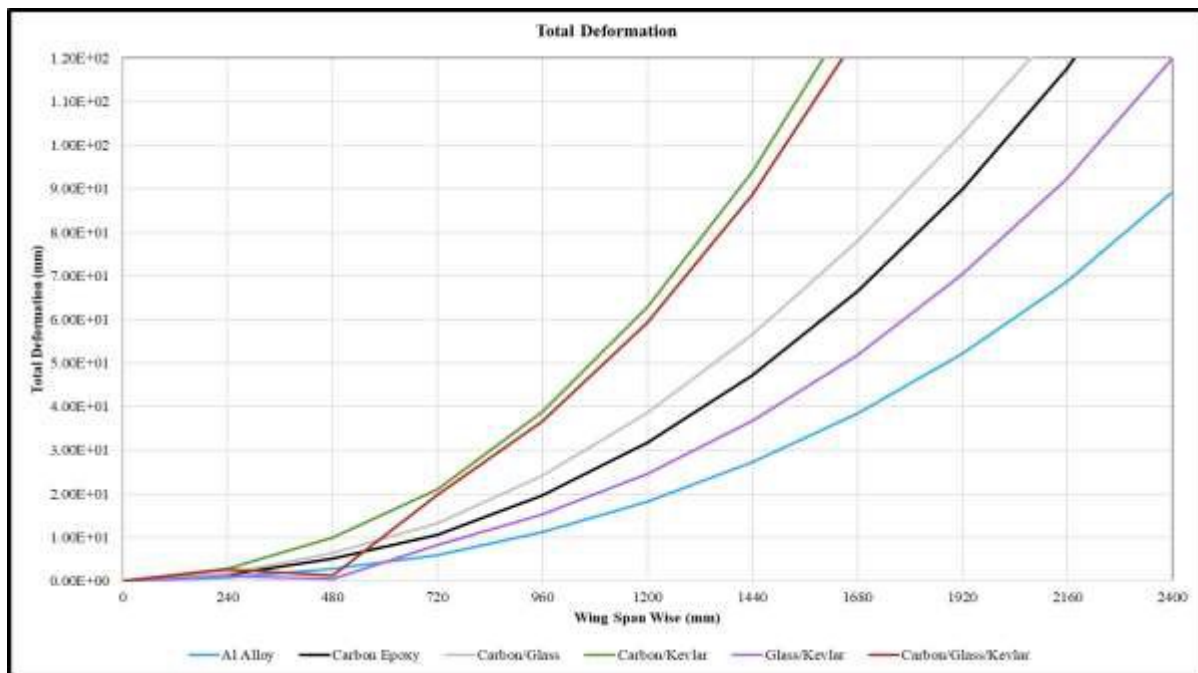


Fig 9 Total Deformation

From this observation, it is found that the presence of glass fibre reduces the stress tremendously and the presence of Kevlar fibre increase the total deformation to higher extent and reduces stress to some extent. The compared result of all samples was plotted in the graph with equivalent stress and total deformation separately as shown in fig. This shows that maximum stress was observed in carbon/Kevlar fibre where there is no glass fibre. The minimum stress was observed in the carbon/glass fibre hybrid composite. Hence, it is proved that presence of glass fibre reduces weight and stress of the component theoretically. The stress distribution is at the root chord only not throughout the wing. The stress result graph is shown in Fig 8.

Similarly, the graph shows maximum deformation occur in the carbon/Kevlar hybrid composite in the short time and the minimum deformation occur in the Glass/Kevlar hybrid composite except aluminium alloy is shown in Fig 9. The presence of glass fibre and Kevlar fibre may affect the property of the composite material.

## CONCLUSION

The finite element analysis of hybrid intra composite wing for UAVs is evaluated. The analytic calculations shows that the stress developed in the hybrid intra composite is less compared to the conventional composite and Aluminium with the same applied force. It has significant effect than

normal composite. Five different hybrid composites were modelled and these composites were assigned to the NACA 4415 UAV wing which is designed for the analysis. For this observation, the various types of research paper are studied and validated for comparing the normal conventional composite and hybrid intra composite which has both numerical and experimental study. The current study showed the equivalent stress and total deformation value of five hybrid composite for comparing the optimized and suitable composite. The analysis was performed on same wing specifications and fibre orientation (0/-45/+45/90/0)s. The result showed that stress is reduced to a greater extent in hybrid composite when compared with conventional aluminium alloy. The obtained result was proved that carbon/glass hybrid composite has better performance than other. The maximum stress was reduced with the difference 17.05% and increase of 77.60% of total deformation which is acceptable because the weight of hybrid composite reduces to greater extent than alloys. The presence of glass fibre reduces the stress to greater extent and reduces less amount of deformation. Similarly, the presence of Kevlar fibre increases the total deformation of the composites but stress value almost remains same with others. For further study, manufacturing of UAV wing can be improved by hybrid intra composite with the presence of glass fibre. This optimization of wing reduces structural weight and increases strength. The manufacturing cost also get reduces and complex structure design can be implemented for more elegant UAVs

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# Significance of Blockchain Technology

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## ABSTRACT

Blockchain is an innovation that is created utilizing a mix of different methods, for example, cryptography, arithmetic, calculations, financial aspects models and so on. Blockchain store data forever across an organization of PCs. This decentralizes the data as well as disperses it as well. The Blockchain authorize this by utilizing a type of math called cryptography. Decentralization diminishes the danger for defilement, misrepresentation and control. Blockchain innovation is a new what's more imaginative method for carrying out decentralization. Blockchain innovation is an answer for the issue of centralization. It's a framework for keeping records by everyone, with no requirement for a focal power. A Decentralization approach to keeping a pioneer that is for all intents and purposes difficult to adulterate.

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## INTRODUCTION

Blockchain is made up of two words. The first one is the block and the second one is the chain. Blocks are blocks used to store data in a blockchain system. Cryptocurrency data is stored in the blocks.

Now what is Blockchain? Let's explain this properly. Blockchain is a type of database. This database stores information and data in the form of tables.

The technology was first introduced to the world in 1991 by Stuart Haber and W. Scott Storyette. But blockchain got its first application in the year 2009 at the launch of bitcoin. This is called blockchain because this technology collects data in groups and these groups are called blocks. Every block has a limited storage capacity. When the limited storage capacity of a block is filled, that block is attached to the first block. Many such blocks combine to form a large chain of data called a blockchain.

A blockchain is a chain made up of blocks that contain data. Each block contains the Cryptography Hash of your previous block. This hash is generated on each transaction. Which are made up of strings of numbers and letters. If one tries to tamper with the data in the blockchain even a little bit, the whole data changes. So that the manipulation of the record can be easily noticed. This is probably why Blockchain Technology is considered the safest. Every computer has a copy of the blockchain. Which is called nodes. These nodes check the hash in the blocks to see if there is any change in the

transaction.

If the transaction is approved by most of the nodes, then it is written in block. This blockchain updates itself every 10 minutes. As a result, they have the details of each transaction. Blockchain for Bitcoin is a type of database that stores every Bitcoin transaction. Cryptocurrencies like Bitcoin are spread directly to Blockchain a computer. So that these currencies are operated without any authority. Using this technology reduces many transaction fees.

Cryptocurrency In addition to cryptocurrency, blockchain technology is used in health centers, banking industry and many other places.

## LITERATURE REVIEW

This inquire about comprises of academic investigate papers from presumed books, conferences and books which are consisting of 40 well known assets best world colleges diaries by IEEE, ACM, Elsevier and ScienceDirect. The reason of this writing survey is to distinguish the existing apparatuses, approaches, techniques and really enormous data and pieces chains which are reliably working in industry. In writing audit, we watched its most recent technological patterns and analysts and industrialists who are at the same time working on it and moving forward this technology based on the existing inadequacies.



### **What is blockchain innovation and how it works?**

Blockchain may be an innovation, an all-inclusive online database that can be utilized by anybody and anyplace utilizing internet network. Blockchain does not permit supporting faking documents, transactions and other information [1]. Blockchain may be a spreadsheet a progressive picture which has produced thousands of clones over computer network[9]. After that computer organize which is planned utilizing blockchain, to overhaul the spreadsheet frequently and you ought to have the essential perception about the understanding of blockchain concept [9]. Blockchain contains the collective data and as often as possible easygoing database. The Blockchain could be a distributed database in which each piece can get the duplicate of recently entered record which suggests that the information it keeps is genuinely public ally open for everybody but no one can alter any of the record [8]. Each block has an allurements for handling and confirming the exchanges

### **How blockchain handles enormous information in genuine life and how they both work in industry?**

Blockchain and enormous information both are autonomous innovations but presently days, both are in full feed [12]. As we already depicted in past areas almost blockchain, that it is conveyed database that store records permanently [15]. Blockchain and huge information upgrade the quality of information in different terms. Enormous information demonstrates the huge sum of information that can't be overseen or prepared effortlessly [13]; it requires a part of endeavors and procedures. In earlier age, colossal information overseen through different forms but they took a parcel of time for preparing so, with the passage of time modern strategies and advances presented but they are rejected due to proficiency, security and some for other realities. Blockchain innovation entered in advertise the most intension of this innovation is security, removing trick, extortion and overseeing information exceptionally well, with the section of time innovation is advancing.

### **Advantages of blockchain: -**

- From blockchain, your business process will be better protected with the help of a high level of security.
- The hacking dangers against your trade will moreover be decreased to a more prominent extent.
- The transactions done is are transparent and hence, easy to track.

### **APPLICATIONS:**

#### **Cash Exchange and Installment Processing: -**

Potentially the foremost perfect and sound application of blockchain technology is utilizing it as a implies to quicken the exchange of stores from one party to another. Most exchanges carried over through blockchain can be settled inside a matter of seconds, whereas banks take 24hours a day and indeed seven days a week.

#### **Sharing of Data: -**

Cryptocurrency IOTA has presented a beta adaptation of its Information Commercial center in November, clarifying that blockchain might be utilized as a commercial center to share or offer information that are unused. Since most venture information goes unused, blockchain may act as an arbiter to store and move this information to improve a mass of industries.

#### **Digital voting: -**

Blockchain gives the capacity to vote carefully, and it is straightforward sufficient that any controllers would be able to see in case something was modified on the organize. It coordinating the ease of computerized voting with the unchanging nature (i.e., perpetual nature) of blockchain to create the vote truly count.

#### **Disadvantages of blockchain: -**

- Blockchain isn't a Dispersed Computing Framework
- A few Blockchain Arrangements Expend as Well Much Vitality
- Not Totally Secure.

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# Algorithm Visualization

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## ABSTRACT

Students should have the opportunity to understand the variety of sorting, such as Selection sort.etc. Algorithm visualization shows how algorithms work visually. It in particular objectives to simplify and deepen the recognize of set of rules visualization. Algorithms and data structures form one cornerstone of an undergraduate computer science education. An effective method of improving instruction in this critical area is to include algorithm and data structure visualizations and animations into the curriculum. Good AVs help illustrate algorithms by illustrating their different states and showing how they progress from one state to another. Algorithm operations illustrate data structures in natural, abstract ways rather than focusing on memory addresses and function calls. Many are available online (and for free).

**Keywords:** *Computer science education • Algorithm visualization • Animations of Algorithms • Sorting*

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## INTRODUCTION

Learning various hidden steps that are dynamically involved is a key part of the 'visualization of algorithms' sequence. Visualizing algorithms offers these advantages: Ability to learn the hidden steps of algorithms, Understanding memory usage and time management. It is called Similarly to the mathematical and empirical evaluation of algorithms, there may be a third manner to take a look at algorithms. Set of rules visualization and may be described as the use of snap shots to convey a few beneficial data approximately an set of rules. This information can be a visual indication of the operation of the algorithm, its performance on different types of inputs, or how fast it performs compared to other algorithms for the same problem.

To achieve this, algorithm visualization uses graphical elements points, line segments, 2D or 3D bars, etc. to represent some "interesting event" in the operation of the algorithm. In fact, the level of student engagement with visualization appears to be more important than the specific functionality of the visualization software. Of course, many AVs exist and are widely (and free) available over the Internet. Unfortunately, those high quality ones can be lost in many low quality ones.

## LITERATURE REVIEW

Similarly to the masses of man or woman AVs created through the years, many systems were created to guide AV improvement. Numerous studies have been devoted to understanding the pedagogical effects of AV. We examine some literature in this section.

This paper discusses a study on animation ranking algorithms as classroom teaching aids. Created a web-

based animation tool to visualize four common sorting algorithms: selection sort, bubble sort, insertion sort, and merge sort. The animation tool represents the data as a bar graph, and after selecting data sorting and algorithms, users can run automatic animations or step through at their own pace. Afterwards, a study was conducted at the College of Rhode Island with a group of volunteer students who were studying algorithms in a computer science course. The study included a presentation and survey asking students questions that might improve their understanding of the algorithm. This paper documents and analyzes the results and responses of previous studies. [1]

Algorithm visualizations illustrate how algorithms work graphically. Particularly to simplify and deepen the expertise of set of rules operation. In this paper, we discuss the possibility of enriching standard methods of teaching algorithms through algorithm visualization. As a step in this direction, we introduce the algorithm visualization platform, demonstrate our practical experience and describe possible future directions, based on our experience and exploration through a simple questionnaire. [2]

This paper is intended to strengthen algorithm visualization, specifically choice sorting for an Algorithm and Programming course. Algorithm visualization technology graphically illustrates how algorithms work. This visualization can be used to provide an explanation for how all statistics pass to the acceptable role in order to be sorted in a display pc for education. This research consists of 6 steps which are concept, design, obtaining content material material, assembly, testing, and distribution. During the testing step, the utility is run and checked to confirm that it performs exactly what the creator has intended, and the college students can learn determination sorting algorithm by means of reading the visualization.

Subjects of the lookup have been students at Department of Informatics Universities Persada Indonesia YAI for implementation of the learning. The facts were analysed using the analytic descriptive approach and interpreted in a narrative way based on the lookup findings. The algorithm visualization suggests that students extend their motivation and ability to application range of sorting in programming language they learn. [3]

In this paper sequence of execution of algorithms are defined visually in an interactive manner. It helps to realize the essential concept of algorithms such as looking out and sorting technique in a simple manner. Visualization good points greater interest than theoretical learns about and it is an easy way of gaining knowledge of process. We suggest strategies for finding runtime of each algorithm and goals to overcome the drawbacks of the existing character systems. System illustrates each and every step actually using textual content and animation. Comparisons of its time complexity have been carried out and outcomes exhibit that our method provides higher perceptive of algorithms. [4]

## EXISTING SYSTEM

- TRAKLA2: is a web-based gaining knowledge of environment for statistics buildings and algorithms. The machine can provide routinely assessed algorithm simulation exercises that are solved the use of a graphical user interface.
- Data Driven Approach: Data pushed systems matter on the assumption that looking at how the variables alternate presents clues to the movements carried out with the aid of the algorithm. The focal point is on taking pictures and monitoring the information adjustments alternatively than on processing the fascinating occasions issued with the aid of the annotated algorithmic code. Conventional debuggers can be without a doubt seen as information pushed systems, on account that they grant a direct comments of variable adjustments.

## PROPOSED SYSTEM

The most important aim of this mission is to layout a gadget for sorting algorithm visualization as nicely as investigating and visualizing the exceptional and worst case for each carried out sorting algorithm.

### Design Steps:

The back-end code is comprised of HTML5, CSS, and JavaScript. All three kinds of code are contained in one .html file and can be run entirely from this file. One of the blessings of HTML 5 is that it is no longer fundamental to consist of distinctive types of web languages in a single file. Therefore, every kind could have been separated, making a whole of three files (plus the miscellaneous sound and picture files). This is true practice for readability and retaining related code together. However, I decided now not to separate the code for two reasons: 1) to make

bigger the portability of the challenge with the aid of solely needing to worry about one project file rather of three, and 2) where in the project file, the alternate in coding languages is extraordinarily marked and consequently does not notably decrease readability. Also, the ability to put extra than one web language in a single file is an instance of an RIA (Rich Internet Application). Below in Figure is an illustration of how the three coding languages relate and talk with every other.

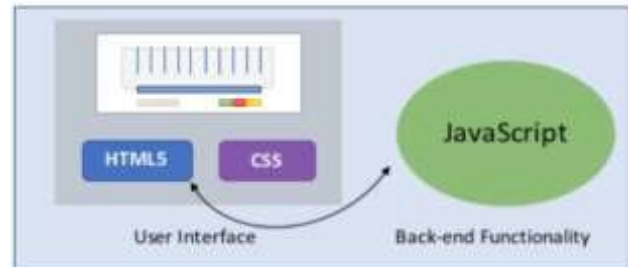


Figure: sorting.html file architecture diagram.

As you can see, there are no most important factors barring the three coding languages. Most websites have tools or scripts that require a server on the returned stop (like PHP), but it is not indispensable in this case considering that JavaScript runs right in the user's browser. HTML5 and CSS are used for the interface. The HTML5 communicates with the JavaScript code and vice versa to launch the fantastic algorithms and replace the interface, accordingly, as seen with a single, bidirectional arrow. Throughout the project, the code for the HTML5 and CSS did now not alternate much. As the JavaScript was modified from a purposeful programming focal point to a greater object-oriented one, the components of the HTML5 that did exchange have been the function calls for every button. All of the back-end interaction is abstracted to the various buttons for selecting algorithms and walking the animation. The implementation of this challenge is a aggregate of HTML5 (Hypertext Markup Language 5), JavaScript, and CSS (Cascading Style Sheets). There is solely one assignment file that incorporates the code and is an HTML file. The only additions to the important HTML file are the man or woman sound documents to aid the sound animation characteristic (saved as ".m4a" audio files). One giant refactor later, the code now resembles a Model-View-Controller architecture. Although, due to its purposeful nature, it has many more individualized features that replace the instance variables and Boolean values, directly updating the View and Controller. A simplified sketch of the Model-View-Controller relationship is beneath in Figure.



## ADVANTAGES

- less difficult and handy for users.
- easy to understand.
- Visualization can provide a brief, excessive level summary of the principle statistics contained inside the records.

## CONCLUSION

Algorithm visualization illustrates how algorithms paintings in a graphical way. It commonly targets to simplify and deepen the understanding of algorithms operation. For many developers, sorting algorithms are shrouded in mystery: they frequently appear too math-heavy or too computer science-y. In reality, however, each internet developer (remote or in-office) constantly works with records — and knowing how to kind this data properly is yet every other stepping stone to turning into even better.

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# A Review on: Fabrication and Development of Track Typed Stair Climbing Wheel Chair for Disabled Person

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## ABSTRACT

There are many researches has been carried out in the sense of fabrication of staircase climbing wheelchair. In the context of handicapped people, accessibility of the wheelchair plays very important role. The fabrication takes place to implement the best possible technologies to provide the better resources to handicapped people. This paper focuses on the different technologies and concepts used for fabrication of wheelchair. In this paper, author has enlisted various researches carried out. There are few major types of staircase climbing wheelchair has been enlisted in this paper.

**Keywords:** *staircase climbing wheelchair, tracked type, three-wheeled system, automation, fabrication*

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## INTRODUCTION

In everyday life we may have to carry so many goods of various quantities through stairs especially in offices, schools, colleges, hotels, industries, apartments etc. where the lifts may not be available, may be full with the people or under repair. It is very tiresome to carry the various objects through stairs manually for higher floor for so many times. In most of building lifts are not installed so there only human labor is solution for caring material. Labor is becoming costly as well as time consuming, where growth rate is getting negative. This problem can be solved if a trolley can lift loads while traveling through stairs.

The paper presents another choice for the transportation of the heaps over the step. The vehicle is planned so that it has three wheels on each side. They are set in a three-sided design. This task centers around the greatest ergonomically useful to a person. The current venture is connected with stacking conveying gear of a sort that is naturally worked by moving upwardly and downwardly on a stairwell. A load transporter is a wheeled system gadget that is by and large used to convey loads. It lessens human endeavors.

## LITERATURE SURVEY

Giuseppe et al. [1], depicts the mechanized wheelchairs goes back on schedule with a few researchers and scientists assessing the step climbing component. This paper assesses different step climbing instruments viz crawler type, leg type, half breed type and wheeled sort. Different powers and forces following up on the wheelchair while climbing the steps are assessed. Ideally the external help get together includes wheels on one or the other side of the seat. An inward help get together, nearer to the middle line of the seat, additionally upholds the seat gathering.

Murray and Takakazu [2], the back tires are independently determined and the front wheels are

freewheeling castors. This proposed idea is mathematically displayed and power estimations for straight actuators are made. Step rising and step plunge tasks are portrayed alongside figures and conditions. The control framework and the step edge sensor framework are additionally explored. The venturing calculation is talked about exhaustively. The impact of outside factors like expense, weight, style, the scope of activity, wellbeing, functional effectiveness, solace is assessed.

Simpson et al. [3], presented that, the steps will probably forever be a reality in reality, on account of the great degree of spatial productivity they give while interfacing areas of varying vertical rises. Steps in all actuality do introduce an expanded level of risk contrasted with, for example, delicate inclines however this must somewhat by need be basically thought of. For instance, in the preparation of any new structures, the objective clients ought to be thought of. Obviously for public conveniences, for example, wheelchair clients should be thought of, yet for instance, on account of saying a private home in Japan where land space is at a higher cost than normal (all the more explicitly over the top expensive) staggered development is unavoidable and steps will undoubtedly keep on being utilized. A trade-off circumstance on account of families really focusing on maturing guardians is frequently giving every one of the fundamental conveniences at ground level (boundary-free) and involving the upper levels for the more youthful families' individual rooms and so on.

Morales R et al. [4] describes the mechanical gadgets, the developments, and the direction age of a clever wheelchair model fit for climbing flights of stairs. The vital elements of the plan are the utilization of two decoupled components for every hub, one used to arrange steps, and the other positioned the hub concerning the seat to oblige the general slant. This decoupling makes various climbing procedures conceivable, the general system turning out to be remarkably flexible according to a control perspective. A control framework is

important to synchronize the developments of the multitude of actuators of the wheelchair so that its focal point of mass can follow discretionary spatial directions.

**Kilari, Snehita Praneetha, et al.,** <sup>[5]</sup> In this diary the streetcar is intended to climb flight of stairs with the assistance of tri wheel instrument and this kind of component is utilized to climb the flight of stairs effectively with weighty burden which can't be out of control essentially or simply by lifting it. This idea of tri wheel instrument is moved to wheel seat. The essential target of bearing weighty burden like 120-150 kg is accomplished during testing. The exhibition is marginally confounded when the straight edge was tried for differing step sizes. Yet, when tried with Quasi-static edge, the vehicle showed more noteworthy execution in any event, for steps with various aspects. Static primary examination shows that it is fit for moving weighty burdens with less disfigurement and with no break.

**Hinderer, et al.,** <sup>[6]</sup> from this diary, it is seen that the wheel seat is competent to move with the assistance of a joystick and for some situations, the older individuals are subject to mind. Because of this care isn't taken consistently to patients and there are deficiencies of nursing homes. In this kind of wheel seat, the patient can move freely with the assistance of joystick development. This is the motivation behind the independent step climbing wheel seat. This paper presents another innovation with which wheel seats or robots can beat steps autonomous and safe. This system in light of legs is depicted exhaustively and exhibited with the assistance of a capacity model. The innovation presented here with which the wheel seat defeats independence which will assist the patients with continuing all alone and they can move freely

**Petzäll, Jan.** <sup>[7]</sup>, The powers required while crossing step hindrances with a wheel seat were determined by the standards of mechanics and handled by a PC for the different chief navigating circumstances. This diary alludes to defeating the obstructions in the pathway of the wheel seat. Situated in the preliminaries the ends are that progression hindrances with a tallness of 50mm can be effectively be crossed with a manual wheelchair moved by an orderly. The tenant of the wheelchair can sit securely and solace capably during the crossing at this tallness. An obstruction stature of 100 mm can be navigated with a back tire drive wheelchair and a front-wheel-drive wheelchair.

**Matteo, et al.,** <sup>[8]</sup> has discussed that, The wheelchair can Climb single deterrents or Staircases with a triple-wheels Cluster engineering. From this diary, the way of the wheel is noted in which let us consider three-wheel one wheel is refreshed in the floor while climbing the flight of stairs and the other two wheels are moved with the assistance of engine and afterward in the wake of climbing one stage the back to back wheel is adjusted and the other two wheels are moved and they are totally made to fix in a point of 120 degrees each

and this will be occupied with tri-wheel edge to move the wheel seat upwards to the highest point of the flight of stairs and the technique is done over and over.

**Ghani, N. M. A. Nasir, A.N.K. et al.,** <sup>[9]</sup>, This paper centers around the control of the wheel seat with the assistance of joystick development. The difficulties are to control the front and back engines as well as the slanted point and guarantee the maintainability and steadiness of the wheel seat to climb the flight of stairs. This kind of wheel seat utilizes control, for example, the fluffy control which is helpful for the patient or the administrator to drive or to run the wheel seat to with no second individual. The actual patient can run the wheel seat with the assistance of blue tooth control. The regulator comprises of Arduino board, engine drive hand-off which is utilized to control the wheel seat

## CONCLUSION

In this paper, we have studied different types of wheel chair and technologies used to build the same. This paper concluded that the track type wheelchair is one of the best suitable mechanisms to get proper grip as well as good traction too. There are furthermore studies are also been has been taken place. The automation and use of wireless technology also be the feasible part of this system.

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# Optimization and Fabrication of Modern Spray Nozzle for Pesticides: Review

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## ABSTRACT

In the agricultural area for the most part, the rancher utilizes the conventional approach to splashing pesticides and insect poisons is finished by ranchers, conveying knapsack type sprayers on their shoulders to shower. Which requires more human exertion, is expensive and consumes time effectively and it causes human danger. The above issues can be addressed with our power sprayer. Sprayers are mechanical gadgets that are explicitly intended to splash fluids rapidly and without any problem. This study expresses sunlight based worked shower siphons for agribusiness purposes. This sort of sprayer covers an enormous region and is not difficult to work. A sun oriented sprayer ordinarily comprises of a tank for conveying the fluid to be showered, here we utilize a sunlight powered charger which converts heat energy into electrical energy that stores into the battery, the engine is for siphoning out of fluid in the tank, splash spouts on naturally scatter the fluid in a descending bearing over an impressive region, a suspension is mounted on the haggles is connected for splashing. The gadget is precisely pushed from behind and as the stock to the siphon is turned on, the fluid is splashed. Concentrating on these significant issues an endeavour is made to foster hardware that will be useful to the rancher for the showering tasks. This study cantered on sunlight based power sprayers for splashing activity. This sort of sprayer decreased splashing time, human exertion, and cost.

**Keywords:** *sprinkler, nozzle, sprayer, agriculture*

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## INTRODUCTION

A sprayer is a mechanical gadget used to splash fluid like herbicides, pesticides, fungicides, and manures to the yields to stay away from any irritations and control the undesirable plant species. Sprayer gives ideal use of pesticides or any fluid with least exertion. In Indian ranches by and large, two sorts of shower siphons are utilized for splashing, are hand worked splash siphons and fuel worked shower siphons, out of which hand worked splash siphons are generally well known. To kill the irritations and bugs' pesticides, manures are splashed either physically or by utilizing sprayers. Prior, the pesticides and composts were sprinkled physically, yet they will bring about destructive consequences for ranchers. To beat this issue, different showering methods have been created. These sprayers comprise of various instruments and the expense of hardware is by and large high. A sun powered worked sprayer is not difficult to deal with and upkeep free, consequently is reasonable to the ranchers. In this way a sun oriented worked sprayer is planned and created.

This framework can be worked utilizing sunlight based energy or electrical energy. The sun powered energy is changed over into electrical energy and is put away in a capacity battery. The primary benefits of the current framework are the running expense lessens to a base and consume less time. Sunlight based energy from the sun is

gathered on the sun powered charger. The board is comprised of photovoltaic cells, which convert photon energy to electric energy. These cells are comprised of silicon semiconductors. The sunlight powered charger is utilized to create electric energy and charge the battery. The charged battery is utilized to work a DC siphon for showering the pesticides.

## LITERATURE SURVEY

Sukhatme, S.P., in 2001 the investigation of handbook of sun oriented energy has been producing power from sun based energy, through the photovoltaic and warm courses. Overall, India has put forth a critical attempt for the effective usage of sun based energy.

R.Joshua et.al 2010 has manufactured a sunlight based sprayer-agribusiness carries out energy interest and it's one of the significant strings for our country. As indicated by them, the utilization of non-customary energy is the main substitute answer for traditional energy interest.

Samuel Gan-Mor et.al in 2012 have done late advancements in sprayers for the use of bio-pesticides an outline. The change from the enhanced states of a research facility trial to the brutal circumstances experienced in the field has up until this point demonstrated harder for the use of bio-pesticides as opposed to synthetic compounds. This

has without a doubt been because of an absence of interest in the advancement of viable details and conveyance frameworks, to market more potential bio-pesticides. The somewhat little exertion put resources into target-explicit sprayers, contrasted and the interest in lab studies, has prompted uneven turn of events, and for instance the requirement for closer combination among detailing and designing exploration. The test is to get viable plans so organic control specialists can be handily applied by ranchers.

Sandeep.H. Poratkar et.al in 2013 has developed a multi-spout pesticide sprayer siphon, they recommended model has eliminated the issue of back torment since there is no compelling reason to convey the tank on the back. This model has a greater number of spouts which will cover the greatest area of splashing in least time and at the most extreme rate. Solid issues are taken out and there is no compelling reason to work the switch.

Sanjay.S et.al 2015 has planned and manufacture of mechanical vermin sprayer. Hence the minimal expense physically worked mechanical pesticide splashing machine. The splashing as far as decrease in work and decrease in utilizing energy, in this manner our instrument gives a decent bug killing procedure.

Akshay, M.N et.al in 2016 has planned and creation of sun oriented worked sprayer for agricultural purposes, and this intentional is about an agricultural pesticide sprayer, which involves sunlight based energy as a wellspring of force for showering.

M. A. Gaodi et.al in 2016 has depicted that there are many sorts of sprayers and splashing machines are accessible on the lookout. Both are having contrasts in the kind of activity and working rule. These sorts are made according to the quantity of structures and level of lessening the human exertion monetarily. Ordinary techniques and cutting edge innovations both are accessible in it. Advance advances a greater number of benefits than ordinary strategies.

R. D. Gorle et. al in 2016 have manufactured a programmed pesticide showering machine, there are many kinds of pesticides sprayers are accessible. However, most use is rucksack sprayer, which is less expensive and less upkeep. It requires a great deal of time and high working expenses. By the electric parts like engine, siphon, and showering spouts the most common way of splashing comes financially. The programmed pesticides splashing machine covers more region than customary machines.

Faijubhai Malek in 2016 has fostered a precisely worked truck for pesticide sprayer for agribusiness. This undertaking is about a pesticide sprayer mounted on a truck that is worked precisely with next to no outside wellspring of energy. The handle of the sprayer will be precisely worked through the pivoting of the shaft of the wheels of

the truck utilizing an effective component. This will give uniform splashing for the homestead. The productive plan for the ranchers will lessen their work radically.

Siddharth Kshirsagar in 2016 has designed and fostered the horticulture vehicle sprayer, their intention behind fostering this hardware is to make automation which will limit the work Of cultivating. It is appropriate for showering at least expenses for the formers so he can bear the cost of it, of the numerous items accessible. The sprayer is are metered to permit speedy blending and the coarse splashes, so it doesn't take as long to apply weeds executioners, insect poisons, and so on,

K. Akhilesh et.al 2016 has planned and chipped away at a movable manual push worked pesticide showering machine, it is observed that the current pesticide splashing machine utilizes petroleum and diesel to run. It can cause contamination and further vibration created in the machine cause commotion contamination while a likely handheld machine might cause medical issues for an individual as he is straightforwardly in touch with the insect spray. The machine can work really concerning covering the region, time and cost of a splashing cycle.

Vipul Jhod et.al 2016 has planned a self-fueled pesto-sprayer, this gear has no requirement for electrical energy, mechanical energy from rethinking. It is a piece of self-fueled hardware. The chain drive is utilized to move the power. Whitworth's component makes an interpretation of revolution movement to responding movement.

Dr. R. N. Panchal sir et.al in 2016 has mono wheel worked pesticide showering machine. This venture is a work to satisfy the whole prerequisite examined before. The wheel-worked responding siphon is completely planned thinking about every one of the mechanical terms that are connected with the plan of the siphon. Every one of the things are pointed towards the less exertion expected to work the siphon. The siphon is a light-obligation part fit for showering high-pressure fluid through a spout. It decreases labor supply for activity.

Joshi Dhruv Bharat Bhai in 2017 has innovated the vehicle moves in sending siphon enacts and because of its strain will be created in the tank and pesticide will be showered out from the spout. The vehicle will be worked by a motor in a sending heading; consequently no destructive impact will happen to human wellbeing. Likewise, they closed a great deal of time will be put something aside for limited scope ranchers.

G. H. Raisonni in 2017 has planned and created the sun oriented worked agro-sprayer, the recently planned agro sprayer satisfies the assignments like hand splashing. IC motor splashing and leg siphon showering and so on Utilizing non-customary energy sources i.e., sun oriented energy. The model is intended to be eco-accommodating and lower cost, and in this way will end up being more

productive when contrasted with petroleum essential pesticides sprayer. This model is generally appropriate for little and medium-scale ranchers.

Dhiraj bhagat et.al 2017 has planned, created, and manufactured physically worked multi-spout pesticide sprayer siphon and seed planting gear the model has taken out the issue of back torment since there is no compelling reason to convey the tank on the spine and shoulder.

Ahalya m et.al 2017 has planned a sunlight based fueled self-loader sprayer for use in grape plantations. They exhibit the undertaking, the execution of advanced mechanics and mechatronics in the field of agribusiness. The presentation was acceptable under lab conditions. It gave great inclusion and the expense of activity. The security and long haul strength of ranchers is guaranteed by disposing of human work totally from this interaction.

Krishna Murthy et.al 2017 has manufactured the sunlight based pesticide sprayer, they fabricate sun oriented controlled pesticides siphoning framework that is savvy contrasted with an electrically worked pressure driven siphon. Since here non-traditional energy is utilized to accomplish the expected head. This gadget fills its need somewhat, however with the legitimate game-plan, it can perform still better. Which covers the greatest area of showering least time at most extreme rodent .imported empty cone spout should be utilized in the field for better execution.

## CONCLUSION

The improvement of sun based power sprayer is earth eco-accommodating, cost-effective, efficient, and decrease human exhaustion. This sprayer can be utilized generally in the horticulture field actually. It tends to be a decent choice to choose for the rancher who is monetarily tested and dealing with electrical issues. It doesn't need fuel and furthermore doesn't make air contamination and clamor. The sun based worked sprayer will assist the ranchers of those distant region of the spot where with powering isn't accessible without any problem.

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## AI-Based Attendance Monitoring System

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### ABSTRACT

Attendance Monitoring System is required in organizations for checking the presentation of students and its difficult task to check each and every student is present or not. In all organization attendance are taken manually by calling their register numbers or names and noted in attendance registers provided by the department heads as a proof and in some institution of students wants to sign in these sheets which are stored for future references. This technique is continual, complex work and leads to errors as few students regularly sign for their absent students or remark proxy attendance of the absent students. This method additionally makes it more complex to way all the student's attendance and not easy to monitoring the individual student attendance in a classroom atmosphere. In this article, we are operating the technique on implementation of face detection and recognition framework to continuously recognize if students going to class or not and marking their attendance by catches their faces with database to match and scoring attendance. This facial biometric framework captures an image of a person using camera and contrast that image and compare the image with the image stored at the time of enrolment and if it matches marks the attendance and monitor the student performance continuously, We can use the concept of artificial intelligence concept to monitor student attendance like capturing the motion pictures of the student when present in class to survey the student data for how much time the student presents in class.

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### INTRODUCTION:

Artificial Intelligent system used for the student's attendance concept mainly works facial recognition system was discussed by Akshara Jadhav et al. Face is considered as a primary key feature to recognize and talk with other peoples in the world because face considered as a unique identity for each and every person. The facial features will be unique to the further individual. The Unique features for every individual person make facial recognition in executing the real world. Human distinguish an individual person's face is based on color, eyes, nose, ears, etc. such factors for computers, it's hard to analyze the data so we may use the concept of Computer vision. The intention of using computer vision technology to recognize the human features in a computer. (1)

In recent years we noticed remarkable changes in face recognition techniques due to available biometric methods, this is the most unnoticeable technique. The installation face recognition systems on a large scale are easy but the actual implementation office recognition system is progressive because has to take into account for all potential cases variation caused by a change in face expressions by light-weight, face expressions, dissimilar styles, image resolution, observing element device, observing distance, etc. Several algorithmic rules are implemented on face recognition and every algorithm has power and abilities by its own. We tend to do face recognition almost on a daily basis. Usually we glance at a face and appreciate by

in a flash with the data present already in the database

### Face Recognition:

In 1900's mid scientists started working on computers for recognition on human faces because of its expensive applications on face recognition has obtained continuous attention from researchers. Face recognition may be outlined because of the technique of features by someone based on biometrics by the approach of matching a capturing image or video with a data present in database. The data flow process in face Recognition systems starts by having the capacity to find face by mobile phones, cameras etc. to recognition frontal face from data input. Virtually it has been proved that students attended classes only when there is full control on classroom and attendance monitoring.

### METHODOLOGY

Functional Specifications: To operate a system functional specification is required. These requirements are necessary to build a system which will be required to attain the objectives being on previously was implemented by Jireh Robert Jam. Some of the important functional and non-functional requirements are outlined below by look over the shop keeper story. High quality camera is used to capture first facial image. HD Camera mostly professional camera. Facial features should be detected in image. Detect the faces and then crop the overall ranges. When recognition take an image to recognize it will

resize all images . Calculating the overall attendance percentage based on facial property matched. When facial image detect it stored in a folder. Loading the images into the database. We want to train facial features to computer to recognize.

Database is used to store performed recognition face. Calculate computer facial recognition speed for effective security. Performing face recognition sequentially for each image cropped. Displaying input and output cropped image side by side on a same slot to recognize and compare the features by machine. After recognition the face display a name of the output picture above the picture in the given area is identify to easy.

### Working of face recognition system:

The working of face recognition system mainly divided into two types of algorithms . One is holistic matching algorithm and second is feature-based algorithm The entire face is considered as input data to identify a specific person from the database in the holistic matching method and in a feature based method face is divided facial features like eyes ,skin tone ,and eyebrows etc.Apart from the above two, in those days three dimensions face recognition technique is used to capture the 3D faces using sensors to identify person in real world very correctly. Real-time face detection using 3D sensor based applications decide a person with various facial photos in different angles, on different light conditions, and various poses with different expression makes more well organized in all applications.

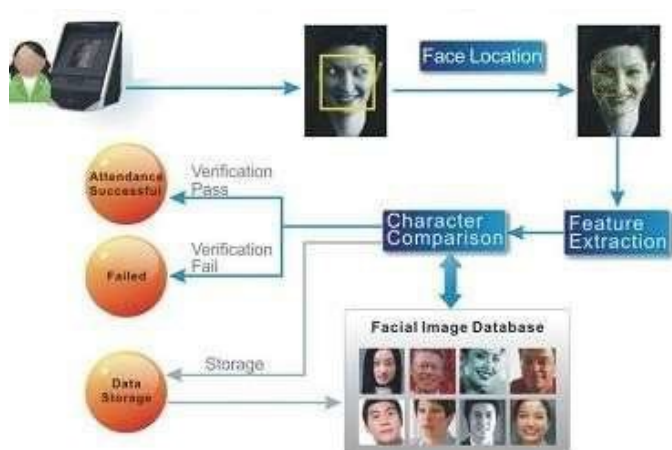


Fig-1: Flow Diagram describing the face detection.

Artificial Intelligence allow Face detection based application becoming world popular. It was discussed by Santana Fell . In Washington, American private elementary school in Seattle begins

implementing automated face detection technique called SAFR (Secure accurate Facial Recognition). This method include faces of parents are adding into the database.

The personal information in mobiles can be protected in smart phones to check no one can access the personal data even the smart phone is stolen.

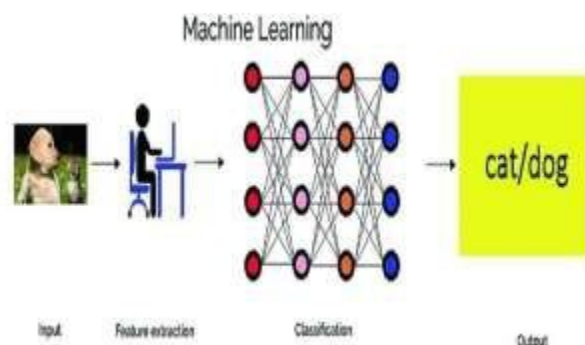


Figure 1. Machine Learning Architecture

### CONCLUSION:

We are automating the attendance system to decrease the errors occurs due to the manual taking attendance. If the cameras monitoring into classrooms to evaluate their interest and to mark attendance, students tends to pay attention if Artificial Intelligence enabled method can monitor and mark their attendance and faculties will at least come to school or college every day because, in early times they are coming and putting sign and they are letting the school or college now it's not possible if the faculty left the college the system automatically marks as absent so everyone will come to school or organization regularly. Using artificial intelligence concept the attendance monitoring system is very secure, accurate and easy to monitor students and faculty's attendance.

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# Travel Planning App By Using Android Application

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## ABSTRACT

This research paper is to understand the relationship between tourist and their dream. These days people like to explore more and more things. Explorers tends to use online platforms than offline techniques. The purpose of the present research is to discover and to understand young people's touristic behavior. The aim of this paper is also to establish how important are qualitative methods when trying to understand touristic behavior. Even we made qualitative research there are some managerial implications of this study. Managers should focus on human factor when promoting a touristic product. They for the most part utilize Web to advise youthful visitors but they must get it the significance of showing the genuine conditions and not a moved forward alternative of the genuine offer.

## INTRODUCTION

IT industry has played important role in development of tourism. Traveling has become easier these days. It has encouraged people to explore more landmark and because of this tourism industry has expanded a lot. Travelers have to believe virtual experience. This is why the way you present the travel destinations is one of the important success factors while planning web sites or apps. The Travel and Tourism industry has grown certainly over the years. According to the United Nation World Tourism Organization (UNWTO) discovered that the international tourist arrivals has increased up to 1.2 billion in 2015.

The most objective of this extend is to form portable based Travel arranging framework. The travel apps are having very a victory since of its client friendliness. Travel operators are having victory in making proficient catalogues where buyers can discover imperative and well-chosen data combined exceptionally well with decent photographs, valuable tips and traps, directing maps and so on. In this extend we offer assistance the traveler to arrange things like budget, nearby travel, fundamental and things -to-do etc. On the other hand, these days it gets increasingly troublesome for "brick and mortar" travel organizations to compete and keep up with the Web and its online booking potential. It appears that most of the travelers tend to favor the online involvement, since its way better way of visualizing goals.

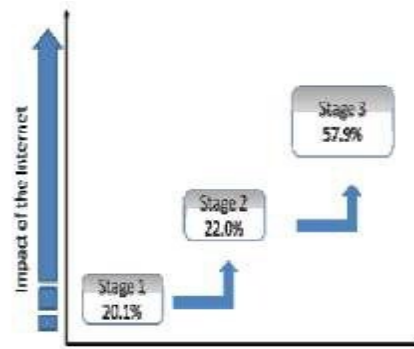
## USING TRAVEL AGENCIES IN PLANNING A TRIP.

Youthful travelers most of the times utilize the Web when they choose to arrange a trip. It is an environment for social interaction, where they can counsel photographs or audits from companions past trips posted, by obscure

travelers that post surveys on locales, this technique their choice will be impacted in a positive. Youthful sightseers tend to be exceptionally well educated approximately all the things, counseling a wide extend of assets some time recently takeoff. Web is the most shape of collecting data almost everything, surpassing family and companions.

## LITERATURE REVIEW

The travel arranging prepare, diverse from a single goal-oriented decision-making demonstrate, incorporates numerous choices and among all choices. Stewart and Vogt characterized travel arranging as handle involving data look behavior, data employments and applications, genuine trip behavior, . The Web has heightened the complexity of the travel decision-making handle by making it simpler for travelers to gather data and alter their choices. Thinks about have distinguished a few particular impacts of Web utilize on travel arranging behaviors. For case, sightseers who looked on the Web tend to spend more at their goal as compared to those who counsel other data. Moreover, it shows that the Web has drastically expanded the number of goals considered by the shoppers within the travel arranging. More as of late, Stop and Fesenmaier difference that online travel organizers can be separated by their association in online travel arranging whereby the categorized online American travelers into three bunches (see Fig 1): The travel organizers at the arrange 1 (inclusion gather) did less travel arranging on the Web than those at organize. They found that travelers varied considerably in terms travel exercises, travel arranging and the effect of the web on the travel arranging handle. Based on this understanding, one would anticipate that the nature and degree of effect of the Web may alter over time as online travel organizers move from Arrange 1 (i.e., moo utilize) to Organize 3 (tall utilize).



**Figure 1 Stages of Internet Use for Travel Planning**  
(Park and Fesenmaier, 2010, p. 4)

In this manner, it is so vital to distinguish the changing drift of impacts of Web utilize on travel arranging behavior. Fig 1 Stages of Web Utilize for Travel Arranging. The considers of the effect of Web on travel arranging behavior demonstrate that online travel organizers claim less vulnerability, more fulfillment, spare time and cash, and it is much simpler to share data. Be that as it may, how the seen benefits change in reaction to changing arranging behavior remains obscure. Taking after Sirakaya and Woodside and others, it is set in this think about that the degree to which travel arranging behavior changes is straightforwardly . In this way, it is anticipated that over time the rate of effect of the Web will diminish as more travelers pick up involvement and so, approximately the benefits of Web utilize as compared to other channels.

#### Existing System

- Within the present system a client should approach different offices to discover details of places and to book tickets.
- This frequently requires a lot of time and effort.
- A client may not get the required data from these workplaces and frequently the client may be misguided.
- It is repetitive for a client to arrange a specific travel and have it executed properly.

#### Proposed System

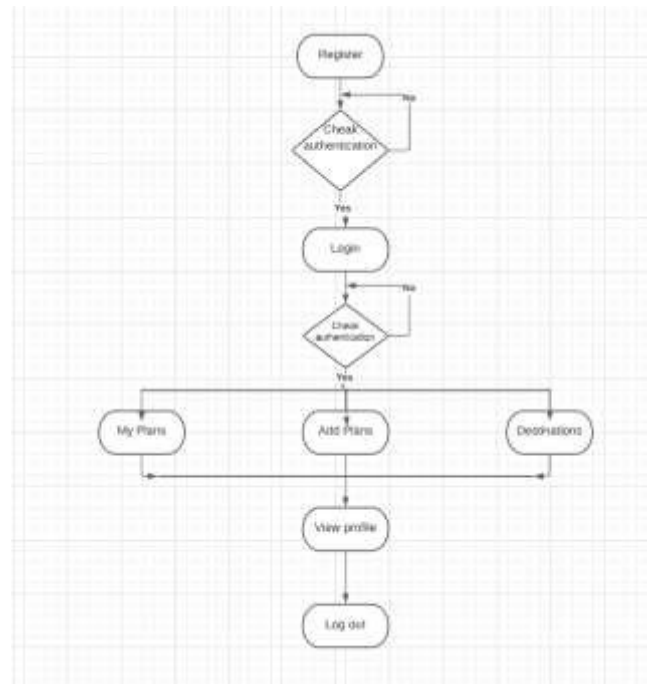
- The proposed framework may be a web-based application and keeps up a centralized repository of all related information.
- The framework permits one to effortlessly get to the important data and make necessary travel arrangements.

- Clients can choose approximately places they need to visit and make bookings online for travel and convenience

#### Advantages-

- Execution: Amid past a few decades, the Travel and Tourism Administration Framework is gathered to preserve manual dealing with of all the Travel Agency's Day by day exercises. The manual taking care of the record is time devouring and profoundly inclined to blunder. To progress the execution of the Travel Organization, the online site is to be embraced. The computerized Travel Organization extend is completely computerized and client inviting.
- Effectiveness: The fundamental requires of the extend is effectiveness. The extend ought to be proficient so that at whatever point a client open this location he will get the information almost.
- Control: The total control of the venture is beneath the hands of authorized individual who has the watchword to get to this extend and illicit get to isn't gathered to bargain with. All the control is beneath the director and the other individuals have the rights to fair see the records not to alter any exchange or entry. Control: The total control of the venture is beneath the hands of authorized individual who has the watchword to get to this extend and illegal get to isn't gathered to bargain. All the control is beneath the chairman and the other individuals have the rights to fair see the records not to alter any exchange or passage.

## Block Diagram



## OBJECTIVE

long term goals are to make as much tall quality substance, covering as numerous places around the world as possible. All of which is able offer assistance individuals travel and ideally give them the answers they need when they look on Google. When creating substance I attempt and compose point by point posts, utilize pleasant pictures, propose incredible goals and encounters, and attempt and make the posts simple and pleasant to read.

## FUTURE SCOPE

This venture can be utilized within the travel organizations. This location is around different travel agencies, their bundles and data almost the courses for diverse places in India. Utmost care and back-up methods must be built up to guarantee 100% effective implementation of the online framework. In case of framework disappointment, the organization ought to be in a position to prepare the exchange with another organization or in the event that the most exceedingly bad comes to the most exceedingly bad, it ought to be in a position to total it physically.

## CONCLUSION

The travel planning has become easier and sustainable. We can check and change it any time we want. This venture is outlined to meet the necessities of a Travel and Tourism Management Framework framework. It has been created in JSP and the database has been built in

DREAMWEAVER and Prophet, keeping in mind the details of the system. For planning the framework, we have utilized basic information stream diagrams. Overall, the venture educates us the basic aptitudes like:

- Utilizing framework investigation and plan procedures like information stream chart in planning .
- Understanding the database taking care of and inquiry preparing utilizing Get to.

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- [4] USING INTERNET AND TRAVEL AGENCIES IN PLANNING A TRIP. A QUALITATIVE APPROACH Oana Țugulea\* Claudia Bobâlcă† Andreea Maha‡ Liviu-George Maha§.
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# Analysis of Cloud Computing

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## ABSTRACT

Cloud computing has gotten to be the foremost pulling in field of computing as proposed by Google in 2007. Cloud computing gives the computing framework, capacity and any sort of applications from sound to word processors what indeed we are able envision. Cloud computing is competent of allotting the desired assets to any client on request. The clients do require not one or the other any taken a toll for computing foundation building nor support fetched of any hardware or program that expels the colossal monetary burden and mental stretch on them. The clients as it were ought to interface their computers or systems to the cloud computing servers. In this paper we centered on the require of cloud computing, architecture of cloud computing, sorts of cloud, administrations given by clouds and the offerings of cloud computing.

**Keywords:** *Cloud Computing, Work Planning, Stack Adjusting, Effectiveness, Execution, Taken a toll*

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## INTRODUCTION

Every organization needs professional industrial educational computer hardware and software. For example, it can be useful for daily activities. The latest change in the application is the addition of new software, and the need to purchase it. It is not enough to buy a computer, as it may have new useless requirements. Cloud computing is an emerging technology as it plays a major role in all types of editing. Software cannot be installed for use by more than one person.

IT is a stress on a responsible person, because the cost of its establishment, its cost is a huge burden. The concept of cloud computing came up to overcome this kind of problem. Cloud computers are known for their demand for computers. For example: distribution resources depend on computers, storage and software, computing applications' web servers and data. If cloud computing connects to an organization's computer, that organization must install a set of software to load each computer. I has invested more in cloud computing systems than trillion. Consumer needs in cloud computing are a significant change in the workload.

Cloud computing has improved the history of economy, society, industry. With the rapid development of science mobile internet and big data technology and online services and data services have built cloud computing at the top. Cloud computing also provides IT solutions as a computer service rather than product-oriented via the Internet. Sending an email doesn't require any software or hardware, it just requires a login, but an internet connection. Email management is managed in the form of software in Google, Yahoo, etc. Cloud computing scalable has made the dream of computer come true.

## LITERATURE REVIEW:-

The writing look handle of this survey included questioning seven quality insightful literature databases (AISel, IEEE Xplore, ScienceDirect, EBSCOhost, ProQuest, Wiley online library, and ACM computerized library). These databases give get to leading IS diaries and high-quality peer-reviewed IS conference distributions. Further, online databases are fitting and viable sources for looking into the literature around a modern wonder such as cloud computing. The look criterion was restricted to the article's title to guarantee the pertinence of the articles. The terms utilized for looking all seven databases are 'cloud computing' in combination with 'adopt' and other related terms, such as 'accept' and 'diffus'. This at first resulted in 94 articles in add up to counting repeats.

## EXISTING SYSTEM:-

Cloud computing supplies program, stages, and foundations as a benefit (SaaS, PaaS, and IaaS, respectively) over a organize association. ... Running an existing software package on a cloud computing premise as a rule includes extensive reengineering exercises amid the migration.



### 1)IaaS

implies a cloud benefit supplier oversees the foundation for you—the genuine servers, network, virtualization, and information storage—through an online association. The client gets to through an API or dashboard, and basically rents the foundation

### 2)SaaS

Whereas in SaaS (Computer program as a Benefit) show you're given with get to application program frequently alluded to as "on-demand software". You do not get to stress around the establishment, setup and running of the application. Benefit supplier will do that for you. You fair got to pay and utilize it through a few clients. Examples: Google Apps, Microsoft Office 365.

### 3) Paas

PaaS (Stage as a Benefit), as the title proposes, gives you computing stages which regularly incorporates working framework, programming dialect execution environment, database, web server etc. Examples: AWS Flexible Beanstalk, Windows Sky blue, Heroku, Force.com, Google App Motor, Apache Stratos.

### PROPOSED SYSTEM:-

The proposed framework proposes an unused strategy of how the files are put away within the cloud by applying the existing encryption strategy and cloud computing framework. Most clients are not comfortable by knowing that their greatly private or secret records can be gotten to for different purposes by the cloud Server providers. This may well be for support purposes, security string claims or indeed standard record reinforcement processes. Ordinarily, these reasons are total substantial in order to secure the cloud Server status and execution. However, clients are hesitant to transfer their

private files into cloud servers. This proposed framework points to fill this hole by giving a progressed level of record security. RSA is known to be the strongest freely accessible encryption strategy

### ADVANTAGE OF CLOUD COMPUTING:-

#### 1) Backup And Restore Data :-

Once the information is put away within the cloud, it is simpler to urge back-up and reestablish that information utilizing the cloud.

#### 2) Improved Collaboration :-

Cloud applications progress collaboration by permitting bunches of individuals to rapidly and effectively share data within the cloud by means of shared capacity.

#### 3) Excellent Accessibility :-

Cloud permits us to rapidly and effortlessly get to store data anyplace, anytime within the whole world, using an online association. An online cloud framework increments organization efficiency and effectiveness by guaranteeing that our information is continuously available.

### DISADVANTAGE OF CLOUD COMPUTING:-

#### Internet connectivity:-

As you know, in cloud computing, each information (picture, sound, video, etc.) is put away on the cloud, and we get to this information through the cloud by utilizing the web association. In the event that you are doing not have great web network, you cannot get to this information. In any case, we have no any other way to get to information from the cloud.

#### Vendor lock-in:-

Seller lock-in is the greatest drawback of cloud computing. Organizations may confront issues when exchanging their administrations from one merchant to another. As diverse sellers give diverse stages, that can cause trouble moving from one cloud to another.

#### Limited control:-

As we know, cloud foundation is totally possessed, overseen, and observed by the benefit supplier, so the cloud clients have less control over the work and execution of administrations inside a cloud foundation.

### FUTURE SCOPE OF CLOUD COMPUTING

\*More applications will be accessible on cloud

\*Increased development in the advertise.

\*more cross breed cloud adaption



- \* expanded advancement for cloud
- \* security, unwavering quality and accessibility
- \* worldwide commerce slant
- \* increment capacity
- \* part alongside cloud computing
- \* improved execution of web
- \* information appears how future changes
- \* measured program \* change of cloud administrations
- \* financial

#### CONCLUSION:-

It has been taken note that the offerings of web administrations on request have been exceedingly expanded nowadays and the slant will be increasingly in future. On request conveyance of computer assets –everything like computing, capacity and software etc. is known basically as cloud computing.

The clients do require not one or the other any fetched for computing foundation building nor upkeep taken a toll of any equipment or software that expels the gigantic monetary burden and mental stretch on them. The clients as it were had to be interface their computers or systems to the cloud computing servers and to pay benefit charges by straightforward installment strategies like pay- per-use or membership strategy. In this paper we centered on the require of cloud computing, design of cloud computing, sorts of cloud, administrations given by clouds and the benefits or offerings of cloud 199computing

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# Blue Brain: A Technique in The Direction of Advent of Blue Brain

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## ABSTRACT

Blue Brain is an attempt to reverse engineer the human brain and reproduce it at cell level by computer simulation. Used to study the structural and functional principles of the brain. Blue Brain Development includes the integration of neural networks, computer simulations and cognitive science. This paper gives an overview of the structure of the blue brain. The procedure to create it. As technology advances, so does the human being, the ultimate source of information and discovery. Human don't live for thousands of years but the information in its mind could be saved and used for several thousands of years. The technology of Blue Brain is of great help in the preservation. This paper discusses about the hardware and supercomputers being used to build a Blue Brain. The merits and demerits involved in creation and implementation of Blue Brain have also been discussed.

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## INTRODUCTION:

Human Brain, is the maximum precious advent of God. The guy is known as smart due to the mind. Today we're evolved due to the fact we will suppose that different animals cannot do. But we lose the know-how of a mind while the frame is destroyed after the loss of life of guy. That know-how could have been used for the improvement of the human society. So a technique is made to create a digital mind known as the Blue Brain because of this that a gadget that could capabilities as human mind and it's miles viable via way of means of clubbing collectively the elements of neural networks, pc simulation and cognitive science.

The predominant intention is to add human mind right into a gadget. So that guy can suppose, take choice with none effort. After the loss of life of the frame, the digital mind will act because the guy. So, even after the loss of life of someone we are able to now no longer lose the know-how, intelligence, personalities, feelings, feelings and recollections of that guy which may be used for the improvement of the human society. The Blue Brain System[11] is a try to opposite engineer the human mind and recreate it on the mobile stage inner a pc simulation. The mission changed into based in May 2005 via way of means of Henry Markram on the EPFL in Lausanne, Switzerland[15]. Goals of the mission are to benefit a whole expertise of the mind and to permit higher and quicker improvement of mind sickness treatments. The studies include analysing slices of dwelling mind tissue the use of microscopes and patch clamp electrodes. Data is accumulated approximately all of the many one-of-a-kind neuron types. This statistics is used to construct biologically practical fashions of neurons and networks of

neurons withinside the cerebral cortex. The simulations are completed on a Blue Gene supercomputer constructed via way of means of IBM, as a result the name "Blue Brain". The simulation software program is primarily based totally on Michael Hines's NEURON, collectively with different custom-constructed components. Figure 1 indicates the simple shape of the Blue Brain. The simple precept of Blue Brain is "Determine synapse-scale connectivity via way of means of certainly reconstructing a cortical microcircuit and evaluating it mammalian sample"



## NEED FOR VIRTUAL BRAIN

Today we're advanced due to our intelligence. Intelligence is the inborn fine that can't be created. Some humans have this fine, to be able to suppose as much as such a quantity wherein different can't reach. Human society is constantly in want of such intelligence and such a wise mind to have with. But the intelligence is misplaced at the side of the frame after the death. The digital mind is an approach to it. The mind and intelligence might be alive even after

the death. We regularly face problems in remembering matters consisting of humans names , their birthdays, and the spellings of words, right grammar, critical dates, records facts, and etcetera. In the busy existence anybody desires to be relaxed [12].The intention is to benefit an entire expertise of the mind and to permit higher and quicker improvement of mind ailment treatments. With the development in era, human, the last supply of facts and discovery need to additionally be preserved. Humans don't stay for heaps of years however the facts in his thoughts can be stored and used for numerous heaps of years. The era useful on this interest is Blue Brain . The studies include analysing slices of residing mind tissue the usage of microscopes and patch clamp electrodes. Data is accumulated approximately all of the many extraordinary neuron types. The records are used to construct biologically sensible fashions of neurons and networks of neurons withinside the cerebral0 cortex[13]

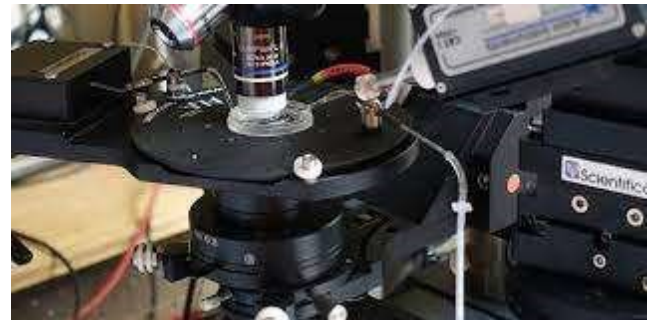
## CONSTRUCTION OF BLUE BRAIN

There are 3 predominant steps to construct the digital mind:

- A. Data Acquisition
- B. Simulation
- C. Visualization of Results.

### A. Data Acquisition

Under information acquisition, the mind slices are positioned below microscope and the form as properly electric interest of man or woman neurons is measured. The neurons are tested through their form referred to as morphology, electrophysiological behaviour and their populace density[14]. Then those observations are translated into mathematical algorithms which describe the form, features and role of neurons. The algorithms are then used to generate biologically-practical digital neurons equipped for simulation. To examine the electrophysiological conduct of the neurons ,the primary device required is 12 patch clamp[10]. It lets in twelve residing neurons to be simultaneously patched and their electric interest is recorded.



*Fig :The 12 patch-clamp.*

## B. Simulation

Simulation refers to using a mathematical version to recreate a situation, in order that the probability of diverse effects may be extra as it should be estimated. The most important consciousness for the introduction of digital mind is at the neuron sand the number one software program used for neural simulation is a bundle referred to as NEURON which changed into advanced in1990 with the aid of using Michael Hines and John Morey[6]. It is written in C, C++ and Fortran and is a free, open supply software program. Neural simulation is largely used for constructing and the usage of computational fashions of neurons and community of neurons . For blue mind, the cutting-edge model of neuron that is getting used is 7.2.T

he most important elements on which the simulation relies upon are:

### I. Simulation Speed

The simulations display about linear scaling -that is, doubling the scale of the neural community doubles the time it takes to simulate. The simulation timestep for then numerical integrations is 0.025ms and the timestep for writing the output to disk is 0.1ms[16]

### II. Work glide

The simulation step entails synthesizing digital cells the usage of the algorithms re used to explain actual neurons. The algorithms and parameters are adjusted for the age, species and sickness level of the species being simulated. First community skeleton is built, then the cells are related collectively to the policies which have been discovered experimentally. Finally the neurons are functionalized and the simulation is introduced to life. Further the styles are considered with the assist of visualization software program. The last purpose is to have the ability to understand and human consciousness.

### BBP-SDK

The BBP-SDK (Blue Brain Project-Software Development Kit) is a fixed of software program instructions which might be used to make use of and check out fashions and simulations. The SDK is a

C++ library wrapped in Java and Python [1]. The Blue Brain simulation makes use of one microprocessor for every of the 10,000 neurons withinside the cortical column of a cerebral cortex [17]. It enables to construct a mind microcircuit, that allows you to scale it in human mind. The neocortical column represents the primary useful unit of the cerebral cortex in mammals that underlies almost all sensory and cognitive processing. These devices are repeated tens of thousands and thousands of times across the cortex. Reverse-engineering [4] a part of the neocortex entails shooting many tiers of element about microscopic cells and fibre-living, dynamic entities which can be invisible to the bare eye . Figure 3shows the Cell Builder Window of NEURON software program

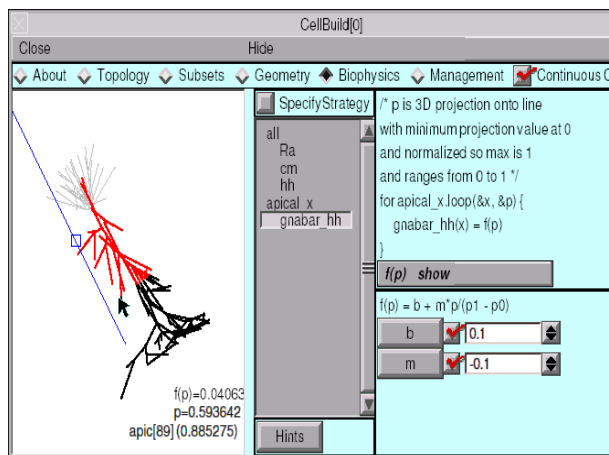


Figure: NEURON Cell Builder Window

### C. Visualization of Results

RT NEURON is a number one utility used for visualisation of emergent behaviour of neural simulation.

RT Neuron is ad-hoc software program written in C++ particularly for neural simulations RT Neuron takes the output from Hodgkin-Huxley simulations in NEURON[8] and renders them in 3-D and visualization are multi-scale as properly 3-D animation may be stopped , began out and zoomed at any degree of process. For visualization of result, 32 processors silicon images inc.(SGI) gadget with 32GB of shared reminiscence is being used .Below determine indicates rendered in RT Neuron [20].

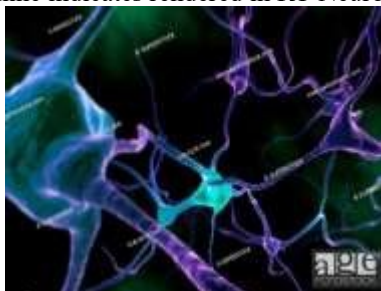


figure : RT Neuron visualization of a neuron

## COMPUTERS FOR BUILDING BLUE BRAIN

### A. Blue Gene Supercomputer

The number one system utilized by the Blue Brain Project is a Blue Gene supercomputer constructed through IBM. This is in which the name "Blue Brain" originates from. IBM agreed in June 2005 to deliver EPFL with a Blue Gene/L as an "era demonstrator". The IBM press launch did now no longer expose the phrases of the deal. In June 2010 this system become upgraded to a Blue Gene/P. The system is established at the EPFL campus in Lausanne (Google map) and is controlled through CADMOS ( Center for Advanced Modelling Science)[18].The pc is utilized by some of extraordinary studies groups, now no longer completely through the Blue Brain Project. In mid-2012 the BBP become eating approximately 20% of the compute time. The mind simulations commonly run all day, and at some point, in keeping with week.

The relaxation of the week is used to put together simulations and to investigate the ensuing facts. The supercomputer utilization information and activity records are publicly to be had online -search for the roles categorised as "C-BPP"[19]. A Blue Brain ambitions to liberate the secrets and techniques of mind through the usage of the brute strength of a supercomputer. Primary gadget utilized by the blue mind is a Blue Gene Supercomputer constructed through IBM [5]. This gadget is upgraded as Blue Gene/P in June 2010 and is hooked up at the EPFL campus and controlled through CADMOS (Centre for Advanced Modelling Science) [3]. Basically, the mind simulation run all day as soon as in per week in any other case the ensuing facts of simulation made on supercomputers is being analysed.

Blue Gene/P technical specifications:

- four,096 quad- centre nodes (sixteen,384 cores in total)
  - Each centre is a PowerPC 450, 850 MHz
  - Total: fifty-six teraflops, sixteen terabytes of memory
  - four racks, one row, stressed out as a 16x16x163D torus
  - 1 PB of disk space, GPFS parallel record system
  - Operating system: Linux SuSESLES 10
  - end: bluegene.epfl.ch and processing log
- Figure



*Fig: blue gene/p supercomputer*

#### **b. Ju QUEEN**

Ju QUEEN is an IBM Blue Gene/Q super computer installed at the Queen Research Centre in Germany in May 2012. It currently has a performance of 1.6 petaflops and was ranked the 8th fastest supercomputer in the world in June 2012. The machine will be used for BBP simulations starting in 2013 under funding from the Human Brain Project. In October 2012, we plan to expand the supercomputer with additional racks. The exact number of racks and the final throughput rate are not known. The Ju QUEEN machine will also be used as part of the research plan. It aims to develop a three-dimensional realistic model of the human brain [15]. X

#### **MERITS AND DEMERITS OF BLUE BRAIN**

##### **Merits of Blue Brain**

1. Blue mind is a technique to shop and make use of human intelligence and statistics gift withinside the thoughts even after human demise.
2. It is a critical circulate closer to self-selection making through the laptop or gadget that holds a blue mind.
3. Business analysis, attending conferences, reporting, etc. are very good-sized capabilities that an intelligent gadget can do consistently.
4. It may be used as an interface among human and animal minds. The BBP has emerge as a success in rat and a few different animals which is an indication of success.

5. It an awesome treatment closer to human incapacity like a deaf can get the statistics through direct nerve stimulation.

##### **Demerits of Blue Brain**

1. It will increase the threat of human dependency on Blue Brain each time.
2. Once a Blue Brain associated with a specific person's neural schema is hacked, the mind may be used in opposition to the very person.
3. Since it a technique to make machines wise and considerate it will increase the threat of machines engaging in conflict in opposition to human (like we were looking withinside the films like Terminator, Universal soldier, etc

#### **CONCLUSION**

With the introduction of a blue mind, we are able to be capable of switch ourselves into the laptop at a while in future. Blue Brain may be used for the remedy of mind illnesses. A big quantity of human beings be afflicted by mind illnesses of their lifetime. Therefore, it's far crucial to have an amazing method for information those illnesses and locating appropriate treatments. Blue Brain will look for insights into how humans suppose and remember. Blue Brain gives a higher information of human consciousness. It is a development closer to constructing questioning machines.

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# Design And Implementation of Library Management System

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## ABSTRACT

At show, the level of library administration way in most colleges is still a manual operation. For the issue of the conventional manual operation is time-consuming and bother, this paper proposes a library administration framework is planned and actualized based on the net benefit. In this framework, the three-layer design is utilized, applying show building dialect that UML carries on needs examination and plan, utilizing the JSP method to construct the framework front interface, and utilizing SQL Server 2005 innovation to construct the back-end database. In arrange to opportune criticism of pertinent data for the utilize of the per user, we include the Visitor Book sub module to the framework in execution prepare. At long last, to make strides the working proficiency of the database, we utilize the put away methods and triggers innovation to optimize the database execution. By genuine test, we adjust the framework bug, and advance move forward the framework execution.

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## INTRODUCTION

The library administration framework is all around organizing, overseeing the library, and library-oriented tasks. It too includes keeping up the database of entering modern books and the record of books that have been recovered or issued, with their particular dates. The fundamental point of this venture is to supply a simple to handle and computerized library administration framework. This extends moreover gives highlights and an interface for keeping up librarian's records, student's history of issues, and fines. The owner can effortlessly overhaul, erase and embed information within the database with this venture.

With the increment within the number of per users, superior administration of libraries framework is required. The Library management framework centers on moving forward the management of libraries in a city or town. "What In case you can check whether a book is accessible within the library through your phone ?" or "what on the off chance that instep of having different library cards for distinctive libraries you can fair have one ?" or "you can save a book or issue a book from your phone sitting at your home!". The Coordinates Library Administration system provides you the ease of issuing, renewing, or saving a book from a library inside your town through your phone. The Coordinates Library Management framework is created on the android stage which fundamentally centers on issuing, recharging and reserving a book.

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## PURPOSE

The reason of the extend is to preserve the points of interest of books and library individuals of diverse libraries. The primary reason of this extend is to preserve a simple circulation framework between clients and the libraries, to issue books utilizing single library card, moreover to look and save any book from distinctive accessible libraries and to keep up subtle elements around the client (fine, address, phone number).Moreover, the client can check all these features from their domestic.

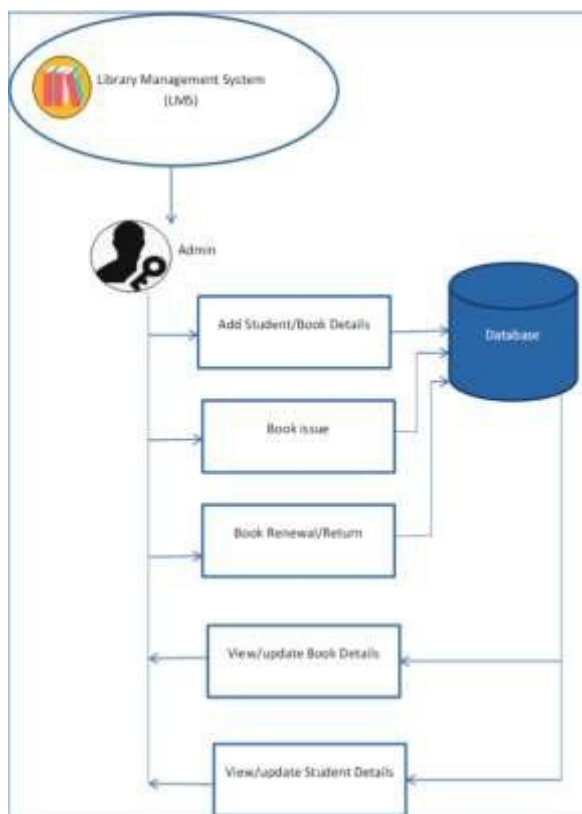
## LITERATURE REVIEW

Most of the inquire about and works on library administration have centered on scholarly libraries and as it were as of late has there been more intrigued within the organization of open libraries. The aptitude and fashion of open library directors – the chiefs, department directors, and office and benefit directors who are driving these educate – unequivocally influences the culture of an open library. Library staff looks to these supervisors to assist them explore through the quick changes that are happening in open libraries as these changes in innovation, parts, and client desires unequivocally change their everyday schedules of open benefit. Modern library directors require a more extensive cluster of aptitudes and traits than their earlier and more conventional partners and ought to look for continual professional advancement to stay compelling as open libraries move into the twenty-first century. These directors too ought to recognize between administration and administration abilities and learn to identify.

## Proposed System of Library Management System

Proposed Framework of Library Administration System The extend Library Administration Framework points at creating a completely useful computerized framework to preserve all the day-to-day action of a library This venture has numerous highlights which such as the office of client login and teacher's login. Too, on top of all this, there's an admin who will be overseeing the complete application's authorization and verification, not no interloper can log in and adjust the information, as a login for admin is additionally accessible.

### Block Diagram



## CONCLUSION

After we have completed the venture, we are beyond any doubt the issues within the existing framework would overcome. The LIBRARY Administration SYSTEM prepare made computerized to reduce human blunders and to extend the productivity. The most center of this extend is to reduce human endeavors. The support of the records is made productive, as all the records are put away within the Get to database, through which information can be recovered effectively. The route control is given in all the shapes to explore through the expansive sum of records. On the off chance that the numbers of records are exceptionally huge at that point client must just sort within the look string and client gets the results immediately. The altering is additionally made less complex. The client has got to fair sort within the required field and press the upgrade button to upgrade the required field. The Books and Understudies are given a specific one of a kind id no. So that they can be gotten to accurately and without mistakes. Our fundamental point of the extend is to urge the proper data approximately a specific under study.

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# Speech Emotion Recognition System Using Machine Learning

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## ABSTRACT

Speech Emotion Recognition is a high priority in machine learning and deep learning research, with the goal of using deep artificial neural networks to recognise different emotions in audio speech. The basic purpose of Speech Emotion Recognition is to improve the human-machine interface. Emotions must be recognised by the machine. While humans are capable of performing this activity as a natural aspect of voice communication, we intend to develop a system that can accomplish this emotion recognition task. Using this technology, robotics capable of detecting emotions could provide humans with more efficient and appropriate emotional responses. Deep RNNs, such as LSTM and Bi-directional LSTM, are used to train for acoustic characteristics. For speech emotion recognition, a variety of CNNs are being developed and trained, and the outputs are being analyzed. Filter banks and Deep CNN are used to infer emotion from speech data, and the results show that deep learning may be utilised for emotion detection and also. From the input speech, we need to extract feature vectors. The characteristics were extracted using the (MFCC) technique.

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## INTRODUCTION

Non-linguistic information is carried by human speech. It's critical to be able to identify, assess, and respond to the user's emotional state in order to have a natural and effective human-machine interaction. Emotional speech recognition is a system that determines a person's emotional state based on his or her voice. Speech Emotion Recognition is a big topic in machine learning and deep learning research, with the goal of using deep artificial neural networks to recognise different emotions in audio speech. Speech Emotion Recognition's main goal is to improve the human-machine interface. Emotions must be recognised by the machine. While people are capable of performing this activity as a natural aspect of spoken communication, we intend to create a machine that does so.

Speech emotion detection has a range of applications in healthcare, including recognizing stress, anxiety, and depression. Every time we talk or send a verbal communication, our voice contains some signals. These signals are used to allow humans and machines to communicate. Create a model that distinguishes emotion from voice using the librosa and sklearn packages, as well as the RAVDESS dataset. Speech emotion recognition has progressed from a specialty to a critical component of Human-Computer Interaction (HCI). These systems strive to make natural human-machine contact easier by using direct voice interaction rather than standard devices as input to understand verbal information and make it simple for human listeners to react. Dialogue systems for spoken languages, such as call centre discussions, onboard car driving systems, and the use of emotion patterns from

speech in medical applications are just a few examples. Nonetheless, many challenges in HCI systems remain unsolved, particularly when these systems progress from lab testing to real-world application, necessitating more work to effectively overcome such issues and achieve greater emotion identification by machines.

## LITERATURE REVIEW

The complete review of speech emotion recognition is explained, including dataset features, speech emotion recognition research classifier selection, and many Various acoustic characteristics of speech are explored, as well as certain classifier algorithms, which will aid future research into modern methods of emotion recognition. M.S. Likitha, Sri Raksha R. Gupta, et al.[1] propose an MFCC-based SER system. A database contains the voices of 60 people who are experiencing various emotions. The function a wav read in the MATLAB tool was used to read the speech signal of the speaker. For identifying emotion from voice sounds, the MFCC approach is utilised. The proposed work is based on MFCC feature extraction and standard deviation decision making. The speech signal is first framed, then sent via a Hamming window for the windowing procedure. The input signal was subjected to a Fast Fourier Transform. The Mel Frequency Cepstral Coefficients were then calculated. The standard deviation for the mean value was discovered, and this value was passed through as if else a statement, where the obtained standard deviation for that specific emotion was compared to the optimised standard deviation values for various emotions, and the corresponding emotion was displayed. It can predict the three basic emotions from MFCC waves:

happy, sad, and furious. It has advantages such as being a simpler technique and maintaining efficiency and performance even in a noisy context. Emotion Recognition from Speech using Convolutional Neural Network with Recurrent Neural Network is presented by Saikat Basu, Jayanta Chakraborty, etc. [2]. Mel-frequency cepstrum coefficients (MFCC) are commonly utilised spectral characteristics by researchers for categorization utilising a machine learning method. For emotion recognition, only pitch and MFCC data are used. As a feature extraction component, there are 13 velocity and 13 acceleration components, as well as a CNN (Convolution Neural Network) and LSTM (Long Short Term Memory) a categorization method that is based on For categorization, they chose the RAVDESS dataset. For training, RNN and Long Short Term Memory (LSTM) networks can be employed. Experiments evaluate and contrast two modelling approaches: emotion dependent modelling and unified modelling with emotion codes. LSTM-RNN-based acoustic models are developed separately for each emotion type in the RST technique. To initialize the emotion-dependent LSTM-RNN, a speaker-independent acoustic model is estimated using speech data from multi-speakers. The second method uses training data from a number of emotion types to create a unifying LSTM-RNN-based acoustic model. The emotion codes used by the unified modelling approach are capable of effectively controlling the emotion type and intensity of synthetic speech by interpolating and extrapolating the codes in the training set, according to experimental results on an emotional speech synthesis database with four emotion types (neutral style, happiness, anger, and sadness). Several studies have shown that LSTM-RNN-based synthetic speech performed better on naturalness than HMM-based synthetic speech for a singer speaker in various training situations [3].

## METHODOLOGY

The proposed human emotion recognition system is of five components: input speech signal, pre-processing, feature extraction and selection, classification and finally emotions recognition. The Architecture of Emotional speech recognition system is as shown in figure The Accuracy of the Emotional speech recognition system is based on the level of naturalness of the database which is used as an input to the speech emotion recognition system. The database as an input to the speech emotion recognition system may contain the real world emotions or the acted ones. It is more practical to use database that is collected from the real life situations. The emotion recognizer system identifies the emotion state of the input speech signal and displays the corresponding emotions of that particular speech. The speech processor, deals with the emotion features selection, speech preprocessing, and extraction algorithm. Determining emotion features is a vital issue in the emotion recognizer design. The emotion recognition result is strongly depending on the emotional features and which provided to various types of classifiers that have been used to represent the emotion .Emotion recognition has potential

applications in human-robot interaction, opening the way for a scenario in which human-robot contact occurs in the real world. Human listeners can receive emotional information through the pitch and intensity of speech when a speaker exhibits an emotion while sticking to an unobtrusive intonation pattern. Our goal, on the other hand, is to extract the many acoustic signals present in the speech signal and analyses their reciprocal relationship with the speaker's emotion. Based on the examination of phonetic and auditory features, we offer a technique for recognizing various basic emotions, including sorrow (SAD), anger (ANG), surprise (SUR), fear (FEA), happiness (HAP), and disgust (DIS). Three different types of experiments were put up as part of the experimental approach.

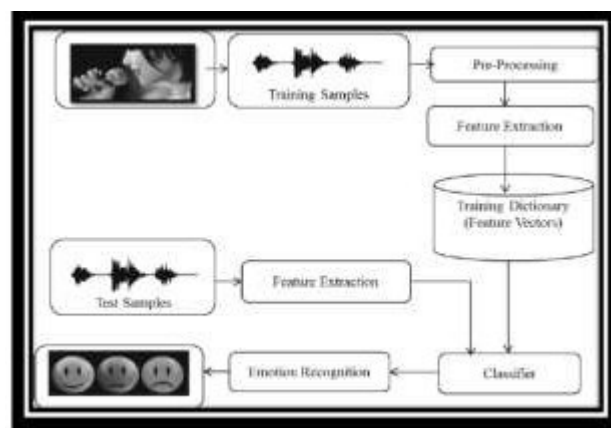


Figure: Architecture of Speech Emotion Recognition System

## FEATURE EXTRACTION TECHNIQUE

We want to extract Feature vectors from the input speech. The features were extracted using the (MFCC) technique. We convert the input waveform into a sequence of acoustic feature vectors, each vector containing the information in a short time window of the signal, to extract MFCC. We're prepared to extract MFCC features now that we have a processed, quantized representation of the waveform. The MFCC pipeline process in its complete.

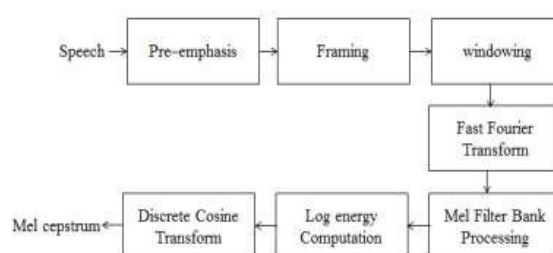


Figure: MFCC Pipeline Steps

## CONCLUSION

Our project detects a speaker's sentiment while they speak and outputs music. In order to develop our project, we used Python 3.6. The RAVDESS dataset was chosen because it



contains eight different emotions expressed by all speakers. For the user interface, we used the Kivy Python Framework. Python programming languages, RAVDESS dataset, and PyCharm as an IDE are all used. Librosa is used in our study to extract emotion recognition features. Pyaudio was used to record the audio. The Matplotlib package is used in our project to plot the wave and save it for later usage. We classified the emotions using the saved model. The front-end element of our Python project was built with Kivy

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## Automatic Power Factor Correction Unit Using Arduino

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### ABSTRACT

We are in the need of energy which we have to make major corrections in which the energy is wasted in form of reactive power. So, the required energy is can be utilised in which the energy can have the major correction to form a power factor. The power factor can be developed with the required energy the utilised power is used in a proper way. The reactive power can be compensated using capacitor banks and this can be termed as power factor correction. The power factor correction is major problem in a industry to compensate a reactive power factor. The reactive power can be compensated with a reactive and it make into real power. Hence the according to the load the power factor can be compensated using Arduino microcontroller and switching operation is done with the regular power factor and his can be controlled with microcontroller. The microcontroller is programmed with to operate with the necessary coding.

**Keywords:-** *Power factor, capacitor bank, solid state relay, precision rectifier, super diode, phase measurement, AC signal measurement, Arduino.*

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## Converting Sound Energy To Electric Energy

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### ABSTRACT

Nowadays the main problem is noise pollution. However we cannot either control it or reduce it but we can use it as a source of energy. There is a huge shortage of electricity even though there are many sources because we need electricity to run most of our devices and do our daily work. Sound is a mechanical form of energy which travel in the form of wave, wave that is an oscillation of pressure this pressure created by the sound could be used to convert it into electric energy transducer

**Keywords:** *Diaphragm, Piezoelectric materials, Transducer, Sound energy, Thermodynamics.*

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## Waste Plastic to Fuel-Petrol, Diesel, Kerosene

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### ABSTRACT

The waste plastic is generated in India 15000 tons per day (as per government survey). The waste plastic affects the human, animals, earth and environment. For dissolving (breakdown) plastic may require around 500 years in the earth. Every year 65% waste plastic is land filled or in the natural environment (River system and ocean). The technology is used to dissolve these all type waste plastic is pyrolysis. The pyrolysis is the heating substance in the absence of oxygen. In this study 4300 Celsius temperature need. The all type of waste plastic is converting to fuel. It works like Petrol, diesel, kerosene and LPG. By implementing this concept can be reduced 80-90% of waste plastic and can provide 60% oil for diesel vehicles. The fuel does not emit sulfur dioxide (SO<sub>2</sub>). It increases machine efficiency. The 5% residue is obtained which is carbon block.

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## IOT Based Distribution Line Monitoring System

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### ABSTRACT

Locating fault locations is the primary goal of power system engineers in transmission and distribution networks. Electricity distribution in India is now much more important than ever thought, it depends on high voltage power lines which sometimes have to traverse kilometers of jungle or mountains to reach certain areas and it has to be preventive as even a single breakdown can stop the electricity flow. supply. This proposed solar energy model uses Ohm's Law concept to detect fault locations quickly, realistically and inexpensively. In this way, IoT makes energy efficiency and continuous monitoring possible. The AC voltage is usually 230 V RMS and is connected to a transformer which reduces this AC voltage to the desired AC voltage level. This generated DC voltage usually has some variation of ripple or AC voltage.

**Keyword:** AC, DC

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## Virtual Doctor Robot

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### ABSTRACT

We all know that during pandemic like corona or generally in hospitals, the front-line workers such as doctors, nurses, compounder in hospitals are nearest to the patients. They all need to look after the patients without caring about themselves and hence doctors, nurses, workers have a high chance of getting contacted to the disease. And few of the medical personnel fearing for the disease and their health, they are not ready to work in the hospital. Hence to tackle this problem we have come up with a solution i.e., Virtual doctor robot- The artificial nurse. The result of this project is a robot that is designed to act as a medical assistant robot which can be controlled by nurses or doctors from a distance using their smart phone or it can just use autonomous navigation to reach the patients and give them required medicines, monitor patients health and stream all the patient information wirelessly through the internet to your palm(mobile). which sterilizes the hospital wherever it travels. Not only it can carry lightweight packages and sterilize the hospital, It can be used as a telecommunication robot and establish communication between doctor and patient.

**Keywords—** *Epoxy Resin, Banana fibre, thermo gravimetric analysis, fly ash, mechanical testing, universal testing machine.*

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## Electricity Power Generation by Using Thermal Plant

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### ABSTRACT

Pollution, population, electricity, traffic, these are the words that everyone talks about every day, that they are facing this or that problem, but we need to know that we create the problem from within ourselves. In recent years, growing concerns about environmental emissions, in particular global warming and energy constraints have prompted in-depth research on new power generation technologies. Thermoelectric power generation is emerging as a promising alternative green technology due to its distinct advantages such as environmental friendliness, lower production costs, etc. The generation of thermoelectric energy offers potential applications in the direct conversion of waste heat into electricity, where heat costs do not have to be taken into account. Applying this alternative green technology to convert waste heat directly into electricity can also improve the overall efficiency of the energy conversion system. This article discusses basic thermoelectric ideas, including their importance and appropriate applications for waste heat, noise/vibration.

**Keywords:** *Thermoelectric, Vibration, Waste-heat recovery, Thermal power plant, Environmental issue.*

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## Review Paper on Distributed Control of Micro-Grid

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### ABSTRACT

Micro grid system has received a lot of and a lot of attention internationally in recent years. Because the best sort of distributed generations, small grid system has additionally found wide applications in several areas. Micro grid is efficient thanks to manage energy storage systems, natural resources generation and numerous hundreds to produce high & smart quality power. Because of the irregularity of renewable generation, additionally as perpetually ever-changing load demand, energy storage systems area unit typically planned to balance supply-demand within the small grid. There's associate increasing a lot of interest in try targeted to the analysis and style and implementation of distributed management systems for AC Micro grids, DC and hybrid AC/DC Micro grids. The controlling Micro grid varies Equipment are Used. In this project we can show the controlling of Micro grid system using Matlab Simulation.

**Keywords:** *Microgrid, monitoring system, control strategy.*

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## Fabrication of Banana Fibre Reinforced Epoxy Resin Composites Added with Fly Ash

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### ABSTRACT

This paper focuses on the thermal and mechanical properties of banana fibre reinforcement with epoxy resin and flywheel. However, many articles available provide information about different types of structures using these elements in the same elements. In this paper, three structures are prepared and tested under different conditions to identify thermal as well as mechanical properties. Fly ash added in the composition of 70% and 30% epoxy resin and banana fibre at 5%, 10% and 20% respectively. In terms of thermal properties, Thermo gravimetric analysis to find the value of different properties used for mechanical testing to identify properties and the value of universal testing machine. As a result, improvement of thermal and mechanical properties found due to addition of fly ash as compared to previous publications.

**Keywords—** *Epoxy Resin, Banana fibre, thermo gravimetric analysis, fly ash, mechanical testing, universal testing machine.*

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## Review On Foot Operated Electric Vehicle For Armless People

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### ABSTRACT

Transportation has become an inseparable part of people's daily lives. At certain times, in large countries like India, people are forced to travel long distances from their workplace to their place of residence. People with upper limb and arm amputations have difficulty traveling and are unable to travel long distances. They use devices such as wheelchairs, crutches, and artificial limbs for mobility. However, they cannot be used for long distance outdoor transportation. Therefore, the aim of this project is to design and develop a "leg powered system" for armless people. A foot control mechanism is a mechanism that is operated with one or both feet to direct the vehicle in the desired direction. This system consists of steering which can control the brake along with steering. The main objective of the project is to design a foot-operated system for handicapped people.

**Keywords:** *electric vehicle, foot operated steering system, weight distribution, accessibility using foot*

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## Effect of CuO Dopant on The Structural, Vibrational and Morphological Properties of ZrO<sub>2</sub> Nanoparticles

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### ABSTRACT

Undoped and CuO doped ZrO<sub>2</sub> nanoparticles successfully synthesized by the Co-precipitation method. The structural, vibrational, and morphological properties for undoped and CuO doped ZrO<sub>2</sub> nanoparticles were studied for different CuO concentrations. The XRD patterns revealed the tetragonal and monoclinic phases of ZrO<sub>2</sub> along with the CuO phase. The crystallite size has been calculated for undoped and CuO doped ZrO<sub>2</sub> nanoparticles. The considerable change in the crystallite size revealed the impact of CuO on the ZrO<sub>2</sub> phase. The micrographs showed that the ZrO<sub>2</sub> played a significant role in the crystallinity, morphology, and growth orientation on CuO: ZrO<sub>2</sub> structures. The presence of CuO and ZrO<sub>2</sub> related functional groups and the chemical bonding were confirmed by FTIR spectra. The increase in the intensity confirmed the presence of Copper oxide and Zirconium dioxide. SEM micrographs revealed the nanocube-shaped morphology for the synthesized CuO: ZrO<sub>2</sub> nanoparticles.

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## Synthesis of $\text{Bi}_2\text{MoO}_6$ – $\text{Ag}_2\text{MoO}_4$ Nanocomposite For Photocatalytic And Antimicrobial Applications

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### ABSTRACT

The  $\text{Bi}_2\text{MoO}_6$  –  $\text{Ag}_2\text{MoO}_4$  nano photocatalyst for the removal of toxic dyes and antimicrobial applications was prepared through Sono Chemical route. In the synthesis, there are two steps are involved. First,  $\text{Bi}(\text{NO}_3)_3$  and  $\text{Na}_2\text{H}_2\text{O}_4$  have been taken in the same ratio and dissolved in 100ml deionized water, Then, by stirring, drying and calcination process, we got  $\text{Bi}_2\text{MoO}_6$ . Second,  $\text{Bi}_2\text{MoO}_6$  and  $\text{Na}_2\text{H}_2\text{O}_4$  have been taken in the same ration and dissolved in 50ml deionized water. After that 0.2M of  $\text{AgNO}_3$  was added. Then by sonication, drying and calcination process, we got  $\text{Bi}_2\text{MoO}_6$ – $\text{Ag}_2\text{MoO}_4$  nanocomposite. The final product was collected for characterization. Powder X-ray diffraction was done and the obtained XRD patterns confirm the phase formation of  $\text{Bi}_2\text{MoO}_6$ – $\text{Ag}_2\text{MoO}_4$ . The nanocrystalline size was estimated from the XRD patterns using Debye-Scherrer formula. The morphology of the prepared  $\text{Bi}_2\text{MoO}_6$ – $\text{Ag}_2\text{MoO}_4$  nanocompostie has been studied from SEM micrographs. Such nanocomposite can be used for photocatalytic removal of methylene blue and antimicrobial applications

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## Drones in Smart Built Environment

**Khairul Nizam Tahar**

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The evolution of the new technology such as Unmanned Aerial Vehicle (UAV) has improved the method of data acquisition especially in built environment. It can obtain the high-resolution imagery at the reasonable cost. Specific applications in image acquisition such as aerial mapping require certain overlap and sidelap image percentage, which must remain consistent during flight missions with specific angle views. The three dimensional model requires imageacquisition from an oblique angle view, with a certain persistent overlap percentage. Drones can also carry many different types of sensors. Different kinds of sensors are useful in many applications. These sensors could be used in the production of digital terrain models (optical camera), orthophotos (optical camera), monitoring of paddy field health (multispectral sensor), estimating nitrogen content (multispectral sensor), evaluating plant height (optical sensor), recording human temperature in crowded open space areas (thermal sensor), building heat estimation (thermal sensor), forest fires (thermal sensor), classification of different species and types of trees (hyperspectral sensor), and biomass estimation (hyperspectral sensor). The accuracy and precision of the final results can be assessed using statistical methods to ensure the proposed model is reliable for specific tasks. Drones have become a new norm in the builtenvironment to provide very high accuracy and precise data, in a series of tasks.

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## Soil Stabilization And Compaction Waste Plastic Material

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### ABSTRACT:

A procedure of soil compaction techniques improvement which includes new authors' methodology is described. The significance of soil compaction for engineering functions is substantiated. Preconditions for Proctor compaction take a look at look are highlighted. Proctor's method and hints for the diploma of soil compaction assessing are analyzed. Soviet model of Proctor's tools and Modified Proctor compaction check are given. Principal variations between Proctor test, Standard compaction take a look at and Modified Proctor check are presented. The troubles and negative aspects of existent soil compaction checks are revealed. New authors' bodily scan methodology for patterns institution of water migration in subgrade embankment depth, in the potential elements of what it is accepted: clay soil kind (its wide variety plasticity); moisture, at what the soil used to be compacted; soil skeleton density; embankment height; «rest» time after subgrade erection and earlier than it's operation is developed and realized. By laboratory and subject exams water migration patterns in compacted subgrade soils depth are established. As a end result of statistical processing of lookup results, the empirical dependence of compacted clay soil stabilized moisture is obtained. Empirical dependence parameter corresponds to most molecular moisture ability at what it is beneficial to do the subgrade clay soils multilayer consolidation for their long-term power ensuring.

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## Digital Future Of Currency

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### ABSTRACT

The style of cryptography and a valuable capacity of modern numerical proficiency can be utilized to make a season graphic. Cryptocurrency and the Encrypted Peer-to-Peer Network Cryptocurrency is in an exceptional situation as a foreigner. The developing number of individuals utilizing on the web ideas and beginning new organizations implies that digital currency is a monetary movement that includes purchasing, selling and exchanging.

This paper looks at the current legitimate status of cryptographic money as well as future government developments on this currency. Cryptocurrency is expected to be utilized as a mechanism for general or restricted reason vehicle of exchange. Cryptocurrency has arisen as a significant monetary programming framework. Security relies upon the disseminated information structure. Mining is a necessary piece of such frameworks.

**Keywords:** *Digital currency, Cryptocurrency, Bitcoin, Encrypted, Currency, Government Future Move On Cryptocurrency .*

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## Smart Medicine Reminder Monitoring Using Arduino

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### ABSTRACT

Most of the time due to work of the people as well as regarding age and some disease which leads to forget the basic things among daily routine . Health monitoring specially for elderly people is a concern and as most people in the modern times are job holders and have so hectic life.

If the patients suffering from the disease where it is compulsory to take medicine at proper time.It can be possible the development of a low cost medical sensing, communication and analytics device that is real time monitoring internet allowed patients physical conditions.

In day to day life people face trouble remembering the pills that need to be consumed .people also have habit of forgetting to take pills.

The basic two reasons Arduino is important for this project is firstly it is automated, so no human interaction is needed. And secondly, because of automation the process have less chance of having errors i.e. having a more efficient system indicating a better quality in service to make a smart identification technology which will help to reduce the error rate subsequently increasing efficiency and to automate.

**Keywords:-** *Speaker, Arduino, LCD Display, Wires, PCB, Battery, Voice output module ,Resistor*

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## Effective Use Of Quarry Dust In Fly Ash Brick

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### ABSTRACT

In India, bricks are substantially composed up of complexion, and are generally produced in traditional, unorganized small scale diligence. Bricks are important structure material and about 250 billion bricks are annually produced by the slipup diligence. Red complexion bricks making consumes larger quantum of complexion which leads to top soil junking and land declination. Large areas of lands are destroyed every time especially in developing countries due to collection of soil from a depth of about 1 to 2 m from agrarian land. An important step in slipup timber is firing of bricks in slipup kilns which beget serious environmental pollution and health problems. Brick burning largely impact the attention of hothouse feasts in the atmosphere. This causes serious air pollution and also workers in slipup diligence are prone to respiratory conditions, to avoid all this environmental pitfalls slipup made of waste that's began from the waste as a residue from the different diligence and manufactories, this types of bricks is nominated as cover ash bricks which is composed by the different accoutrements similar as lime, gypsum, beach, fly ash etc. The ideal of this paper is to explain about manufacturing of cover ash bricks in present period and advantages of using it as a construction material. In this paper author explain about advantages of cover ash bricks over burnt complexion bricks or red bricks and manufacturing process of cover ash slipup

**Keywords:** *Fly ash bricks, Manufacturing & Material selection.*

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# A Review On Fault Detection And Monitoring Of Hybrid Power Plant By Using IOT

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## ABSTRACT

With the rapid development of wind power and solar capacity, from which we need to deduce the total operating time, the maintenance of wind turbines and solar power plants is becoming increasingly important, so we urgently need to develop fast and efficient fault detection and monitoring. So, in this project, we are using an IoT (Internet of Things) technology modem for the interface. At the same time, we will detect and monitor faults so that the time required for this process (fault detection and monitoring) is reduced and we improve the stability of the hybrid power plant. The discussion in this review article is based on IoT remote monitoring of hybrid power plants for performance evaluation.

**Keywords:** *Aurdino UNO, IOT Modem, UART, Wind turbine, solar panel.*

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# Hospital Management System

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## ABSTRACT

Our extend hospital administration framework incorporates enrollment of persistent, putting away their subtle elements into the framework, additionally computerized charging within the drug store, and labs. HMS could be a program to robotize most of the day to day exercises of a clinic. The data recovered effortlessly. The interface is exceptionally user-friendly. It's areas for different proficient that make up a hospital.

**KEYWORD:** *Hospitality, trigger, administrators, receptions.*

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## Recycling Of Waste Water By Using Vermifilter

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### ABSTRACT:

Vermifiltration is a well-known biotechnological aerobic process of treatment of wastewater which is carried out with the use of epigenic earthworms as a means of treating wastewater and it has been increasingly regarded as an environmental friendly wastewater treatment technique. In the present work, treatment of domestic wastewater was performed using the species of *Eisenia fetida* earthworm to achieve the requisite quality of the effluent. The study included evaluation of performance efficiencies of vermi filtration system based on various parameters like pH, temperature, EC, DO, salinity, BOD, COD, phosphate, sulphate, nitrate and also the pathogen removal efficiencies for total coliform and faecal coliform. The study of five month study revealed that presence of earthworm in the vermifilter bed can efficiently remove BOD and COD by 83.51 % and 83.33% respectively. About 90-99% pathogen removal efficiency was observed for total coliform and faecal coliform which shows that Verm filtered water can be reused for non-potable purposes like irrigation, gardening, industrial etc.

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## Review on Mechanical Ventilator

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### ABSTRACT:

Mechanical ventilation is routinely delivered to inpatients' rooms to reduce respiratory function, improve oxygen supply, or correct respiratory acidosis. Although traditional mechanical ventilation achieves many of these purposes, they have important limitations. Alternatives should hold some of these limitations and are now available in modern ventilators. This article reviews the most common aspects of operation and the limitations of traditional mechanical ventilation, as well as the potential interest of promising new methods.

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## Monitoring and Controlling of Substation Using IOT in Distribution Power Grid

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### ABSTRACT

The energy is generated in power plants and used for transmission from transmission lines to substations. The substation reduces the voltage through the transformer and distributes it to different zones. We need to monitor distribution parameters such as current, voltage, power and temperature of the substation, so we have developed a system where we can monitor all these parameters on the LCD. Then after assuming that there is a disturbance in the distribution line, say a short circuit, then we create a system that can activate certain distribution lines if a disturbance occurs. After this alarm and displayed at the substation, people will be notified of the fault in a certain area where the breakdown has occurred, and the malfunction will be detected by various types of sensors such as current sensor (ACS 712), voltage sensor (25V) and detected temperature sensor ( LM35). The Arduino Uno controller and the ESP8266 Wi-Fi module are inexpensive microcontrollers and wireless devices, respectively. A new Android smartphone application that monitors voltage and current measurements using the open source software MIT App Inventor 2. Allows the observation of several power quality properties of mains voltages. The system also calculates the frequency and power factor of each line using a zero detection detector and voltage and current calculations.

**Keywords:** Monitoring, Controlling, Substation, Distribution, Power Grid, IOT.

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## IOT Based Smart Food Monitoring System

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### ABSTRACT

In present scenario, the work done is in terms of the sensed value that has been recorded And a detailed analysis has been performed but automated controlled alternatives are not present. The proposed solution analyzes temperature, humidity and light, as these parameters affect the nutritional value of foods such as fruit and vegetables, and makes the analysis results available to users via mobile applications. The web server is used to store real time data values and to analyze the results. User is alerted via messages along with locations of the shipment whenever an emergency occurs in this solution; heterogeneous sensors for various domains are employed for sensing the condition of food.

**Keywords:** Food monitoring, IoT, Sensor. DHT-11, MQ6.

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## Crystal Growth And Comparative Studies on New NLO Crystals: ZnSo<sub>4</sub> & CuSo<sub>4</sub> Picolinate

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### ABSTRACT:

Nonlinear optical single crystals of ZnSo<sub>4</sub> and CuSo<sub>4</sub> Picolates were grown by slow evaporation method using water as the solvent. The phase formation of grown crystals was analyzed by the Powder XRD and from the FT-IR spectrum the presence of functional groups and modes of vibrations were identified. The transmission range of grown crystals was also identified by UV-Vis-NIR spectrum. The mechanical stability of the sample was assessed by Vicker's micro hardness test. In addition, the antibacterial activity of these crystals was carried out at different concentrations (25, 50, 75 and 100 g/mL) in-vitro against Staphylococcus epidermis, Staphylococcus aureus (G +Ve), Escherichia coli and Vibrio cholera (G-Ve) bacteria. Moreover, the third order nonlinear optical properties were determined by Z-scan studies and the results suggest that these single crystals are appropriate for potential applications in nonlinear optics and detection.

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## Leukemia Detection Mechanism through Microscopic Image and ML Techniques

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### ABSTRACT

It is reported that since 2016 there are over sixty thousand diagnosed cases of Leukemia in the United States of America(USA) alone. It is seen that Leukemia is the most common type of cancer in the age of twenty years. This study is based on a most of western countries, it is equally alarming for an Asian country like Bangladesh where healthcare system is not up to the standard. Researches show that the Chronic Lymphocytic Leukemia has about 83% 5 year long survival rates. This Survey paper focuses on Acute Lymphocytic Leukemia (ALL) as this is the most common type of Leukemia in Bangladesh. It is very common knowledge among oncologists, that cancer is much easier to treat if it is detected in the early stages of life. The treatment needs to begin as early as possible for identifying Leukemia disease. We propose a hands-on approach in detecting the irregular blood factors (e.g., Neutrophils, Eosinophils, Basophils, Lymphocytes and Monocytes) that are generally plant in a cancer case. We have also collected 256 primary data samples from Leukemia patients. This data is then processed using microscopes to obtain the images and fetch into Faster-RCNN machine learning algorithm to predict the odds of cancer cells formings. Here we have applied two loss functions to both the RPN (Region Convolutional Neural Network) model and the classifier model to detect the similar blood objects. For identification of the object, we have calculated the corresponding objects and based on the count of the corresponding objects we finally detect Leukemia disease. Mean average precision values observed are 0.10, 0.16 and 0, where the epochs are 40, 60 and 120, respectively.

**Keywords:** *Leukemia, Faster-RCNN, Object Detection, White Blood Cells*

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## Automatic Braking System

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### ABSTRACT

This project describes an automatic braking system with an ultrasonic sensor controlled by an ultrasonic sensor. The robot consists of ultrasonic sensors and is controlled by the Adriano microcontroller. The ultrasonic sensor is mounted on the front of the lens. The sensor receives environmental data from the robot's built-in sensor. Sensors detect obstacles and deviate from the path to choose an unobstructed path. The sensor sends data to the controller, compared to the controller to determine the movement of the robot's wheels. The movement and direction of the robot's wheels is based on the sensation of ultrasonic sensors and also uses a wheel encoder. These vehicles are used to detect obstacles and avoid collisions.

**Keywords:** *Obstacle, Microcontroller, Ultrasonic sensor, Adriano, Encoder*

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## A Brief Study of an Installation of a Rooftop Solar PV System in SMSMPITR Akluj

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### ABSTRACT

Rooftop solar photovoltaic system is one of the most popular setups in the country of India as it is economical and suitable for the space available in the country. This paper focuses on the most important design aspects when building systems, not only for photovoltaic engineering design, but also for other key components, such as: B. roof location assessment to final cost analysis. Therefore, the discussion in this article will give an average understanding of how roof photovoltaic systems are processed in the country from the point of view of engineers.

**Keywords:** *Solar, Installation, Generation, Rooftop*

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## Covid-19 Detection from Lung CT Imagery

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### ABSTRACT

The expanding number of instances of affirmed Covid infection (COVID-19) in China is striking. The motivation behind this study was to research the connection between chest CT discoveries and the clinical states of COVID-19 pneumonia. Among the people who foster indications, most (around 80%) recuperate from the illness without requiring clinic treatment. Around 15% become truly sick and require oxygen and 5% become fundamentally sick and need concentrated consideration. Intricacies prompting passing might incorporate respiratory disappointment, intense respiratory trouble disorder (ARDS), sepsis and septic shock, thromboembolism, as well as multiorgan disappointment, including injury of the heart, liver or kidneys. In uncommon circumstances, youngsters can foster an extreme fiery condition half a month after contamination. Proposed strategy recognizes the accessibility of NOVEL CORONA as well as it tracks the treatment progress. In Second era, number of designs or calculations is available for characterization issue. In different dialects we need to begin without any preparation, yet for MATLAB and Python this is another case., just calling those work and changing the info contention, you test. Because of accessible implicit orders, plan and advancement time get decreased. With insignificant Mathematics behind profound learning, we can plan and test different designs of neural organization.

**Keywords-** *Genome Classification, LSTM, Feature Extraction, Classification*

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## Analysis on Manufacturing of Clay Bricks Using Plastic as a Raw Material

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### ABSTRACT

Now a days competition is the thing which can be help to improve the human life as well as their living status. Every person wants a car, huge building to live because they made to them as necessary think to develop them self. As cost of land get increase because of the lands cannot available at huge amount. In this condition to overcome the human problems the human can increase height of buildings They can use so many construction materials like bricks ,stones ,etc. The main component is to PET waste is a plastic waste that very difficult to recycle in large scale, so it was causing environmental pollution. In this project plastic used as main material of bricks . A regular brick has a cement sand ballast cement and water. All these elements have a weight implication whereas our paver blocks only have sand or ballast and plastics

The brick can be sustaining the load when it is used in two or more stored buildings. It can be made a proper bond between the mortar and other bricks because there is special arrangement i.e., frog Due to frog it is sustain the different loads in different in different ways. The compressive strength is very high as compared to other construction materials. These bricks are very economical because it requires raw materials like coal powder, biogas, wooden powder , water which are very economical materials. So, the other construction materials having high cost which is not affordable for normal person.

**Keywords:** *Waste Plastics, Wooden powder, Clay, Absorption, Ash of bricks.*

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## Survey Paper on Jarvis Digital Life Assistant

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### ABSTRACT

Jarvis is “Just Rather Virtual Assistant System” which make easiest our life .In this project Jarvis is digital life assistant which uses only human communication means such twitter, instant message and voice to create two way connection between human and his apartment, controlling light and appliances assist in booking , notify him of breaking news, facebook notification and many more. In our project we mainly use voice as a communication means so the Jarvis is basically speech recognition system. This concept of speech technology encompasses two different technologies first is Synthesizer and second is Recognizer. The speech synthesizer takes as input and produce an audio stream as output. Also speech recognizer on other hand does opposite. Also it takes an audio stream as an input and thus turns it into text transcription . The voice is a signal of infinite command. The direct analysis and synthesizing the complex voice due to too much information contained in the signal. Therefore the digital signal process such as Feature Extraction and Feature Matching are introduced to represent the voice signal. In this project we directly use speech engine which use Feature Extraction technique as Mel scaled frequency cepstral. The mel scaled frequency cepstral coefficients (MFCCs) derived from most widely used front-ends in state-of-the-art speech recognition systems. Our aim to create more and more functionalities which can help human to assist their daily life and reduce their effort. In our test we check all these functionalities is working properly.

**Keywords:** *Feature Extraction, Speech recognizer, Feature Matching.*

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## Solar Inverter Project Using SG3525

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### ABSTRACT

The high energy demand and the constant depletion of fossil fuels lead us to shift our focus to renewable energy sources which are not only the future unlimited source of energy it is also ecofriendly and viable for the environment . Solar energy is the oldest form of renewable energy. This paper focuses on design of solar inverter which is required to run an AC loads which is mostly used as consumable purpose .The power output of the designed inverter is 100w, input voltage is 12v, output is 220v, and 50Hz square wave output.

**Keywords:** *fossil fuel, AC, DC*

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## Online Movie Ticket Booking System

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### ABSTRACT

Online film ticket booking framework is an electronic ticket booking framework. Presently a day's kin are a lot of ward on web. They like to do consistently to day life errands or necessities in online on the grounds that it is more straightforward and bother free. To observe any film they will book the ticket in on the web. They don't have to go to theater to purchase or there is no issue that they will get the ticket or not. So in this manner it will be sans pressure. There will be no problem that they will get the ideal ticket or not. So it is more helpful for individuals. Each individual need to finish their work effectively and with next to no problem for that reason this internet based film ticket booking framework is a lot of huge thing in our everyday life. Without this internet thing you need to go through all the problem and end of the time you are don't know if you will get the ticket or not. So in diversion or amusement time you need to stress where by this internet based framework you don't need to be concerned. You simply need to book the ticket online even by sitting at your home or office or from anyplace. Indeed, that is so natural. So this internet based film ticket booking framework will make your entertainment time smoother.

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## Heartbeat Detection Using Machine learning

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### ABSTRACT

Heart Rate (HR) is one of the most important Physiological parameters and a vital indicator of people's physiological state and is therefore important to monitor. Monitoring of HR often involves high costs and complex application of sensors and sensor systems. Research progressing during last decade focuses more on noncontact based systems which are simple, low-cost and comfortable to use.

Still most of the noncontact based systems are fit for lab environments in offline situation but needs to progress considerably before they can be applied in real time applications. This project presents a real time HR monitoring method using a webcam. The heart rate is obtained through facial skin color variation caused by blood circulation.

Three different signal processing methods such as Fast Fourier Transform (FFT) have been applied on the color channels in video recordings and the blood volume pulse (BVP) is extracted from the facial regions. The obtained results show that there is a high degree of agreement between the proposed experiments and reference measurements.

**Keywords :** *Heart Rate, Fast Fourier Transform (FFT) blood volume pulse (BVP)*

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# Self Curing Possibilities Of Concrete By Using Soluble Polymer

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## ABSTRACT

Now a day's concrete is a necessary artifact and versatile construction material which is widely employed in housing industry everywhere the globe thanks to its compressible strength, on other hand water is that the key ingredient which forms a paste that binds the all material together but is becoming scarce and valuable material. Water plays a significant role in Curing of concrete which directly affect on durability and other performance necessities. Improper curing can affect the concrete performance and sturdiness. The concept of several self-curing agents to scale back water evaporation from concrete. And hence increases the water retention capacity of concrete compared to standard concrete. it had been found that water soluble polymers may be used as selfcuring agents in concrete. The advantage of self -curing admixtures is more significant in desert areas where water isn't adequately available. during this study, polyacrylic acid, polyethylene glycol are going to be tried as self-curing agents and its effect on ordinary concrete will examined. it'll be mixed separately with ordinary concrete with varying percentage and its effect on properties of concrete are going to be examined.

**Keywords:** *Concrete, Self Curing, Polyacrylic acid, Polyethylene glycol.*

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## IOT Based Sugar Industry Real Time Parameters Monitoring By Using Esp32

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## ABSTRACT:

Today's word is internet world; Internet of Things (IoT) is expanding at rapid rate increasing technology. A network of connected computers hidden in every corner of our life monitoring and controlling things with minimal IOT supports to connect hard ware devices to the internet to process the data for monitoring and security. This system uses ESP32 and sensors helps to monitor the different parameters of big sugar industry like AC load, DC load, and temperature, level, Fan speed etc. are accessed and monitored from remote area by using MySQL and publish on webpage automatically. This system is very useful for small scale industry for to achieve maximum throughput and to avoid from accidents by it is a simple, smart monitoring and security system and also tells the importance of IoT in industrial applications. Proposed method very well suitable for small scale industries monitoring and controlling.

**Index Terms—** *IOT, Wi-Fi, ESP32, MYSQL, Web Page;*

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# Nanomaterials Based Smart Sensors for Monitoring Trace Level of Hazardous, Toxic and Inflammable Gases

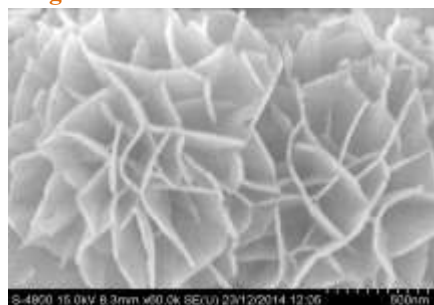
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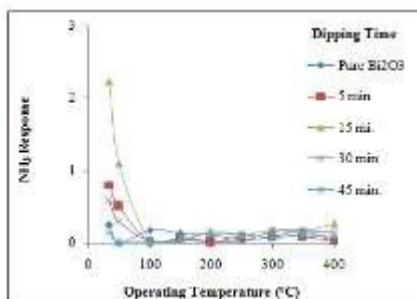
## ABSTRACT

Many researchers, all over the world, are taking continuum efforts for the development of wide band gap ( $\sim 3.4$  eV) semiconductor sensors at nanoscale, for the detection of toxic, hazardous, combustible and inflammable gases. Yet, few difficulties persist for the large applicability to Laymen. Many international leading industries viz. Figaro Engineering Inc, Sierra Monitors Inc, IST, etc., already fabricated the gas sensor models. However, few models have limitations of sensing the gases below Threshold Limit Value. The features of the sensors mainly depend on and co-related with crystallite size, thickness of sensor, nature of actuators and their concentrations, microstructures and nanostructures, temperature, etc. The disc type ultrasonicated microwave assisted centrifuge technique has been used in the synthesis of the materials at nanoscale. The materials in the form of thick films are utilized as the gas sensing elements. The electrical behavior, gas sensing performance, food freshness and disease diagnosis performance of the nanocomposites have been investigated in our laboratory. The efforts are made in the said direction to develop the smart gas sensors and food freshness monitors by using bulk and nanomaterials viz. ZnO,  $\text{Bi}_2\text{O}_3$ ,  $\text{SnO}_2$ ,  $\text{MnO}_2$ , etc. The co-relation of sensor performance with crystallite size and shape, operating temperature, gas concentrations, film thickness, type of actuators, actuator concentrations, surface activation, etc. will be presented and discussed.

## Images



**Fig. 1:** Micrographs of  $\text{Bi}_2\text{O}_3$  activated  $\text{ZrO}_2$  sample



**Fig. 2:** Ammonia response versus op. temperature (°C)

## Studies on $\text{Cd}_{1-x}\text{Ti}_x\text{S}$ Thin Films as Highly Selective Photosensors Sensitive to Green Light

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### ABSTRACT

The nanostructured  $\text{Cd}_{1-x}\text{Ti}_x\text{S}$  thin films were fabricated by chemical bath deposition technique, at  $41^\circ\text{C}$  in a constant temperature water bath. The films were dried at  $80^\circ\text{C}$  temperature under an IR lamp and annealed at  $150^\circ\text{C}$  for 30 min in ambient air. Silver contacts were prepared by vacuum evaporation technique and monitored the photo-sensing performance of the prepared  $\text{Cd}_{1-x}\text{Ti}_x\text{S}$  thin films. The surface morphologies, chemical compositions and crystal structures of the films have been investigated by FESEM, E-DAX, XRD, UV-Vis Spectroscopy, etc. It is very interesting to note that, the fabricated thin films are very sensitive to the visible band of colors. Thin film shows higher response for the exposure of green light. As the contents of Ti is increased, the current generated upon incidence of green color increases up to 5 wt% and further decreased for 7 wt%. The thin films show negligible photo response for the red and white colors of light. The 5 wt% Ti doped CdS thin film has the highest photo-response. This may be attributed to the excitation of the material by photon of the wavelength in between 520 nm to 560 nm. Upon exposure of the photon of wavelength in this region, the free electrons move to the conduction band and constitute to enhance the photo current.

**Keywords:** *Nanostructured CdTiS, Thin films, Green Light Photo Sensor*

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## Nanostructured $\text{MoO}_3$ Based E-nose for Ammonia Monitoring

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### ABSTRACT

The nanostructured  $\text{MnO}_2$  and  $\text{MoO}_3$  powders were synthesized by disc type ultrasonicated microwave assisted centrifuge technique. Thick films of pure  $\text{MoO}_3$  and  $\text{MnO}_2$  doped  $\text{MoO}_3$  powders were fabricated by screen printing technique followed by firing at  $450^\circ\text{C}$  for 30 min. The surface morphologies, chemical compositions and crystal structures of the pure and doped  $\text{MoO}_3$  powders have been investigated by FESEM, E-DAX, XRD, etc.  $\text{MnO}_2$  doped  $\text{MoO}_3$  (3 wt %) sample exhibits crucial response to 50 ppm ammonia gas at room temperature. Electrical behavior and gas sensing performance of thick films of pure and  $\text{MnO}_2$  doped  $\text{MoO}_3$  thick films have been studied and discussed.

**Keywords:** *Nanostructured  $\text{MnO}_2$ ,  $\text{MoO}_3$ , Thick films, Ammonia Sensor*

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## Nanostructured ZnO Based E-nose for LPG Monitoring

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### ABSTRACT

The nanostructured ZnO and SnO<sub>2</sub> powders were synthesized by disc type ultrasonicated microwave assisted centrifuge technique. Thick films of pure ZnO and SnO<sub>2</sub> doped ZnO powders were fabricated by screen printing technique followed by firing at 450°C for 30 min. The surface morphologies, chemical compositions and crystal structures of the pure and doped ZnO powders have been investigated by FESEM, E-DAX, XRD, etc. SnO<sub>2</sub> doped ZnO (5 wt %) sample exhibits crucial response to 10 ppm LPG gas at 150°C. Electrical behavior and gas sensing performance of thick films of pure and SnO<sub>2</sub> doped ZnO thick films have been studied and discussed.

**Keywords:** *Nanostructured ZnO, SnO<sub>2</sub>, Thick films, LPG Sensor*

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## Drag Optimisation of Nose Cone Configuration in Supersonic And Hypersonic Regimes

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### ABSTRACT

Nose cones are essential in high-speed vehicles to ensure minimum aerodynamic drag and change the air flow behavior of incoming air. This paper makes a comparison between the drag forces experienced by different configurations of nose cones at different altitudes and Mach numbers. The change in the drag force with altitude or Mach number is studied to understand the effect of these parameters. Three different Mach numbers 1, 3 and 5 are considered, while altitude is considered from sea level to 15 km in steps of five - 0km, 5km, 10km and 15km. The results obtained provide an idea about the optimum operating region for the nose cone designs

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## Detailed Study on the Role of Laser Sintering in Rapid Prototype-Review

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### ABSTRACT

Selective laser sintering, which can employ a wide range of powdered materials to manufacture high quality complex geometries directly from digital models, has become a very adaptable fast prototyping method in recent years. This is one of the powder-based manufacturing methods that employs high-power CO<sub>2</sub> laser radiation to melt and fuse polymer powders at a low scanning speed. Surface tension causes balling, therefore high power and moderate scanning speed assist to decrease it. Laser beam design for sintering power material is influenced by technical characteristics such as laser power, temperature, laser point size, scanning speed, and so on. This article offers a detailed evaluation of the effects of different parameters on selective laser sintering includes Laser power, scanning speed, and temperature. As an outcome, High temperatures promote powder agglomeration, which affects the mechanical integrity, dimensional accuracy, and surface polish of printed components. The melting time will be longer if the scanning speed is low, while the laser energy transfer time will be shorter if the scanning speed is high. When the laser power is too high, and too low cases are discussed along with Mechanical qualities improve as laser power and scanning speed drop, which is consistent with microstructure.

**Keywords:** *Selective Laser Sintering, scanning speed, laser power, temperature, mechanical properties*

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## Numerical Analysis of Electric Pump Feed System for Upper-Stage Rocket

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### ABSTRACT

Due to advancements in battery technologies, electric propellant feed systems became an alternative to Gas pressure and Turbo-pump propellant feed systems in liquid rocket applications. For longer burn times, low thrust, and low chamber pressures, the Electric feed system offers reliable mass savings compared to Turbo-pumps and Pressure feedsystems. Electric pump-fed propellant feed system provides cost savings and a simple design due to the elimination of high-temperature gas flow used in turbo-pumps. This paper addresses the power and energy requirements calculations for motors, pumps, and batteries. A maximum thrust of 25 kN is considered for the second stage rocket with minimum exit velocity of 2900 m/s and maximum exit velocity of 4500 m/s. The second stage of the rocket uses LO<sub>2</sub> (Liquid Oxygen) and LH<sub>2</sub> (Liquid Hydrogen) as fuels. Two cases are considered to transfer the power from electric motors to pumps and are compared for weight, power, and energy requirements. In one case, two electric motors are considered to run two pumps, one for LO<sub>2</sub> and one for LH<sub>2</sub>. In the second case, a single motor with a gearbox is considered to operate the two pumps at different speeds.

**Keywords:** *Electric pump-fed propellant feed systems, Turbo-pumps, Gas pressure propellant feed system, Thrust.*

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## Design and Analysis of Flat Bottom Fixed Wing for UAV

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### ABSTRACT

This paper presents the model design and analysis of a flat bottom fixed wing for UAV (unmanned Aerial vehicle) with reference of NACA-4412, the design is developed to obtain high stability and minimum controlling effort. The model is developed and model analysis are performed by using commercially available packages AutoCAD and ANSYS respectively. Design is tested for high performance of UAV, enhancing safety, reliability and effectiveness of flight operations. The results of theoretical calculations are compared with the numerical model analysis.

**KEYWORDS:** *UAV, NACA-4412, High Performance UAV, Model Analysis.*

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## Design and Development of Solar Powered UAV for Long Endurance

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### ABSTRACT:

Unmanned Aerial vehicle (UAVs) has become huge in the field reconnaissance areas of Many Nations. Endurance is the one of the principal issue in the Unmanned Aerial Vehicle, Generally the greater part of the airplanes use ordinary fuel which cause pollution, which it additionally have a short time frame life and Expensive. So there is an Enormous need for involving a non modest exhaustible source of energy as a fuel. A sunlight based energy is one of the reachable sustainable energy. The streamlining and planning of the optimal design of Flying vehicle have gotten part of significance to expanding the use to fostering the UAV with compelling endurance and dependability at a subsonic speed. In this paper a conceptual and preliminary design approach is introduced for a solar powered unmanned aerial vehicle to achieve higher endurance. Some data has been acquired statistically from the existing aircraft and unmanned systems due do the theoretical calculations for the solar powered UAV. A better understanding of design and most optimal configuration selection can be determined by performing a historical analysis on previous UAV's. The main aim of the paper is to design a fixed wing solar UAV with high endurance. In preliminary design the wing geometry and unmanned aerial system is designed using Autodesk Fusion 360 software. Further an appropriate wing span is calculated to be 4m to complete the designing of the 3-D solar powered UAV. The performance analysis has been calculated theoretically by using various parameters. Thorough research has been done to find the desired photo voltaic solar cells and types of batteries to be installed in the system to incorporate the solar power system for long endurance. The final objective was to design and analyze a solar powered unmanned aerial vehicle for long endurance applications with implementation of batteries and solar cells.

**Keywords :-** *Solar powered UAV , Long endurance , Conceptual Design , Theoretical calculations , batteries , solar cells*

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# Vestiges of Xenophobia in the Narratives of J.M Coetzee and Zoe Wicomb

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## ABSTRACT

In the postcolonial context, one realizes that most youths are involved in an intercultural relationship and are even ready to leave their respective countries in order to build and construct a workable intercultural dialogue. This, however, is not easy for the individuals concerned, who meet with a lot of hatred and rejection in some of the countries they have been to. This paper aims at projecting the link between postcolonial narrative discourses to explain the fact that for one to be involved in a fruitful intercultural dialogue, one must be ready to face challenges that might slightly or totally act as barrier to its progress. From the prism of postcolonial theory, this paper, therefore, hinges on the premise that Coetzee and Wicomb in their narrative fictions believe that even though cultural and racial negotiations and arbitrations are the panaceas for harmony in the postcolonial socio-political space, there are definitely a lot of challenges to grapple with in order to construct a society void of cultural variations.

**Keywords:** *postcolonial, postcolonial narrative, xenophobia, vestiges of xenophobia, hatred and rejection, and postcolonial theory.*

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## INTRODUCTION

Xenophobia is a dislike and/or fear of that which is unknown or different from one. It comes from the Greek words (xenos), meaning “stranger,” “foreigner” and (Phobos), meaning “fear.” Xenophobia can be defined as fear or hatred of foreigners or people from different cultures. Xenophobia in South Africa, just like in most countries, is a phenomenon tantamount to violence and hatred towards foreigners. Jean Pierre Misago in “Responding to Xenophobic Violence in Post-Apartheid South Africa: Barking Up the Wrong Tree?” explains that: “Xenophobic violence generally refers to any acts of collective violence (by local communities, groups or crowds) targeted at foreign nationals or ‘outsiders’ because of their being foreign or strangers” (52)

Sarah Deardorff Miller in “Xenophobia toward Refugees and Other Forced Migrants” sees xenophobia as “attitudes, prejudices and behaviour that reject, exclude and often vilify persons, based on the perception that they are outsiders or foreigners to the community, society or national identity. (2) In “Xenophobia In South Africa – A Brief Summary” Alice Wamundiya explains that:

*The so called ‘fear and dislike’ of foreigners was expressed in the form of hostile anti-immigration policies which favoured white*

*labour immigrants while at the same time discouraging black immigrant workers... This systematic targeting and denoting of the ‘other’ as different and unequal resulted in the beginning of subsequent overt xenophobic tendencies, expressed namely through negative stereotypes of black Africans and the derogatory naming of them as ‘Amakwerekwere’, allegedly based on the linguistic noises they made in their foreign languages. (1)*

Thus, xenophobia in South Africa started as far back as the 90s when the whites who were in control in South Africa favoured white immigrants and discouraged black immigrant workers. It should be noted that this is xenophobia of the highest order because there is no justification why whites should be accepted in South Africa and blacks rejected. Saloshna Vandeyar stresses in “Opposing Gazes: Racism and xenophobia in South African schools” that:

*Perhaps it is time for stakeholders in education to take a stand and to actively work towards educating students about racism and xenophobia in an attempt to eradicate it and to promote social cohesion and harmony. A concerted effort should be made by both parents and educators to teach students to value human dignity and to view*



*each other as cosmopolitan citizens of the world, in order to break the perpetuation of this vicious cycle of racism and xenophobia.* (15)

Vandayar emphasizes the fact that there is a need for parents and educators to educate all, especially students, to realise that racism as well as xenophobia is a terrible thing that must be eradicated. Vandayar also believes that for racism and xenophobia to be eradicated, students must be taught to value the dignity of others and to see each person as a cosmopolitan citizen.

Vestiges of Xenophobia constitute enormous threats to dialogue and reconciliation in post-Apartheid South Africa as reflected in *Disgrace*, *Youth*, *David's Story* and *Playing in the Light*. Despite the collapse of Apartheid and the measures taken by the successive regimes to reconcile the various races, the post-Apartheid citizen, especially those of the black race, still harbours memories of injustice and torture meted on him by his/her white counterpart. These reminiscences of injustice, humiliation and torture have pushed him/her to have an acrimonious disposition against South Africans of the white race.

#### **Vestiges of Xenophobia in the Narratives of J.M Coetzee and Zoe Wicomb**

In J.M Coetzee's *Disgrace*, there are a lot of instances of xenophobia. To begin, when David the main character in the novel parks his car, it is vandalized and this is done not only because he harassed a black girl as seen in the text but also because of the hatred they have for him given that he is white. The narrator says that:

*[...] his car parked in the street is vandalized. The tyres are deflated, glue is injected into the door locks newspaper is pasted over the windscreen the paint work is scratched. The locks have to be replaced; the bill comes to six hundred rand. 'Any idea who did it?' 'None at all.' He replies. (31)*

Hyperbole is used by the narrator to explain the level at which David's car has been vandalized. However, the bottom line here is that David's car is destroyed because of the hatred they have for him. The newspaper pasted over the windscreen of his car is the one that gives information about the harassment case of David. Explaining what

happened to his car, the omniscient narrator says that: "[...] what will he do indeed? What happened to his car was not enough: Evidently there are more installments to come. What can he do? He must grit his teeth and pay, what else?" (31). The rhetorical questions portray the fact that David has little or no option rather than to suffer as well as pay for his crime.

Again, the idea of xenophobia is also clearly seen when a few blacks who stay with David feel that he is not part of them. They state that: "For though he lives among us, he is not one of us. He is exactly what he calls himself: a thing, that is, a monster...It will no be possible to love him, not in the deeper, more human sense of the word" (33-34). From the above lines, we realise that David stays with blacks in the same community but; they do not consider him as a brother. They consider him a monster and a thing because of the hatred they have for him.

Furthermore, when unknown gun men attack David in his daughter's house, "He speaks Italian, he speaks French, but Italian and French will not save him" (98) because he finds himself in a context where hatred reigns such that even if he spoke in the language they understand as seen in the above quotation, they would still struggle to achieve their aim. When these gun men entered his daughter's apartment, one of them "[...] fires twice ... one dog shot through the chest, dies at once (95). It should be noted that after the theft, their "living room is a mess, so is his room. Things have been taken: his jacket, his good shoes and that is only the beginning of things" (97). This is just the beginning because of the hatred they have for him and his daughter. They are going to come back because "it happens every day, every hour, every minute, he tells himself in every quarter of the country. Count yourself lucky to have escaped... count yourself lucky" (98). In the above quotation, hyperbole is used because saying that this crime happens "every hour" and every minute" is an overstatement. Besides, the phrase "count yourself lucky" is repeated to emphasize the fact that the hatred meted on the whites by blacks is frequent. When the crime is committed, "the telephone is smashed" (98) So that the police will not be aware of the crime. These thieves did not only steal David's things, they also raped Lucy and went away with "money, clothes, a television set, a CD player, a rifle with ammunition." (98)

Another instance of xenophobia is seen in the text through Ettinger who is a very close friend

of David. We are told that “[...] His wife is dead, his children had gone back to Germany, he is the only person left in Africa” (99). Ettinger is a German and the fact that he is the only person left in Africa could be that he is no longer comfortable with the way his children are treated in Africa after apartheid.

Moreover, after the attack on Lucy and David, Petrus, who is the neighbour of Lucy, is not around and due to frustration, Ettinger feels that “[...] Not one of them you can trust” (109). Here, one can say that hyperbole is used once more because saying that no black man can be trusted is an overstatement. Ettinger also feels for Lucy and remarks that: “It must have been hard for her. Still it could have been worse” (109). because “they could have taken her away with them” (109). Ettinger feels this way because of the hatred he has for the blacks and that is why he states that Lucy “ought to buy a pistol...if that way life is doomed, what is left for her to love?” (112). The rhetorical question in the above quotation suggests that what has happened to Lucy is enough for her not to love anybody particularly, blacks.

Also, talking about Petrus and wondering why he was not around on that fateful day, David tells Lucy: “why didn’t he tell you he was going away? Doesn’t it strike you as fishy that he should disappear at precisely this time?” (114). The two rhetorical questions in point to the fact that David does not have an iota of trust for Petrus because of the hatred he has for him. To him, the fact that he was nowhere to be found when the theft took place proves that he is an accomplice. Somehow, David feels that: “The worst, the darkest reading would be that Petrus engaged three strange men to teach Lucy a lesson, paying them off with the loot” (118). However, on the other hand, he does not believe that Petrus knew something was offing, he does believe that Petrus could have warned Lucy. That is why he would not let go the subject and he continues to nag Petrus (118) because he feels that Petrus was aware of everything and deliberately refused to alert them or the police. He believes with all his heart that these thieves are not strangers. In fact, he tells Petrus that: “Do you know Petrus, he says, I find it hard to believe the men who came here were strangers. I find it very hard to believe they arrived out of nowhere” (118). David feels this way because of the abhorrence he has for blacks. The more Petrus tries to convince him that he knows nothing about the thieves the more David insinuates that Petrus is lying. According to him, “it was not simple theft” (119). While telling Petrus this, “A flurry of anger

runs through him, strong enough to take him by surprise” (119).

A few days after the theft, a boy who was with the thieves that rubbed Lucy and her father is sighted in Petrus’ house by David and this makes him to conclude that “one way or another, it was he who brought in those men in the first place. And now he has the effrontery to invite them back” (133). David finds it very difficult to accept that Petrus is blameless. According to him, Petrus was involved in the attack. He tells Lucy that: “[...] Petrus is not innocent, Petrus is with them” (133). David has the right to suspect Petrus after sighting the boy in Petrus’ house but saying that Petrus is guilty is not true because it is obvious that Petrus is a good person who is surrounded by very bad people. However, David does not seem to understand this because of the abhorrence he has for the blacks who raped his daughter and stole his things.

Furthermore, David also tells Petrus that if “Lucy has any sense she will quit before a fate befalls her worse than a fate worse than death” (138). He feels that if Lucy does not leave, what is going to happen to her will be worst. He finally tells Petrus that his “[...] daughter wants to be a good neighbour” (138). Here, he insinuates that his daughter is a good person but is not living in peace because she is surrounded by very bad people who do not want to see her happy and that is why he wants Lucy to quit before something bad befalls her. After telling Petrus that he wants his daughter to be a good neighbour, Petrus informs him that: “Lucy is safe here” (138). Responding to Petrus, David tells him: “But she is not safe, Petrus! Clearly, she is not safe! You know what happened here on the twenty-first” (138). He adds that “you say you know what happened, but you didn’t protect her last time, he repeats. You went away and then those three thugs turned up and now it seems you are friends with one of them. What am I supposed to conclude” (139). Again, David thinks that Petrus did not protect his daughter because he still suspects Petrus for bringing thieves into his daughter’s house and that is why he tells Bev Shaw that “[...] I can’t leave Lucy alone on the farm. She isn’t safe. I am trying to persuade her to hand over the operation to Petrus and take a break. But she won’t listen to me” (139). Lucy, as seen in the above quotation, does not reason like her father and that is why she feels that Petrus is not a bad person after all. Commenting about Petrus to David, Bev Shaw states that “[...] Because Petrus has a beard and smokes a pipe and carries a stick you think Petrus is an old-style

“kaffir.” But it is not like that at all. Petrus is not an old-style “kaffir” (140). The word “kaffir” as seen in the above quotation, is a derogatory word for blacks but Bev Shaw wants David to realise that Petrus is not as bad as he thinks.

Though Lucy has decided to forgive her rapists, one can say that she still has a very terrible memory of what happened to her on that fateful day. Commenting on the barbaric act perpetrated on her, Lucy states that: “It was personal hatred. It was done with such personal hatred. That was what stunned more than anything...But why did they hate me so? I had never set my eyes on them” (156). These thieves did not just come to steal, they also came intending to inflict pains on Lucy who happens to be a white. The way they raped her justifies the fact that they hate her with passion. Explaining what happened to Lucy, the omniscient narrator states that it “was history speaking through them... A history of wrong. Think of it that way, it helps. It may have seemed personal but it wasn’t. It came down from their ancestors” (156). The ‘history’ is that in which racial segregation was the order of the day. What has orchestrated the crime against Lucy is the fact that those involved are not happy with them about what happened to them during the apartheid period and somewhat struggling to revenge.

Considering what happens to Lucy, David asks her the following question “Are you still afraid?” (156). Responding to him, she states that: “They are going to come back” (156). She also states that: “I think they have done it before...I think I am in their territory. They have marked me. They will come back for me” (157). They will come back for her because of the hatred they have. She equally states that during the act, “they spur each other on. That’s probably why they do it together like dogs in a pack” (159). Here, we realise that her rapists take turns to rape her like dogs and “the third one, the boy...was there to learn” (159). Although Lucy is not happy with her rapists, she decides to tell her father who is too bitter about the rapists that: “If they had been white you wouldn’t talk about them in this way, she says” (159). Lucy’s comment reveals the hypocritical nature her father.

Also, after the rape scene, “Lucy was frightened, frightened near death. Her voice choked, she couldn’t breathe, her limbs went numb. This is not happening she said to herself” (159). When Lucy’s father realises how frightened she is, from the solitude of his room, he writes his daughter the following letter: “Dearest Lucy, with

all the love in the world, I must say that you are on the brink of a dangerous error. But the road you are following is a dangerous one. It will strip you of all honour; you will not be able to live with yourself. I plead with you, listen to me your father” (160). It should be noted that David writes this letter to his daughter out of frustration because, despite everything, Lucy is not ready to follow him to where ever he wants to go. He also advises Lucy about the idea of leaving South Africa in the following words: “Holland may not be the most exciting places to live, but at least it doesn’t breed night-mares” (161-162). By Saying that South Africa “bread-night mares” portrays that David has a particular hatred for South Africans. Indeed, Lucy is not “safe, she would be made to feel safe. But she will stay on nevertheless. It has been a point of honour with her” (187)

Again, one can say that David hates South Africa because “[...] despite the time he has spent here, it feels like a foreign land” (197). In the text, we are made to understand that David has spent so many years in South Africa but he does not feel at home. His hatred for Africans is seen when he hears that Petrus wants to marry his daughter, he addresses Petrus thus: “You will marry Lucy? He says carefully. Explain to me what you mean No wait, rather don’t explain. This is not something I want to hear. This is not how we do things” (202). The pronoun “We” stands for whites. In fact, he is stunned to realise that Petrus who is black intends to marry his daughter Lucy, simply because he feels that Lucy is superior to Petrus since she is a white.

David does not also think Lucy should marry Petrus because of the hatred he has for blacks. He further tells Petrus about this idea of marriage that: “Lucy does not want to marry. Does not want to marry a man. It is not an option she will consider. I can’t make myself clearer than that. She wants to live her own life” (202). It is not true that Lucy does not want to marry a man and it is not also true that Lucy wants to live her life as David insinuates, the bone of contention here is that he does not want Lucy to marry Petrus whom he considers as inferior. To justify that David is not interested in the intended marriage between Lucy and Petrus, he claims that: “I try to handle it lightly; he tells Lucy afterwards. Though I could hardly believe what I was hearing. It was blackmail, pure and simple” (202). He could not believe what he was hearing because according to him, Lucy has made a wrong choice and that is why he feels it is a blackmail. Responding to her father on this, Lucy tells him that: “It wasn’t a blackmail. You are wrong about

that. I hope you don't lose your temper" (202). From the above quotation, Lucy reminds her father that her love for Petrus is genuine and not a blackmail as David insinuates.

Moreover, when Lucy asks her father whether he loses his temper after realizing that she is going to marry Petrus, he answers Lucy in the following words: "Offended at the prospect of becoming Petrus's father-in-law? No was taken aback, astonished, dumbfounded, but not offended, give me credit for that" (202). David is not just astounded that Lucy has accepted to marry Petrus but pretends that he is not offended at the prospect of becoming Petrus father-in-law because of the hatred he has for blacks. When Lucy is frustrated about her father's abhorrence for blacks and tells him that he was not where she was raped and does not know what happened to her, out of frustration and disappointment, he states that:

*[...] where, according to Bev, according to Lucy, was he not? In the room where the intruders were committing their outrages? Do they think he does not know what is rape is? Do you think he has not suffered with his daughter? What more could he have witnessed than he is capable of imagining? Or do they think, where rape is concerned no man can be where the woman is? Whatever the answer, he is outraged, outraged at being like an outsider. (140-141)*

The rhetorical questions as seen in the above quotation illustrate the fact that David is not happy with the intruders for raping his daughter. Again, he poses these questions because he feels for his daughter and that is why he desperately supports the fact that they should leave the farm and why not South Africa. Furthermore, because of the hatred that David has for Petrus whom he thinks cannot take care of Lucy, he feels that if Lucy remains in the farm she will be disappointed and frustrated. He states that:

*[...] It is not hard to imagine Lucy in ten years' time: a heavy woman with line of sadness on her face, wearing clothes long out of fashion, talking to pets, eating alone. Not much of a life. Better than passing her days will not be enough to protect her and no one will answer the telephone. (151-152)*

David feels this way about Petrus not only because he hates him but also because he is a black. It is because he does not like him that he insinuates that after ten years, Lucy will be sad, wear clothes that are out of fashion and eating alone. He also feels that no body will protect her or answer her telephone calls. Apart from the fact that he also tends to belittle other people. For instance, when Lucy introduces him to Bev and Bill, he wants to leave, because "the last thing he wants to do is trade small talk with these people." Apparently, he judges them by their appearance: he sees Bev as a "dumpy, bustling, little woman" (72). When Bill at a later point picks up Lurie at the hospital after the attack, Lurie tells him that he appreciates Bill's help. However, Lurie does not like Bill's response; "What else are friends are for? You would have done the same". Instead of simply agreeing, he becomes annoyed and begins to contemplate why Bill calls him his friend. He ends up associating the origin of the meaning of 'friend' to 'love', but cannot see the connection between him and Bill (102). In this way Lurie tends to distance himself from other people because he seems to judge others based on his own 'higher standards.'

In J.M. Coetzee's *Youth*, just like in *Disgrace*, there are equally a lot of instances of vestiges of xenophobia. In the text, the omniscient narrator laments that John, the main character, is

*[...] in private worries, he cannot fail to see that the country around him is in turmoil. They pass laws to Africans and Africans alone are being subjected are being tightened ever further, and protests are breaking out everywhere. In the Transval police fire shots into the crowd, then, in their mad way, go on firing into the backs of fleeing men, women and children. From beginning to end the business sickens him: the laws themselves; the bully-boy police; the government stridently defending the murders and denouncing the dead; and the press too frightened to come out and say what anyone with eyes in his head can see. (36-37)*

In the above passage, personification is used to describe the predicament of Africans during the Apartheid dispensation. Here, we realise that the past laws were meant to discriminate against Africans. During that period, the police were not friends to Africans as often insinuated nowadays. They killed Africans indiscriminately and stopped

the journalists from reporting those atrocities. We are made to understand that “After the carnage of Sharpeville nothing as it was before. Even in the Pacific Cape there are strikes and marches. Wherever a march takes place there were policemen with guns hovering around the edges, waiting for an excuse to shoot” (37). Here, we realise that the police were also around to protect the citizens as they were supposed to but all they did was to come around and wait for an opportunity to shoot indiscriminately.

Another instance of xenophobia is seen during a workers’ march by PAC, according to a coloured student nearby. The narrator states that the students’ eyes “glisten, he has an intent look. Is he right? The PAC is not like the ANC. It is more ominous African. African for Africans! Says the PAC. Drive the whites into the sea!” (38). Simile is used here to compare PAC and ANC. While the PAC thinks that whites should be sent “into the sea,” that is away from South Africa, the ANC is a liberal party that is struggling at all cost to embrace all everyone despite, the odds. This explains why after the apartheid regime in South Africa, Nelson Mandela’s and Desmond Tutu’s wish was to make a break from the past and establish a common future, with the aim of promoting national unity and cultural coexistence.

Again, xenophobia is seen in the text when John, the main character, insinuates that when he left school, “they were conscripting only one white boy on three for the military training. He was lucky enough to be balloted” (36-37). The fact that only more blacks in this context had the opportunity to gain admission to training in the military is by itself xenophobic.

Furthermore, while in England, John complains about his stay there when he opines that: “How long will he have to live in England before it is allowed that he has become the real thing; become English? Will getting the English passport to be enough or does an odd-sounding foreign name mean he will be shut out forever? And Becoming-English-What does that mean anyhow” (103). From the above quotation, one can say that it is very hard for aliens to integrate themselves easily in England. The omniscient narrator supports this idea in the following words:

*The people he works with are too polite to express their opinion of foreigner visitors. Nevertheless, from certain of their silences he knows he is not wanted in their country,*

*not passively wanted. On the subject of West Indians they are silent too, but he can read the signs. NIGGER GO HOME say slogans painted on walls. No COLOURED say notice in the windows. West Indians are halted are halted at the dockside in Liverpool detained until they grow desperate, then shipped back to where they came from. If he is not made to feel as wretchedly unwelcomed of his protective coloration: his Moss Brothers suit, his pale skin. (104)*

From the above passage, some of the words are written in the upper case by the writer to emphasize that foreigners are not wanted in England and that is why slogans like “nigger go home” are written on walls. Besides “no coloured” notice is also written on windows. Again, as seen in the above quotation, West Indians are stopped at the dockside in Liverpool and detailed until they get desperate, then shipped back to their country. This act by the British government does not encourage cosmopolitanism and cultural coexistence because it promotes hatred for blacks and Indians.

The idea of vestiges of xenophobia is also recurrent in Zoe Wicomb’s *David’s Story*. Reflecting about the past, Ouma Sarie states that: “[...] in those bad old days there was nothing as thinking through; there was only thinking yourself into knots and endless sums of rand and rents” (6). From the above quotation, one can say that folks like Ouma Sarie are willing to keep the past behind them but it should be noted that some blacks who did not find it funny during the apartheid dispensation find it very difficult to interact with whites who caused them untold hardship.

In addition, as Ouma Sarie walks down the hill “towards the newly whitewashed, wobbly-lined rectangles of a child’s drawing, their flat roofs sloping backwards to a wall considerably lower than the front: the street my-weg location of unmistakably coloured country houses, the houses of farm labourers. These houses have blind backs with no windows” (7). Here, one realises that the coloured people live in poorly built houses simply because they are labourers. If it were white people staying in that neighbourhood, efforts would be made to improve their lives by building better houses for them. Furthermore, although Ouma Sarie thanks God so very much for her good fortune, she laments that:

*[...] who could have imagined trouble overtaking her like that, one day the children playing ten-stones in the yard and before you blink they're out there in the terrible world of fighting, as if she shouldn't do her best to bring them up as Christians. And if that wasn't bad enough, to have a child called a guerrilla, a word sounding so like baboon. (6)*

There is fighting between black children and white kids and in the course, black kids are referred to as guerrilla "a word sounding so like baboon." The simile "[...] a word sounding so like a baboon" emphasizes how xenophobic the whites are as they refer to blacks as "guerillas."

Again, during of David and Sally's courtship, they see little of each other and on one of their meetings, they decide to go to a restaurant in Harare Gaborone. The omniscient narrator states that the place "still held the taste of the forbidden as black people entered defiantly" (13). The fact that blacks are not allowed to eat in that restaurant is hatred of the highest order. The narrator further states that while in the restaurant, "Sally felt the chill of discomfort, at those tables of trimmed carnations and muted conversations" (6). Sally is not comfortable at the table while eating because of fear of the unknown given that those around them are not happy to see them there. To justify her fear, Sally whispers:

*[...] When she looked repetitiously around the room to identify that Boer, the lone dark skinned white man with blunt features, David laughed. The Young flashily dressed black couples behind them were no less suspicious; there was no telling who was who and where danger may lurk. If it were not for pleasure of being together in public, the seductive whiff of the illicit, Sally would not have bothered learning to sit around in cafés, spending money inventing personas that spoke quietly about subjects such as gardening or holiday resorts or even a baby called Tracy, and behaving, except for the customary hushed tones and eavesdropping, as if there were on one else about (13)*

From the above quotation, the atmosphere in the restaurant is so tensed and suspicious. The environment was dangerous given that Sally and all who are there do not know who is who. In it should

be noted that this idea where people cannot socialize in peace and harmony due to the fact that the colour of their skin is ridiculous is uncalled for.

Furthermore, as seen in the text, the very long conversation between David and his father portrays the favour as someone who hates the blacks. He addresses David in the following words: "A windbreek, that's what you are, what you've always what been, that's why you mess around with Kaffirs, his father shouted, taken in by kaffir talk" (19). The word kaffir is a derogatory word for blacks and here David's father is not happy with him for associating with blacks. His father further stresses that: "He had had enough of the fellow's stubbornness, his madness. God had seen fit to bless him with one son only, a son who has since turned out to be no blessing at all. A moffie and a windbroek" (20). Firstly, a "mofie" is a derogatory term for an effeminate homosexual man. Secondly, "windbroek" means trousers, lacking full buttocks that is, a man without courage or nerve. The insults meted on David by his father are a clear indication of the fact that he is not happy that his son is associating with people of other races. It is interesting to note that the narrator dedicates eight (8) pages to the rivalry between David and his father and the reason for this acceleration as far as narratology is concerned is because the narrators wants to point out the fact that what David's father is doing is unreasonable.

Also, David's father expresses his anger concerning David's association with people of other races in the following words:

*I tell you something about Kaffirs and the Hotnots, they don't want to work. Look what it's taken your mother and me, sweet and blook, to shake off the Griquaness, the shame and the filth and the idleness, and what do you do? Go rolling right back into the gutter, crawling into all kinds of dirty hovels to speak with old folks about old Griqua rubbish encouraging the backwardness. Don't think I don't hear about these things...once a Griqua, always a Griqua. Then, in a fit of irritinal rage, And all because of the Kiffirs, Your mother must be returning in her grave. (23)*

"Hotness," as seen in the above quotation, is the short form of Hotentots and it is a derogatory name for the Khoikhoi. It should be noted that the above quotation expresses the hatred that David's father has for the non-whites and that is why he is

disappointed that his son is associating with blacks. According to him, David should not “smile or laugh with” (23). He further tells him that: “You must do your Christian duty but don’t ever let a Kaffir see your teeth. See how your mother keeps her head down” (23). David’s father is hypocritical because he cannot claim to be a Christian and yet discourages his son or children from associating with people that do not share the same culture with them. Again, David’s father further accuses him in the following words:

*You liked the Kaffirs even when you were small, going against my wishes and talking to people I’d told you to leave alone. I should have put my foot down from the very start; I shouldn’t have listened to your mother, and you wouldn’t have got into this dangerous business. No respect for your elders, that’s your problem, think your education gives the right to put aside everything your elders have taught you.* (24)

From the above passage, it is clear that the only hatred disagreement that David’s father has for his son is because he does not want him to associate with blacks and the fact that he should not have listened to David’s mother is probably because she was liberal. And when David decided to maintain a good relationship with blacks he feels that David is being disrespectful to elders and he also insinuates that David is disrespectful because of his education. Responding to his father, David informs him that: “[...] Old people do not have a right to respect of the young; they have to earn it like everything else. Just like those in power do not have a right to that power; the people over whom they rule not agree” (24). Here, David believes that his father has to earn his respect given that he is not happy with his father’s decision to discourage him from associating with people he loves, irrespective of their cultural affiliations.

Another instance of xenophobia in text is when Thomas Kakstad Adviser whom David is supposed to meet in his office for chat tells him that: “[...] I can see you’re a man of your word. Not like these bladdy Griquas who keep Kaffir time” (74). It is due to the hatred that Thomas has for blacks that makes him to insinuate that blacks do not keep to time. It is fallacious and an overstatement to say that blacks do not keep to time since there are so many blacks who are punctual.

Furthermore, David makes one to understand that he has been to a grand museum called Kelvingrove, “the place where as a student, David caddied for the wealthy golf players of Cape Town: no blacks, no Jews are in Kelvingrove” (6). The fact that blacks and Jews are not in Kelvingrove is a gross act of xenophobia because golf is not meant for white alone at all. Curiously, the best player in golf in the world is an African American (Tiger Woods).

In Zoë Wicomb’s *Playing in the Light*, the idea or issue of vestiges of Xenophobia reign supreme. Commenting about the blacks, Marion’s father states that: “[...] Kaffirs and hotnos too lazy to work, just greedily grabbing at things that belong to others, to decent people” (14). Once more, the derogatory word word “kaffir” is used to refer to blacks. However, what is curious here is the fact that most of these blacks who are lazy tend to steal from those who are hardworking. In fact, this act is perpetrated only against folks of other races by blacks as seen in the text. Marion confirms this when she claims that:

*You can’t go anywhere nowadays without a flock of unsavoury people crowding around you, making demands, trying to make you feel guilty for being white and hardworking, earning your living; and of course there is no getting around it; hundreds of rand per month, being blackmailed by the likes of these every time you park your car. And the impudence of watching as you get out, watching as you lock the door, willing you feel uncomfortable about your own belongings.* (28)

It should be noted that the above scenario is happening to Marion in the New South Africa and her only crime is that she is a white who finds herself amongst some blacks who most often than not are very lazy and all they can do is to harass others who have decided to be hardworking.

Another instance of xenophobia can be noticed when the woman (Tokkie) who has served Marion’s parents all her life dies. At her death, Marion who is five years at the time expects her entire household to be part and parcel of her funeral but her mother refuses on the pretext that they will organize theirs at home, which they never did. The narrator says:

*Marion was about five years old when Tokkie died. Her mother held her and wept tears that left muddy rivulets down the pink pancake make-up. Her parents argued in hushed tones, but she heard them alright. They didn't like each other, even then, and Marion's hand would fly to her ears to block out the sound – not knowing meant that she wouldn't be able to take sides. This time, the argument could not be contained in the large sagging bed. At the kitchen, Pappa said in sad dominee tones that they ought to go to the funeral. He should mind his own business, Helen said, Tokkie was hers, belonged to her family. Tokkie would appreciate any sensible decision she made, which was more than could be said for Campbell. It was plain folly to go to the funeral, to that little house in Kensington where her family were, subject the child to such things. Marion said that she wouldn't mind a little house in Kensington at all, that she loved Tokkie, that she was Tokkie's sweetest heart, but her mother wouldn't hear of it. They would have their private mourning at home, she said. Helen made it sound like a party, a special treat, but on the day of the funeral nothing happened; they didn't speak about it or put their arms around each other. Marion found Tokkie's apron on the hook behind the kitchen door and stood on a chair to get it. She stole with it to her room, where she crept under her bed, wrapping herself in the parment the more to touch Tokkie's aged smell of orange and wood smoke. (32-33)*

Marion's father, however, criticises this attitude and cautions them that God would not forgive them for not going to the funeral. The narrator states that: "God would not forgive them for not going to the funeral, but Marion's friend Annie did not understand that Tokkie did not understand that Tokkie was much more than a servant, that Marion was the old woman's very special little person, but there was no point in explaining." (33). In hearing this Annie Boshoff mocks Marion's father saying "[...] that was kaffirboetie talk. There was no need going to a servant's funeral, no matter how old or wonderful she was" (33). This attitude does not only bring out the concept of racial segregation in the Apartheid era; it also portrays the fact that the Apartheid society was also based on class distinction. However, the narrator argues that

Annie does not understand that Tokkie was more than just a servant to the family, especially to Marion. In other words, this can be considered as an act of hatred because it is unthinkable to miss the funeral of a person who took care of your family and children, all her life. It should be noted that if this servant was a fellow white, he would struggle to be part of the funeral.

Xenophobia can also be seen in the conversation between Boetie and Brenda in the text. In the text, Brenda feels that the level of insecurity and violence in the country after apartheid is not as a result of bad governance in the post-Apartheid South Africa. He blames Boetie for the predicament in the new dispensation in the following words: "Really? You don't think that years of oppression of human and destitution and pervasion of human beings, thanks to the policies that you voted in, have anything to do with you?" (36). From the above quotation, it is apt to note that the animosity exhibited by the blacks is as a result of the so many years of oppression of blacks by whites during the apartheid dispensation. In other words, blacks feel that this is payback time since hatred begets hatred. Even though Boetie feels she "never voted for apartheid" (36), Brenda insists that the hatred of blacks for whites is a result of the oppression and discrimination of blacks during the apartheid period. It is interesting to note that the narrator dedicates three (3) pages to this issue of violence meted on other races to emphasize how serious it is.

Another aspect of xenophobia evident in the text is when Marion insinuates that she saw Tokkie's face on the water and decides to call her father who is already asleep. Bothered by Marion's call, John addresses her thus: "Who is Tokkie? What's the matter Marienjie?" (65). When he does not reply, "she shouts, don't worry, I'll be dressed now-now; I'll be right there in a minute. Is it the Kaffirs? I'll bring my stick, I'll beat them to death" (55). It can only be hatred that will push John to feel that the person bothering Marion is a "Kaffir." The fact that he wants to bring a stick and beat them to death portrays the hatred he has for the blacks.

In addition of xenophobia is portrayed when Marion cannot make sense of the Population Registration Amendment Act of 1962 about who is a white. The librarian reads aloud the amended definition:

*A white person is a person who (a) in appearance obviously is a white person, but does not include any person who for*



*purposes of classification under this Act, freely and voluntarily admits that he is by descent a native or coloured person unless it is proved that the admission is not based on fact. (55)*

From the above quotation, it is obvious that the whites feel that they are the only acceptable race in South Africa and any other race is useless and irrelevant.

Also, the idea of xenophobia in the novel is also seen when Zoë Wicomb digs deep into criticising some of the Apartheid laws, especially those that define the concept of race and colour. In the novel, the author shows the complexities and complications that are involved in defining the racial orientations of South Africans – especially the coloured. While in the National Library, the narrator comments that Marion and the librarian “[...] pore over the laws and confusing racial definitions” (120). This comment, by the narrator, depicts the contradictions that were embedded in the racial laws during the Apartheid era, which is further buttressed when the narrator recounts thus:

*The 1946 franchise laws allowed mixed blood in one parent or grandparent, but the new bill of 1950, designed to formalise and fix the categories of coloured and white, conflicted with the earlier one. Coloureds could now elect European representatives to the House of Assembly, but many whites who until then had thought of themselves as European were in the fifties transferred to the newly established separate coloured voters’ roll. On the other hand, Act No. 30 of 1950 defined a ‘white person’ as: one who appearance obviously is, or who is generally accepted as a white, but does not include a person who, although in appearance obviously a white person, is generally accepted as a coloured person. (120-121)*

As Marion and the librarian investigate on the archives in the library, they realise that the definition of who a white person is, following Act No. 20 of 1950 contradicts the Population Registration Amendment Act of 1960. The narrator says that in 1950, a white person was defined as: “one who in appearance obviously is, or who is generally accepted as a white person, but does not include a person who, although in appearance a white person, is generally accepted as a coloured

person” (121). This law, which lays down the definition of who a white or coloured person is, does not depend on any scientific or rational parameter. In other words, the law has to do with perception and not reality. It means that coloured, who supported the Apartheid policy, were considered whites while whites who were adversarial to this policy could even be considered as non-white. It further alludes that being white or non-white in the days of Apartheid was a matter of ideological orientation (121). This law, however, was modified in 1960 and the amended definition read as follows:

*A ‘white person’ is a person who (a) in appearance obviously is a white person and who is not generally accepted as a coloured person; or (b) is generally accepted as a white person and in appearance obviously not a white person, but does not include any person who for the purpose of classification under this Act, freely and voluntarily admits that he is by descent a native or a coloured person unless it is proved that the admission is not based on fact. (121)*

After studying the two laws, Marion doubts whether there is any real difference between them. This is seen in the use of the rhetorical question by the narrator when he says: “But is there any difference, Marion asks, from the 1950 Act?” (121). One can infer from this question that Marion finds no difference between the former law and its amended one. Also, the study of these laws is reminiscent of trauma, distress, and anguish during the Apartheid era. The narrator says:

*The librarian lifts an admonishing palm, purses her lips to silence Marion, but it is not long before she succumbs to laughter. In vain they try to stifle the sound; they stagger drunkenly between the aisles before sliding with the heavy tomes onto the carpeted floor, where they rock with quiet laughter. Tears stream down their faces. There are decades worth of folly trapped in these pages. (121)*

The librarian further affirms that in the fifties and sixties, in South Africa, the Apartheid regime ran into confusion on the definition of who a white is. This confusion probably stems from the fact that some coloured South Africans were passing for whites. The omniscient narrator remarks that “Must have been a hell of a confusing time, between the fifties and sixties, when whiteness was not yet

properly defined, the narrator says” (121). This assertion depicts the view that even the regime, in the days of Apartheid, found it difficult to say who a white is. It should be noted that this type of regime that favoured only whites was xenophobic in their dealings since anyone who was a non-white was considered as inferior and a sub human.

Further xenophobia is expressed in *Playing in the Light*, through John who loves the job of a traffic officer but is ignorant to realise that this particular job is reserved for whites. The omniscient narrator explains that:

*I was in ignorance, not knowing that the job of traffic cop was reserved for whites... With his shoulders held back, and drawn to his full height, for that was how a traffic cop should hold himself, it was important to keep standards, the superintendent explained. A city can't function without good traffic control, its heartbeat, and once you slacken on discipline, let coloureds into the system, things can go downhill. (124)*

John is denied the job because of discrimination. According to whites, if the right thing must be done in this department, only whites should be allowed to do it. It is an act of ignorance and superiority complex to feel that only whites can successfully handle the traffic. This superiority complex of the white is further elucidated from the narrator's utterance that “[...] being white in the whole is surely about being at ease, since the world belongs to you (152). Here, hyperbole is used because claiming that the world belongs to whites is gross exaggerated.

Moreover, xenophobia is seen in the text when Helen feels that as a coloured, it is difficult to live in areas close to the whites. The narrator states that: “As for the poor-white estate across the railway line, from where barefoot children threw stones at the coloured houses. Shouting swartgat, swartgat, that too was an object lesson” (129). The reason children of the whites' throw stones at the coloured houses is that have been taught by their parents to hate them. It is unsafe to stay in a neighborhood where people do not like you. The narrator supports this when he explains that: “No, there is no question of letting up. Just look how the world around them is being ordered, shaped according to colour, restricted: Coloureds on new visitors' roll job reservation Group Act – Legislation up legislation that proves how right they were” (151).

The fact that the world is shaped around colour is clear indication that anyone who is not a white does not deserve a better life but all whites are fortunate and always right. “whiteness is without restrictions. It has the fluidity of milk; its glow is far reaching. It's up to them to make it work” (151). Here, to succeed means one should be a white hence, there would be no restrictions irrespective of their status in life. John reasons that “vigilance is everything; to achieve whiteness to keep on your toes...being white in the world is surely about being at ease since the world belongs to you.” (152)

In the text, under analysis, one realises that there was predominant white supremacy during the days of Apartheid. The whites saw themselves as superior to the Africans and dragooned non-whites to believe in the idea as well. It is for this reason that most coloured were even happy to be mistaken for whites. This created serious identity crisis and split personality issues, especially among members of the coloured race. The narrator affirms that John Campbell, though from the coloured race, was content to be mistaken for a Boer (126). “Indeed”, the narrator says, that was what had sparked the idea of becoming white – not an act of imagination on his part, no, merely a happy case of mistaken identity” (126). It is for this reason that when he is mistaken for a white in the Traffic Department, he does not notify the superintendent; he lives with this mistaken identity – with all the advantages that follow it – until the end of Apartheid. In addition, the white supremacist ideology is seen in the dialogue between John Campbell and the superintendent at the Traffic Department. The narrator remarks thus:

*It was ignorance, not knowing that the job of traffic cop was reserved for whites, that he had gone to the Traffic Department in Green Point; and the superintendent, a plattelander himself, heard with nostalgia the sun burnt young man's rough rolling r's as the language of a farmer. With his shoulders held back, and drawn to his full height, for that was how a traffic cop should hold himself, it finally dawned on John, when the man spoke passionately about job reservation for whites, that he was being mistaken for one of them. It was important to keep up standards, the superintendent explained. A city can't function without good traffic control, it is its very heartbeat, and once you slacken on discipline, let coloureds into the system, things can only go downhill. It was a*

*practised speech, newly debated in the Traffic Department where the orthodox position prevailed: it would be an affront, it simply did not make sense for a coloured cop to reprimand his betters; and motorists were, after all, predominantly white. (127)*

Non-whites, in South Africa in the days of Apartheid, were almost in constant and continuous demonstration against the racist Apartheid legislations. This was one of the major root causes of violence and uncertainty during the period. The narrator insinuates that Fourie, the husband of Elsie, was one of the ringleaders against the unjust Apartheid laws. This information is found in the local tabloid or newspaper called Cape Times. The narrator remarks:

*One the front page of the Cape Times there'd been a photograph of coloured men waving defiant fists, and Fourie in the centre named as a prominent Unity Movement rebel. They'd led a procession through the streets of Cape Town, congregating on the Grand Parade, where Fourie and others had spoken against the new laws. Disgraceful, making spectacles of themselves, Helen had said to John, as she'd read out the report of coloured people marching through the streets of Cape Town; no more than a disorderly mob, when everyone knew that they'd get nowhere with protests and processions. There was no stopping Prime Minister Malan, and really, what Elsie should have done with that man of hers was to emigrate. (170-171)*

In addition, the narrator affirms that “The late seventies were terrible years. One just didn’t know whether you’d see your children alive the next day. John didn’t go to the university until he turned thirty; Bella was in the military wing, away for years all over Africa; and our youngest, William, shot dead on the border” (171). What made this period in South Africa so terrible, unpredictable and volatile was the Soweto Massacre which took place on the 16<sup>th</sup> of June 1976. This was when Soweto children initiated a mass protest, primarily in reaction to the introduction of Afrikaans as the language of instruction in their schools. The forces of law and order opened fire at the crowd of students and massacred hundreds of them. This macabre incident during Apartheid inspired the creation of many literary productions.

Also, during the Apartheid era, non-whites experienced untold poverty and hardship. Since the policy of Apartheid was discriminatory against the blacks and non-whites in general, it did not allow blacks to be as rich as the whites. The reader is told by the narrator that, “Father Gilbert spoke with passion about the parishes in the townships, the poor coloured people who were so lacking in facilities and resources that they were vulnerable to devil’s work and dagga” (67). These coloured people are so poor that they cannot even build a church of theirs. “[...] so a group of freshly confirmed girls were sent out to take Sunday-school classes at the new church in Bonteheuwel, kindly donated by the ladies of the southern suburbs” (67). This gesture by the ladies of the southern suburbs is an indication that the under-privileged groups were at the mercy of members of the civil society – and not of the state. It also shows the degree to which the state neglected these groups and treated them unjustly. Also, even at the level of education, non whites because of their poverty-stricken nature, found it very difficult to educate themselves to a particular level; this is the case with Tokkie – who is nicknamed Thomasina by Flip Karelse. The narrator asserts that she could not go to high school because her family had no money to sponsor her to that level –even though she was intelligent at school as testified by Flip Karelse who falls in love with her because of this. The narrator says:

*Flip, who was smart, was already the foreman when she left school and came to work at the shoe factory. She would’ve liked to have gone away to high school, but there simply wasn’t the money: too many young ones left in the family to get through primary school. Flip liked her for her cleverness, for her way with words; he said he could listen to her all day, that for one so young she was astonishingly cheeky, and skilful with the leather to boot. She was astonished to find how much better that was than being thought beautiful, although he claimed to be smitten by her looks, but that came much as an afterthought, one she took, at first, with a pinch of salt. How could he possibly value what he called her long slender limbs? But it turned out that he did; that, watching her handling the sheets of hide as he checked her work, his eyes lingered over the nimble movements, the expressive hands that continued working effortlessly as she modulated her careful speech. Yes, she expected to finish the batch by*

*lunchtime, that was if someone did not keep her from doing so with idle talk. (135)*

Also, the librarian as seen in the text, is a very important store-house for South African history. In the dialogue between her and Marion, the former reveals that in the days of the regime of Pieter Botha, South African whites were encouraged to give birth to more children to withstand the black population that occupied about 70% of the South African population. The narrator says:

*Even in the seventies and eighties, there were Nationalists campaigns to boost the white population, she explains, and that while Depo-Provera was being given free of charge to rural blacks. Yes, there were the slogans like Babies for Botha, if I remember correctly – chivvying the tannies to reproduce themselves for the nation. (122)*

The librarian, however, says that those days have passed and gone and one should not bother about them any longer. “Anyway, lovey, thank God it’s all over”, the librarian says, “all ancient history, and we needn’t bother our heads about that nonsense any more. I must be getting on. Only a couple of months left now before I retire, she whispers confidentially” (122).

## CONCLUSION

From the above facts, one can say that rejection and hatred slightly hinder the characters in the novels under study from building an intercultural relationship. In summary, the rupture in the moral psyche of most South Africans, as illustrated in *Disgrace*, *Youth*, *David’s Story* and *Playing in the Light*, is a cause for concern in the post-Apartheid South African state. In order for nation-building and national reconciliation to be effective, it is absolutely incumbent on the ruling elite of the post-Apartheid state to fight against these ills as already explained. This entails introducing policies and laws to guide the moral lives and perception of the South African people.

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# The Extent to Which Islamic Education Books for the Primary Stage Include the Concepts of Peaceful Coexistence

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## ABSTRACT

The current research aims to know the extent to which Islamic education books for the primary stage include the concepts of peaceful coexistence. The research community was Islamic education books approved by the Iraqi Ministry of Education. As for the sample, it is the concepts of peaceful coexistence included in Islamic education topics. After conducting a content analysis process for the topics, the existence of a set of concepts and their number 35 concepts distributed over the six stages, but there was no balance in distributing them to the school stages. The concepts of respect and assistance predominated in all stages in the first place, followed by the concept of brotherhood, love, and removing harm. As for the concept of charity, good neighborliness, forgiveness, friendship, humility, justice, generosity and righteousness, they were the least among the concepts mentioned in the topics of Islamic education, which called the researcher to suggest a balance between these concepts and their distribution in a way Intensive in Islamic education topics

**Keywords :** *Inclusion, Islamic education, peaceful coexistence, books*

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## Pressures Investigating Journalism

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## SUMMARY

The purpose of this study is to monitor, analyse and interpret the pressures faced by the communicator in the investigative investigation from the point of view of the communicator in the surveys. This study belongs to the descriptive studies. The researcher used the media survey approach, using the survey tool as the required data tool. The survey applied a deliberate sample of investigative investigators in Iraq as its component. 60 singles distributed among four (press, television, radio and news agencies).

The study produced a series of findings, the most important of which were:

1 -The field study found that there was little investigative presence in Iraq, which does not preclude the existence of survey investigations in Iraq, because of the nature of survey investigations, obstacles and risks in newly democratic societies.

2 -The investigative investigator is sometimes exposed during the performance of the investigative investigation, and the overall situation is the most important of these pressures and security constraints. (Permits) are the main obstacles facing them, and the lack of laws protecting the media were the most important professional and administrative pressures impeding your performance during the investigation, the deterioration of the security situation, abductions and physical liquidation were the most important political pressures, the influence of the owner of the money. (Financier) The most important economic pressures, or social pressures, were specific to some social issues.

3- The lack of laws and legislation governing information work during the investigative investigation and the need to enact new laws and legislation encouraging the exercise of investigative investigations in conjunction with the change in the political environment have been the most important mechanisms for strengthening investigative investigation in Iraq.

**Keywords:** *Investigating Journalism, Pressure*

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## The Effect of The PCQ (Pros: Cons: Questions) Strategy on the Historical Understanding of Fifth Grade Literary Students

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### **ABSTRACT**

The purpose of the study is to know the effect of the PCQ (Pros: Cons: Questions) strategy on the historical understanding of the fifth literary grade students. The researcher used an experimental design with partial control of the experimental group, and the researcher randomly chose Division (A) to represent the experimental group, which is taught according to the PCQ (Pros: Cons: Questions) strategy. The number of students in the two research groups is (67), including (33) students in the experimental group and (34) students from the control group. The two groups in equivalent different ways are chronological age, intelligence and previous academic achievement: The researcher prepared a research tool that tests historical understanding and was tested to ensure its validity and stability, and the researcher used (T test) a test of two independent samples to process the data, and the results showed that the experimental group outperformed the control group in historical understanding.

**Keywords:** *PCQ (Pros: Cons: Questions) strategy, historical understanding.*

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# Orientalists and their Role in the Study of the Arabic Language: Researcher Preparation

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## ABSTRACT

The heritage is the most valuable and greatest thing that we possess, as it represents the balance and butter of what the predecessors left, and the departure of those present to advance peoples forward. Leah is among the ages, as the heritage knows us on the other hand with its failures, setbacks, calamities, and sorrows, and from here we find no saying in the right of the heritage except that it was and still is the Khazars of every nation - it was necessary to preserve it and dust it off.

**Keywords:** *orientalist; study; language; Arabic*

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## INTRODUCTION

As for our Islamic heritage, it is no less important than the rest of the heritage of other nations, and whoever doubts this for a moment must investigate the reality of the civilizations that came after Islam, to discover that they were built on sciences and culture in which Muslims excelled and reached others in one way or another, and by others we mean those Westerners who boast They reached it, denying that the prosperity and prosperity they are in today would not have happened had it not been for the study of our heritage and taking from it, and those who built and built their civilizations on the defects of our Islamic civilization alone. If they entered it from its wide language, and it came from what we have, then our heritage was written, preserved and read, and therefore it is unreasonable to engage in a conversation about heritage before talking about it, so the ancestors were interested in it from a long time ago, so they preserved it with great care until it became considered among the Semitic languages. The other has its status and its right without its owners, and after the advent of Islam and the influx of peoples to convert to it from non-Arabs and studied, the interest in it increased more for fear of distortion and falsification because it has become the language of the decision is generous and the honorable hadith and everything that contributes to it will affect them as well, so create for it Means of messengers, books and dictionaries may contribute.

## LITERATURE REVIEW

### The concept of orientalism

Orientalism is a self-contained science, and what reflects this proposition is the great interest it has become, so it has become its schools, its philosophy, its birth, and its followers.

**Linguistically:** the East is the sun... and its travels and where you can see the sun... and the sun rose in the east, and as it rises: it rose and the tashriq is beauty, eavesdropping on the face, and seizing from the east  
It must be pointed out that the word to be searched for is not mentioned in the old dictionaries, but this does not prevent access to its meaning after its rulings on the rules of morphology and the science of derivation.  
As for modern Arabic dictionaries, the word “ Oriental” did not deviate from the same meaning in most of it. Contemporary Arabic language, so the word Sharq means: the point or star of the horizon from which the sun rises throughout the year, and shone became an orientalist and a gentleman who was interested in oriental studies,

an orientalist, and the plural is orientalists, a Western writer with whom the heritage of the East, its civilizations, and its languages (2)

#### **Foreign Dictionaries:**

**Auzou dictionary:** an orientalist from the east, from a cultural or political identity, an orientalist interested in everything that comes from me, an orientalist interested person by orientalism. (3)

**Le Petite La Rousse Sharni Dictionary** - Found in the East, in the East a person who belongs to the Eastern civilization... Sunday Orientalism Orientalism: the sum of the sciences that take the subject of Eastern civilizations - The meaning of Eastern things is Orientalist who has a relationship with Orientalism that specializes in oriental humours. (4)

**Idiom:** There is no fixed, agreed-upon definition of "Ishraq", so the search to find a specific concept has become difficult, or for that reason giving a definition of "Orientalism" is impossible, and every definition is a struggle. His giving is not comprehensive, all-encompassing (5), but this does not prevent him from giving some concepts Orientalism is the study of the languages and literatures of the East (6) and Orientalism is the preoccupation of non-Muslims with the sciences of Muslims, some victory over the preoccupation with geography, their religious, cultural and intellectual affiliations (7). 8)

#### **Orientalist motives:**

The religious motive Muslim researchers agree that the goal of Orientalism at its inception was a purely religious goal. Mustafa al-Sibai says: We do not need a crown and effort to recognize the first motive of Orientalism among Westerners, which is the religious motive (9) and that its first launch was from within the church. It started from monasteries and churches, and it was carried out in the beginning by monks and priests (10). And he would seek their blessings, but the situation did not last long, for after Islam appeared and gained control of their homes that were dominated by Christianity, and captured the hearts of their supporters, these monks did not see him as a serious threat to their interests, so they found nothing but to stand in front of it and fight it with all the means available to them.

These monks worked to distort the image of peace, and everything related to it, so they spread false sayings and special ideas about it, that Alaa was interested in slandering Islam, distorting its virtues, and distorting its facts (11), this is about Islam, as for Muslims, they did not escape from They hate them, and describe them as those who are bloodthirsty and barbaric, because they are barbaric people of thieves and bloodshed. (12)

The aim of the religious goal is to delve into the ages of the Islamic religion, and research it so that they can fight it and expel the people of Durr (13) Christians from it, and transfer their theories outside the lands to the Islamic countries, and they will not be able to do that by knowing the aspects of the life of the Islamic nation, whether cultural, intellectual, or lenticular, economic and political

There is also evidence indicating that the first motive for Orientalism was to find knowledge of Islam, and then spread suspicions about it, says Johann Focke. - An Arab way of compassion for the Bible (14) Thus, the religious factor became a strong motive for the spread of slavery in the world. (15)

#### **Scientific motive:**

At a time when the Islamic nation witnessed the flourishing of its ages in terms of progress in all scientific, literary and intellectual fields, civilizations and cultures were built, languages and philosophies arose, sciences and arts were born, and religions and sails were revealed (16) stagnation and backwardness were hanging over the measured side of the westerners, a state that did not It was a source of comfort and contentment among its people, especially that category of Sitha that was seeking to make a movement, and to take the causes of civilization and sophistication of the text for its people from this slumber and bring them out to the mainland of civilization and development.

The bright state that the Islamic civilization was in made it an example and a model followed by the Arab citizens, and what claimed to be the development of that mixture that Muslims made between what is old and new, so they do not care about the progress of the culture that they draw from, but rather they depend on it in their work even if it comes from Others, so they mixed the old and the new without taking into account what distorts their culture, and it is not important for it to benefit from the sciences of the Greeks, Syriacs and Indians, and the best of the



first and the later (17), so it paved a bridge linking two sides between the past and the future, this is what sparked the dependence of Western agents, so they took care of studying it and discovering its secrets. (18)

The West did not find a way to take from the treasures of this civilization except to walk to its cradle at that time, such as the Levant, Baghdad and Andalusia, especially for Arab M. But they found a problem that must be solved and overcome in order to achieve their demands, which is that these sciences that are intended to be taken are sciences that are studied, taught, and written in the Arabic language mostly, and they are sorry for us that they do not master our language. And his emotions, which are above this and that, are the symbol of his spiritual being, the title of his unity and progress, and the treasury of his customs and traditions (19), and after this comprehensive and adequate saying, we cannot add anything but that it is a measure to determine the extent of progress or backwardness of a nation.

After the correct awareness of the orientalist, the value of the language in the air in its learning and teaching, and what language chairs they established in their universities and institutes are a decisive night on the great care that the orientalist gave to it, and the first school that arose for oriental studies was the school of Toledo, which was established by the Council of Facilitators (not 1250 AD), and languages were taught in it Omariya and Persian.... It was in the nature of the category that influenced itself to undertake this task, among them were orientalist in Tibet who were troubled by orientalism in order to research and learn about the civilization of Muslims and search in the past after they understood Islam more than others, and the missions followed one after the other - caution - science and disseminated it in their homelands, and its coldness, with their return from Andalusia, became a fierce flame illuminating the darkness of its homelands....

And it started spreading sciences, philosophies, literature, and facts that pushed its peoples with giant steps that cannot be overlooked when looking at the development of science. world (20)

#### **Economic motive:**

The economy is a basic criterion for the extent of progress or backwardness of any society, because it affects the individual's living character, as it pushes man to seek means of living across lands and seas in all parts of the world, and in order for a person to reach this goal, he unleashes his weapon and uses his strength and tyranny whenever he finds a way to do so, he takes and occupies, plundering, plundering, dominating, and enslaving (21)... For this reason, the individual has always sought to preserve his economy and preserve it with all his might, even if that killing took place.

This aspect, like the rest of the aspects that prevailed in the advancement of Islamic civilization, witnessed a great superiority in the lives of the Muslims, and through it the blessings increased in all their homes, while the opposite bank was living in bitter conditions that did not allow for joy, as class prevailed among its societies, and poverty spread among people, especially those who They live in areas with harsh climates, and diseases and epidemics are marked by the lack of food, the lack of doctors, and all this because of the ignorance that was rampant among them.

The manifestations of prosperity that the Islamic nation enjoyed made it a coveted desire that Westerners have been thinking of finding a way to take it, to bring it back to their homelands, especially those who traveled to the Islamic lands, settled in it, and lived in its atmosphere, so they started raising armies, waiting for the appropriate opportunity to defeat Islamic Jeddah, to pounce on its bounties. After establishing control over it, and the reason for this heinous greed was the succession of frenzied attacks from controlling all the facilities of life in the Arab world and then the whole world, and therefore the economic aspects were the most urgent motives in the rush of the West to learn the languages of the East, and study its civilization. (22)

Colonial motive: The conflict between Arabs and Muslims on the one hand, the West on the other hand, has its roots since the advent of Islam, and this conflict represents the dangerous point in the relations between the East and the Arabs (23), its customs and traditions, and the bounty of the land of its owner who has resistance and courage to defend his freedom and then preserve his identity, religion, customs, traditions and freedom, and he is willing to pay the most precious thing he has for this.

The successive defeats suffered by the Cross did not discourage their determination to return once again to the re-colonization of Islamic lands, especially after the Muslims overthrew the most powerful empire of that era such as the Persians and the Byzantine Romans, and imposed their control over economically and commercially important sites, whether by land or sea. This is what filled their hearts with hatred and envy, so they waited for the right opportunity to restore it and colonize it after they had long patience, so they delved into the depths of the

affairs of Islamic countries until it became clear to them the strengths, so they worked to weaken them, and the weaknesses, so they made them happy.

Orientalism has had an active role in the expansionist campaigns of the West in Muslim countries. The Orientalists who lived in Islamic countries and took from its sciences became familiar with it in language, economy, and Egypt's policy in the military field. And the Levant to wage a decisive battle (24) against Muslim Islam. This is how the orientalist marched in the pillars of Western colonialism, whether in the past or in modern times... They provided extensive and detailed information about the countries that Western countries wanted to colonize and seize their goods and wealth (25), and from here it is clearly true that The occupation would not have taken place in the Islamic countries except after studying the conditions of the Muslims (26) which were carried out by the Orientalists. Accordingly, Orientalism has a role in preparing the Islamic land for Western colonialism. (27)

### **Phases of Orientalism**

The aim of this study is to address the most important stages, and the phases that Orientalism went through through the various eras since its inception, and this is just what distinguishes each stage of the diversity of opinions on the subject. Eastern Languages from the Synod of the Church in Vienna (28), but it is not an exact date, and for this reason the difference between the Ba' was about the beginning of Orientalism.

He knows exactly who was the first Westerner to teach me about Oriental studies, and not at any time

That (29) Most of the research and studies that we looked at in our research agreed that Orientalism consisted of three basic phases that took place between themselves, and from the first until the twentieth century.

Formation, progression, launch (30)

#### **1- The first phase:**

This phase is considered the first phase of the emergence of Orientalism, and it has been called by several names: the stage of birth, the stage of religious Orientalism, or the stage of codification (31) The eyes of the West on the fatherland of the Arabian Peninsula were many, including what was mentioned in the books of Herodotus of the fifth century BC, and Tim Durst The student of Aristotle, who spoke recently in Sika about the famous nature of the Arab countries in his writing "History of Plants", and the Greek geographer Strabo at the beginning of the first century AD, and the historian Mani Blithy in the eighth century AD who placed tablets with the names of tribes and cities, and we know the ones located in the middle of the Arabian Peninsula (32) This is what suggests the emergence of Orientalism in a specific way, rather it was waiting for the appropriate conditions to announce its beginning. The emergence of Islam and its spread in the parts of the earth until it reached the borders of western citizens was the strong motive for its birth, distinguished learning in the last century AD, the Church had an active role in refining and developing it, I rejoiced. She guarantees him, takes care of him until he is reunited, matures, and then pushes him to carry out his purposes.

Fanaticism against Islam and its Messenger blinded the minds of the saints, and did not allow them an opportunity to differentiate between truth and falsehood, because they did not accept the idea of this religion. And our frankness is that they increase and become stronger every time, and this is not because Islam as a belief possesses souls, and has captured hearts, to illuminate the path of humanity, which has been living in blind delusion for centuries, and not now that the owners of the banner have begun to expand their religion, and open calamities one after another at the expense of The Christian religion in particular, ben, because the Arabs and Muslims created a global civilization that stunned human minds. This civilization, which started from a well-wisher, in which they saw the primitive life of man, and not only that, because the speed of its spread and its ability to expand imprisoned minds. Therefore, it was necessary to stop this advance, so I was the first beginning of the Christian clergy of bishops, monks and others, and to reach this goal, they must know the power of this religion so that they can control it.

After the emergence of Islam in Andalusia, the beginning of an open conflict between Muslims and Christians, since the Arabs contacted the West through Andalusia, those who thought about it began to antagonize Muslims and attack them, and this method remained in circulation in our time (33), and it seems that the friction between Muslims and the West in Andalusia appeared on the emergence The Umayyad state served as a bridge through which those western missions crossed to the Arab East, which we had previously talked about, these missions that devoted themselves to studying the name and knowing how to attack it, and among the most famous of them were Gerber de Aurillac and De Aurillac, so they began to study the Qur'an and learn Islam until they spread false ideas

about it and about Muslims among the Christians of the West, Islamic Andalusia, to the buried hatred of insight, the true vision.

## **2- The second phase**

Those fanatics of the Islamic religion realized the extent of its weakness, and out of their buried hatred for it, they began to appeal to the religious emotions of their people steeped in ignorance, so they spread false ideas about the poisoned peoples and their religion, describing them as bloodthirsty monsters and machines of destruction and sabotage, in addition to the emergence of material ambitions, especially after a close discovery through Those travelers to the Arab countries, add to that a strategy for a place, and as for trade, all this paved the way for new events in the history of the East-West relationship.

In talking about this transformation, we mean that war - the Crusade or what the West called it for the wars of apostasy and recovery, in which the Arabs saw a limit to Islamic civilization, but its impact was great on both sides, as it continued to afflict Europe and Muslim lands alike for three consecutive centuries after its beginning in (197 AD) and its end in (1291 AD) when the Mamluks were victorious in the Battle of Acre, which was a thousand of those bloody wars (35), but the outward appearance of these wars does not constitute a danger close to mystical. The prosperity of the Islamic civilization in that stock of knowledge of medicine, mathematics, astronomy, and others, which the Muslims worked hard to repent until they established their civilization, this stock that Europe needed to take from it and build with it its homelands on which stagnation was based, and then catch up with the Islamic civilization History attests to this, when the Christians were forced to leave the country of Arabia after the battle of Acre once and for all, at that time, this exodus was accompanied by the seizure of thousands of Arabic books and manuscripts, and they were transferred to European libraries.

After the Europeans were convinced that their civilization would not flow except by working according to this stock of knowledge that they seized, especially since it is a method that does not cost them neither equipment nor equipment, they began to send scientific missions one after the other to take advantage of this treasure and by all methods and means available, and these wars were - Among the ways to obtain the manuscripts of the East, so that the situation will continue as it is for centuries, even after its inception.

In fact, it was not these reasons alone that pushed Europe to pay attention to the East, but there is another reason, after Aleph realized the ways of civilizational superiority among Muslims intellectually, civilized, and economically, and if he wants to advance over them, he must follow the path in which Islamic civilization walked. And whoever does this happens unless he dispenses with his nervousness, so he can learn the Arabic language, because it is a tool for translating the Arabic sciences that were established by its owners, developed and worked with it, and from here - Europe's interest in the Arabic language increases and spreads until Farid Yik II, King of Sicily - eighteenth century AD 2. King of Castile and Alphonse in the middle of the thirteenth century AD and Europe followed this path, establishing schools and institutes in many countries with it to learn the Arabic language.

After the monks and missionaries showed their grief over Basheer, due to the lack of providing them with proofs and arguments that help them to do so, due to their ignorance that the peoples to whom missionaries are to be preached have reached and to the Arab peoples in particular, all this prompted them to learn the Arabic language, so that they would be able to acquire from rational sciences, such as philosophy and theology, and from In that era, schools that teach Arabic began to spread.

From here it becomes clear that the Crusades had a great impact on the growth and progress of Orientalism, as this phase is actually the starting phase and a name for Orientalism.

**-3The third phase:** This phase was called the stage of embodiment and the stage of fruition, because the orientalists began to reap the fruits of their work and efforts that lasted for many years. That would be had it not been for the strenuous efforts made by monks, monks, and statesmen. The establishment of universities, institutes, and homes also played a major role in spreading Arab culture and its sciences, which students graduating from institutes and universities worked hard to spread, in addition to the Europeans continuing to follow the path of these people, and they did not go so far. Not only, but they began to delve deeper into what their ancestors left to them of the sciences. All this reinforced the spread of the Arabic language among the educated class, so that it became the language of civilization and progress for them, and then teaching it and etiquette took one of the most important reasons for the renaissance that exists in Europe as a whole.

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## Strategic Intelligence and its Impact on Creative Performance: A Study of its Analysis in the Ministry of Electricity

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الذكاء الاستراتيجي وتأثيره في الأداء الإبداعي / دراسة تحليلية في وزارة الكهرباء في وزارة الكهرباء

المدرس المساعد: رائد عبد الجبار خضبر بخيت

### ABSTRACT

The research objectives focused on testing the impact of strategic intelligence with its dimensions (forecasting, systems thinking / future vision, motivation, partnership) in improving the creative performance of a sample of leaders of the Iraqi Ministry of Electricity and its dimensions (risk, flexibility, sense of problems, originality), and given the importance of the two variables for the ministry from the perspective of My application touches its reality on the one hand, and the sample (general managers, assistant general managers, directors of power plants, heads of departments, unit officials) on the other hand, and in order to adopt the pillars of strategic intelligence to improve creative performance as a goal viewed from different angles and on this basis, it was The research problem (Was the Ministry of Electricity able to adopt strategic intelligence in improving its creative performance?), so that this question would be a research goal. , to collect and analyze through the statistical program (SPSS V.28) and through the appropriate statistical methods, so that the analysis of the practical side reaches the most prominent result (with the high availability of the search variables, with the ministry's investment of strategic intelligence in improving creative performance through the two dimensions of systems thinking and partnership).

**Keywords:** *strategic intelligence; creative performance; foresight; sense of problems*

المستخلص:

تركزت الأهداف البحثية في اختبار تأثير الذكاء الاستراتيجي بأبعاده (الاستشراق، التفكير بأسلوب النظم / الرؤية المستقبلية، الدافعية، الشراكة) في تحسين الأداء الإبداعي لعينة قيادات وزارة الكهرباء العراقية وبأبعاده (المخاطرة، المرونة، الإحساس بالمشكلات، الأصالة)، ونظراً لأهمية المتغيرين للوزارة من منظور تطبيقي يلامس واقعها تطبيقاً من جهة، والعينة (المديرين العاميين، معاوني المديرين العاميين، مديري

محطات توليد الكهرباء، رؤساء الأقسام، مسؤولي الوحدات (من جهة أخرى، ولأجل تبني دعائم الذكاء الاستراتيجي لتحسين الأداء الإبداعي كهدف يُنظر إليه من زوايا مختلفة وعلى هذا الأساس، فكانت مشكلة البحث) هل استطاعت ورثة الكهرباء من اعتماد الذكاء الاستراتيجي في تحسين أدائها الإبداعي؟ (، ليكون هذا التساؤل هدف بحثي، تمكن البحث من اختيار المنهج الوصفي، ليعتمد بذلك استبانة، اذ كانت عينة البحث (89) وزعت عليهم من مجتمع كلي (150)، لتجمع وتحلل عبر البرنامج الاحصائي (SPSS 28).V) وعبر الأساليب الإحصائية المناسبة، ليصل تحليل الجانب العملي الى ابرز نتيجة (بتوفر متغيري البحث بشكل مرتفع، مع استثمار الورثة للذكاء الاستراتيجي في تحسين الأداء الإبداعي من خلال البعدين التفكير بأسلوب النظم، والش اركتر). الكلمات الرئيسية: الذكاء الاستراتيجي، الأداء الإبداعي، الاستش ارف، الإحساس بالمشكلات.

## المقدمة

عندما تتعامل ورثة الكهرباء مع بيئة ذات لا تأكد مرتفع لاسيما عندما تخطط لأمد بعيد، فإن التقيد بالخطة الموضوعية سلفاً يحتاج لذكاء استراتيجي يتناسب وتلك ظروف البيئة وصولاً الى تحسين البيئة الداخلية لها، وحتى تبلغ مستوى مرضي من الأداء الإبداعي ينبغي عليها التمسك بذكاء استراتيجي ينظر الى المستقبل وفق رؤية تدعو الى تجميع الموارد وحشدتها لتحقيق الغاية من التخطيط، وفق منظور عقلائي يعتمد اد ارك الموقف، وتوليد البدائل المرنة، وفق المعايير القانونية وبمعيار أخلاقي يتلاءم والبيئة الاقتصادية، مع إمكانية التطبيق وتقييم كل بديل وباعتماد معلومات وبيانات ومعرفة توثق التصرفات والتكتيكات الموجهة للمستقبل، وصولاً الى تحقيق الأداء الإبداعي الذي يستحسنه أصحاب المصلحة. لقد أصبح الإبداع ضرورة ملحة وأساسية في جميع مجالات عمل الورثة، فمن خلال مكوناته تصبح امكانياتها على مواكبة الانفجار المعرفي والتقدم التقني والمخترعات والتكنولوجيا المستخدمة في انجاز المهام الحالية، في عالم متصف بالتعقيد وشيوع مختلف المشكلات التنظيمية، ليصبح معها الإبداع والابتكار الحل الوحيد الذي يجعلها اكثر قدرة على مسايرة متطلبات العصر، حتى يصبح ادائها فاعلاً ويسهم في تنمية المجتمع وإيجاد حلول لأي مشكلات تواجهه في المستقبل على مستوى تجهيز الطاقة، فلم تعد الأساليب التقليدية المتمركزة حول ادائه والتي تهتم بالكيف وليس الكيف مناسبة لإعداد موظف قادر على التكيف مع التغي ارت السريعة جداً في نمط عملها، لذا بدأت الحاجة إلى الاهتمام بطاقات المورد البشري، والعمل على استثمارها استثماراً جيداً، فالمنظمات الرقابية لا ترقى وتتطور دون الموهبين والمبدعين لأنهم ركائز أساسية وضرورية لمجتمع متقدم، فهم ينتجون المعرفة ويطورونها ويطوعونها للتطبيق، وهم يمثلون الأمل في حل المشكلات التي تعيق التقدم الحضاري المنشود، وعلى هذا الأساس اصبح الذكاء الاستراتيجي ضرورة ملحة

لعملها والناجمة عن سلوكيات توظيفها القيادة لضمان وتعزيز ولاء موظفيها من خلال تنمية حالات الابداع وادراك البيئة ومتغي ارتها والناجمة عن اندماجهم في رؤيتها ورسالتها وقيمتها اودافها، فضلاً عن ابتكار لخريطة الطريق توجه صناع الق ارر نحو ق لارت اكثر وعياً، تلبي حاجاتهم الملحة للمعلومات وتوفيرها في الوقت المناسب بالدقة والكمية والجودة المطلوبة وصولاً لصناعة ق لارتم عقلانية، فضلاً عن توفير تنبؤات وتحذيرات مبكرة بالتهديدات المحيطة بالمنظمات واتخاذ الإح اراءات الوقائية بأ ازنها، وتمكينها من الاستجابة لتغي ارت البيئة الحالية والمستقبلية والتخطيط والتنبؤ بالنتائج بالشكل الذي ينعكس إيجابياً عن سمعتها وموقعها، وتشكيل القناعات لدى صناع الق لارت وصياغة السياسات بوجوب الوصول إلى الق لارت وسياسات إبداعية مثلى، والنهوض بمهمة جمع المعلومات وتحليلها عن البيئة الخارجية وجعل المنظمات تقيم تحالفات في مجال البحث والتطوير، وعلى هذا الأساس صاغ الباحث مشكلة البحث من منطلق تساؤل رئيس (هل استطاعت وررة الكهرياء من توظيف الذكاء الاست اريجي في تحسين ادائه الإبداعي؟)،

**اولا -المشكلة البحثية :** تتعامل الدراسة مع واحدة من أهم المنظمات في الع ارق ان لم يكن أهمها الا وهي وررة الكهرياء التي تعد الجهة المسؤولة عن تجهيز الكهرياء لكافة الجهات العاملة بصمةً بصرها الرسةمية وغير الرسةمية في البلد ، فهي المجهزة للطاقة للمواطنين والشركات والمنظمات القطاع الخاص والعالم والمختلط، كما تقوم بتطوير الشبكات وتجهيز الطاقة الكهربائية بشبكة متكاملة يتلاءم وحجم الطلب، وعلى أساس ذلك صيغت المشكلة الرئيسة للبحث (الى أي مدى يؤثر مستوى الذكاء الاست اريجي لقيادات وررة الكهرياء في ما تحقق من اداء ابداعي؟ ) وتتفرع عن هذا التساؤل عدد من التساؤلات الفرعية التالية-

1- الى أي مدى تتمتع قيادات وررة الكهرياء بالذكاء الاست اريجي؟ 2- ما مستوى وطبيعة الأداء الإبداعي المقدم في وررة الكهرياء؟

3- ما مساهمة قوى اد ارك الادا ارت العاملة في وررة الكهرياء لأهمية عمليات الذكاء الاست اريجي في تسيير أداء الوزارة؟

4- ما نوع وقوة واتجاه علاقات الارتباط والتأثير بين الذكاء الاست اريجي والأداء الإبداعي؟

### ثال ١ : أهمية البحث:

ينظر الى أهمية اي دراسة عبر محورين أساسيين أولهما الأهمية النظرية التي تتمتع بها متغي ارت الد ارساة وثانيهما يبرز في أهمية القطاع الميداني الذي تعالجه الد ارساة في جانبها التطبيقي، وفي د ارساة الحالية التي تتعامل مع متغي ارت مهمة في حقل العمل الرقابي والمالي فضةً لا عن معالجتها لمتغي ارت تنظيمية وسةً سلوكية مهمة في اطار العمل الميداني، لذا فان هذه الدراسة تتسم بأهمية المتمثلة بالنقاط التالية:

## أ- الأهمية النظرية (المعرفية) :

- 1- تبرز أهمية البحث في تعاملها مع ابعاد ومتغي ارت متنوعة وتقع ضمة من منظومة الفكر المالي والرقابي والاداري في بعدين غلية في الأهمية يتمثلان في (النكاء الاسمة ارتيجي / الأداء الإبداعي) وذلك لترسيخ وعي وفهم واضح لملامح المتغيرين الرئيسيين للبحث.
- 2- أهمية بيان التأسمة للنظري للعلاقة التي تربط المتغيرين وأبرز ما قدمه رواد الفكر الإداري والباحثين في اب ارز تفاصيل المتغيرين وذلك التأسيل .
- 3- يمكن عده في حقل العمل الفكري المالي والرقابي على وجه التحديد رفد جديد للمكتبة الاكاديمية بالذات فيمة يتعلق بالمتغي ارت المذكورة اذ انها عالجت علاقة لم يتم الخوض فيها على حد اطلاع الباحث بالصيغة التي هي عليها الآن.
- 4- يسة الهدف البحث قيادات ورزة الكهرباء من مديرين، لتؤخذ آرائهم حول متغيرين يجمعان لأول مرة في نموذج فرضة، يهدف الى اختبة لثأثير الفكاء الاسمة ارتيجي بهأبعاده مجتمعة في الأداء الإبداعي.

## ب – الأهمية العملية (الميدانية):

- 1- تبلورت أهمية الدراسة في اختيار المنظمة الأبرز والاهم وفق المعايير الاقتصادية ( ورزة الكهرباء) كموقع لاستمعياب الآراء الفكرية والتعرف عليها بشةكل واقعي ، لذلك تنبع الأهمية هنا من أهمية هذه المنظمة التي أصبةبحث الآن في صةدارة اهتمام المسةؤولين على المسةتوى المحلي والدولي فأداء ورزة الكهرباء يؤشمة وشةكل دقيق مسةتوى ما يمتنع به أي بلد من تطور اقتصادي والت ازم بمعايير الشفافية والانتاجية الرصينة المرضية لجمهورها.
- 2- تبرز أهمية البحث من خلال بناء منهج واطار علمي لنموذج متكامل يعالج المتغي ارت بنظرة شاملة تمتد من الاسباب وتنتهي بالنتائج فضا لا عن تبنيها لمعايير عالمية ذات موثوقية في انتاج الطاقة وبحسة بمعايير الجودة وتم تطبيقها في المنظمات العالمية المناظرة في سمةتوى دعم صور الاداء في الحقل الميداني للبحث كمحاولة لمطابقة تلك المعايير العالمية.
- 3- تبرز الأهمية الميدانية من خلال عكس صةتورة عدد من الجوانب التي تعد مت ارجعة في أوجه الاداء للورزة محل الد ارسمة الميدانية وبالتالي فأنها تقدم مؤشمة تنبيه للفائمين على ذلك المفصلة في سبيل تعزيز الجوانب الايجابية والعمل على ايجاد الحلول لحالات الاختلال الهيكلي والادائي.

## لربا : اهداف البحث :

يمكن بيان ابرز اهداف البحث الحالي في الاتي:

- 1- محاولة تسليط الضوء على مسةتوى ما تمتلكه قيادات ورزة الكهرباء من ذكاء الاسمة ارتيجي والتي تتعكس في صيغة ممارسات وق لارت.



2- توضيح شكل ومضمون ابعاد الأداء الإبداعي في المخرجات التي تقدمها كوادر وزارة الكهرباء.

3- معرفة طبيعة العلاقة بين الذكاء الاستراتيجي والاداء الابداعي ونوع التأثير للمتغير التفسيري في المتغير المستجيب.

4- بناء تصفيل نظري خاص بالأبعاد الأسهاسية الخاصة بالذكاء الاسمت اريجي كونه متغير للوزنة من جهة والارتقاء بعمليات الاداء الابداعي لدى قيادتها من جهة أخرى .

5- تقديم مقترحات لدراسات وبحوث مستقبلية مقدمة للباحثين لسهولة ليط الصلة مع و بذل الجهود في معالجة متغي ارت او اطر متنوعة لم تعطيها الدراسة الحالية.

### خامساً: منهج البحث

يمثل منهج البحث عملية تصفية مهمة يتم من خلاله وضعية الخطط لجمع المعلومات بهدف جعلها تحقق أغراضها بطريقة مبسطة ومتأصلة ونظامية ، وتعتمد المنهج الوصفي التحليلي الذي يعد الأكثر ملائمة للدراسات الإدارية والذي يتمثل بجمع معلومات حقيقية ومفصلة للظاهرة المدروسة في مجتمع المنظمة محل الدراسة ويوضح العلاقة بين الظواهر المختلفة ومن ثم استخلاص النتائج والمؤشرات الأساسية باستخدام الوصف في جمع البيانات والمعلومات التي تتطلبها الدراسة لأغراض تحديد النتائج والوقوف على أبرز المؤشرات ليقترن الوصف بالتحليل لتعني الدراسة وهذا يتناسب مع المتغيرات المدروسة ، فضلاً عن استخدام أداة الاستبانة في جمع البيانات الخاصة بالمنظمة المدروسة ليتسنى التعمق في الدراسة والتوسع في جميع جوانبها ،

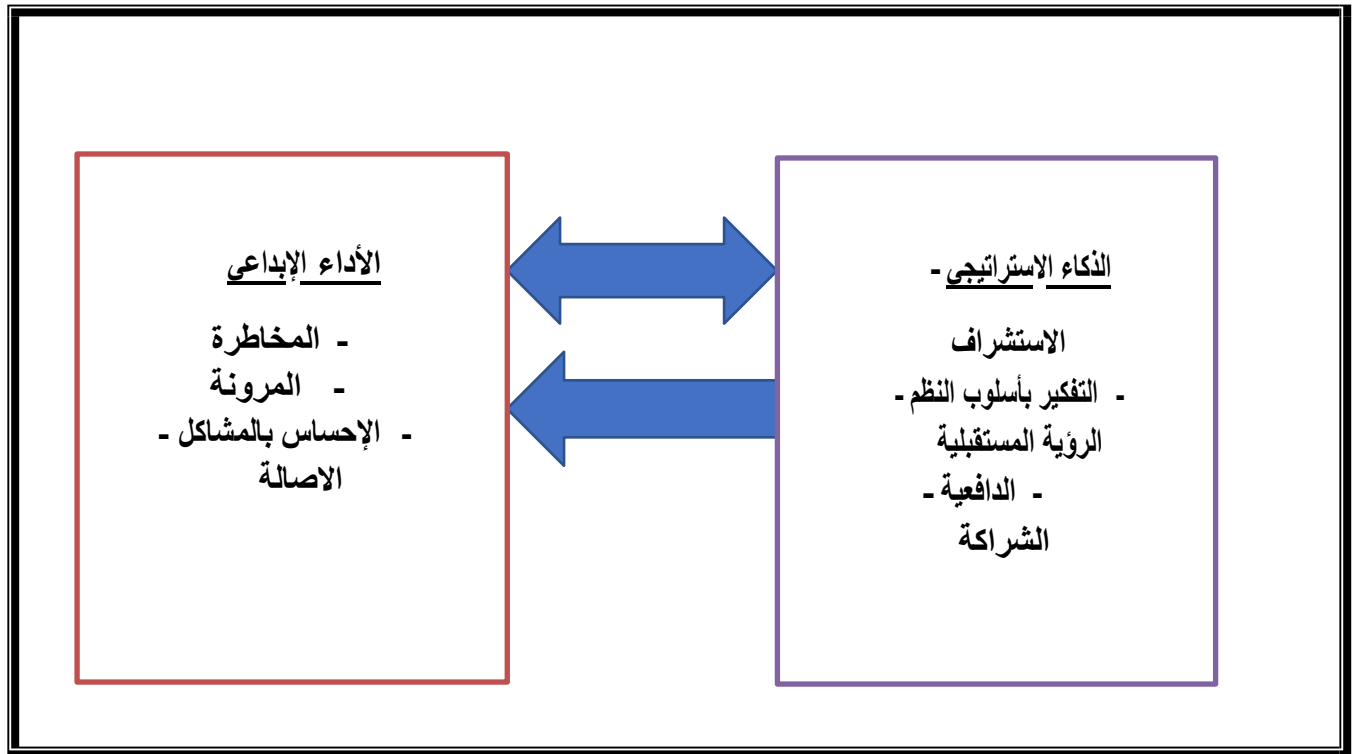
وتكمن أهميته في استطلاع جميع المنعيات المتعلقة بمشكلة الدراسة والاستناد عليها في التنبؤ بجوانب القصور والضعف والصعوبات في إجراءات تطبيق الدراسة

## سادسا - مخطط البحث الفرضي

بالاستناد الى مشهورة الدراسة اهدفها قام الباحث بتوليف نموذج مطور وافات ارضة تجسة مخططا للعلاقات الارتفاعية التي تضمنت متغى ارب البحث المتمثلة بـ

1- المتغير المسمة (الذكاء الاسمة ارتيحي) والمتمثل بالأبعاد الاسمة (التفكير بأسمة، الرؤية المستقبلية، الدافعية، الش اركة

2- المتغير المعتمد (الأداء الإبداعي) (و المتمثل بالأبعاد المخاطرة، المرونة، الإحساسية للمشكلات، الإصالة).



( الشكل 1 ) المخطط الفرضي للدراسة

#### سابعاً: فرضيات البحث

الفرضية الرئيسية للبحث: يؤثر الذكاء الاستراتيجي وابعاده في الاداء الإبداعي تأثي كمعنوباً

#### ثامناً: الجانب النظري: 1. الذكاء

##### الاستراتيجي:

من خلال التطورات والتغيرات الكثيرة التي ميزت بيئة الأعمال أصبحت المنافسة شديدة ومتزايدة. بعد استخدام المنظمات للذكاء الاستراتيجي في اتخاذ قراراتها الاستراتيجية وأيضا صياغة الاستراتيجيات الاستراتيجية الاستراتيجية بالنسبة لها فضرورة لها عن توفر قاعدة معلومات لتلبية احتياجات الجهات المعنية ويلبي الذكاء الاستراتيجي احتياجات صناع القرار رفيعي المستوى ويركز بشكل رئيسي على الأنشطة الاستراتيجية، ويدعم أنشطة الذكاء الاستراتيجي بمعلوماته الشاملة حول البيئة الخارجية استراتيجيات المنظمة بشكل صريح ويكون بمثابة توجيه مناسب لصنع القرار في المنظمة، ويجلب المعلومات ذات القيمة المضافة والمعارف من أجل اتخاذ القرار الاستراتيجية للمؤسسات (Manuel, 2020: 4)

وقد بدأ الكتاب والباحثون يدركون أهمية الذكاء الاستراتيجي وأوردوا مفاهيم متعددة للذكاء الاستراتيجي ومن ضمنها التعريفات المدرجة :

اذ عرف (245: Baei et al, 2017) الذكاء الاسمي المرتبجي على انه (النظام المتكون من ابعاد عدة ضرورية لانشاء صورة واضحة عن المستقبل وتتلخص هذه الابعاد في الاستش ارف و الرؤية والدافع ( قيمة يرى ) العتامي، 2018: 48) القدرات الاسمي المرتبجي على انه (القادرة التي يتمتع بها الفرد التي من خلالها يحيط بالعلم وتمكنه من صناعة ق لارت صائبة وإنجاز الأنشطة بأفضل أسلوب)

وعرفه (20: Abd & Kudair, 2019) على انه (مجموعة من الإج اراءات والأنشطة المسخرة للعثور على جميع معلومات الأعمال وتحليلها وتقييمها من أجل تحقيق هدف معين ومحدد، وتركز بشدة على كل أساسي على القضايا المتعلقة بالتخطيط الاستراتيجي لأحد الأعمال)

ويعرفه (38: Alhamadi, 2021) بانه (قدرة ارت يتمتع بها فئة قادة المنظمة ومن خلالها يمكن الاعتماد على نظام معلوماتي يؤمن الحصول على المعلومات ومعالجتها، ليسنى لهم الاستفادة من المادة الفكرية الناتجة عنها في اتخاذ قرار و عمليات تساهم في توفير الخدمة التي تقدمها بأعلى كفاءة ممكنة)، بينما أشعة ارات (عبد الوهاب، 2022: 25) الى الذكاء الاسمي المرتبجي على انه (سككمة فتبكيك بها قيادات المنظمات والتي تعد احك الم هلات والفكرات العقلية والتي تمكنهم من اتخاذ القرار البكككككككككك في الوقت المناسب من اجل حل الازمات ومواجهة كافة المشكلات بطريقة تضمن بقاء المنظمة وتحقيق لها الميزة التنافسية)، ومن خلال اطلاع الباحث على التعريفات المشابهة للذكاء وغيرها من تعريفات الذكاء الاستراتيجي تظهر عدد من الملاحظات يمكن تلخيصها في النقاط ادناه :

أ. هنالك من ينظر الى الذكاء الاسمي المرتبجي على انه عملية التي يتم من خلالها جمع المعلومات عن الزبائن والمنافسين والأسواق بشكل منهجي عبر الوسائط القانونية وتحليلها لدعم عمليات اتخاذ القرار والتوسع في الميزة التنافسية.

ب. يتعامل بعض الباحثين مع الذكاء الاسمي المرتبجي على انه قدرات ومهارات يمتلكها المفكرين من القيادة العليا والتي تنبض من النظرة الثاقبة للمستقبل استناداً للخيال السريعة في البيئة، ومن ثم توظيف ما توصفوا اليه من أفكار ومعرفة من اجل تطوير استراتيجيات مناسبة تساهم في دعم عملية اتخاذ القرار بشكل فاعل.

ت. بينما يتعاطى البعض الآخر مع الذكاء الاسمي المرتبجي كونه عملية يمكن من خلالها زيادة الميزة التنافسية للأعمال عن طريق الاستعمال الذكي للمعلومات المتاحة في صنع القرار .

ث. وبشدة غير البعض للذكاء الاسمي المرتبجي بانه نظام يتكون من عدة أبعاد ضرورية لإنشاء صفة قوية واضحة عن المستقبل المشرق للمنظمة .

وبناءً على ما ورد أعلاه يرى الباحث أنه يمكن تعريف الذكاء الاسمي المرتبجي اج ارياً على انه (مجموع متكامل من القدرات العقلية التي يتصف بها قادة المنظمات الناجحين بما يمكنهم من اتخاذ القرار

المسؤولية في ظل الظروف الطبيعية والطوارئ وبما يحقق حالة من التفوق للمنظمة إزاء نظيراتها من المنظمات).

## 2. أهمية الذكاء الاستراتيجي:

يمكن وصف الذكاء الاستراتيجي بأنه الدور الفاعل فاعلاً في كل مرحلة من مراحل الاستراتيجية المنظمة، والغرض منه المساعدة في تعزيز أهداف المنظمة عن طريق تقليل حالات عدم اليقين كما أن الذكاء الاستراتيجي يعمل على إعداد القادة ومساعدتهم في قيادة المنظمة والعمل من أجل الصلة بالعام (Maccoby & Scudder, 2011:32)، وتبرز أهمية هذا النمط من الذكاء في مواجهة المخاطر التي تتعرض لها المنظمة وتسهل تخصيص وتحديد المخاطر والتهديدات والفرص بطريقة تمكن المدراء في تحديد البامرج والسياسات الخاصة بالمنظمة وتظهر أهمية الذكاء الاستراتيجي في التخطيط الاستراتيجي والإدارة الاستراتيجية ومساعدة المنظمة في البقاء على وضوئها التنافسي في ظل التحديات المستقبلية على المدى البعيد ويوجه قادة المنظمة إلى الطريق الذي ستستوفى إليه المنظمة والتركيز على النشاطات الاستراتيجية (قاسم، 2019: 49)

ويلعب الذكاء الاستراتيجي دوراً فاعلاً في معرفة التغيرات التي تحدث في السوق والتكنولوجيا الجديدة مما يستلزم في تشيكل الخيارات الاستراتيجية وكذلك يلعب الذكاء الاستراتيجي دوراً بارزاً في صياغة الخطط والسياسات القياسية وعمليات التغيير والتطوير للارتقاء بمستوى العاملين ومواجهة التغيرات (عطا، 2015: 58)، كما تبرز أهمية الذكاء الاستراتيجي من خلال إدارة المخاطر التي تواجه المنظمة، ووضوئ تلك المخاطر والتهديدات بطريقة تمكن المدراء القدرة على تحديد بامرج ومساعدة القياسات المنظمة (الظالمي، 2016: 49)

ويلعب الذكاء الاستراتيجي دوراً بارزاً في الاضطلاع بمهمة الكشف عن قضية التحول الكبيرة أو المعقدة من أجل توضيحها في شكل أكثر قابلية للفهم كما ويشهدها إلى أن الذكاء الاستراتيجي يوفر للمدراء المعلومات اللازمة التي يحتاجونها بدلاً من أن يحصوها على كم هائل من البيانات، فضةً عن مساعدته القادة على ابتكار وسهائل وطرق جديدة للتعامل مع الفرص وذلك من خلال اكتشافه وتحديد تلك الفرص في وقت مبكر، وأنه ينشئ عملية التخطيط الاستراتيجية في الشركة ويعزز استخدامه كأداة مهمة لتحقيق أهداف المنظمة (Baei & et al, 2017: 244)، وقد بين (Bratianu, 2017: 13) أهمية الذكاء الاستراتيجي في عمل المنظمات من خلال:

أ. يساعد على تجنب المفاجأة الاستراتيجية من خلال توفير إنذار مبكر من التهديدات التنافسية.

ب. يسهل أعدد المديرين التنفيذيين على تحدي معتقداتهم الخاصة من خلال تسهليل الضغوط على النقاط التجارية الغامضة، أو إلافت إرضاءت غير الصحيحة حول الساحة التنافسية.

ت. يستفاد على ضمتان استناد الق رارت والإج اراءات إلى التنبؤ والبصيرة بدلاً من الشهور الغريزي أو تجربة الصناعة وحدها.

ث. يساعد على تقديم تقرير غير متحيز مع عدم وجود مصلحة في نتيجة القرار. ج. يعزز الثقافة التنافسية في المنظمة عن طريق زيادة الوعي التنافسي

ح. يستفيد من تعزيز الوعي بالتهديدات التي يتعرض لها رأس المال الفكري للمنظمة والحاجة إلى مكافحة التجسس والتدابير المضادة . خ. يساعد على تقليل حالة عدم اليقين.

ويرى الباحث أن الذكاء الاستراتيجي يلعب دوراً بارزاً في كل مجالات المنظمة وخطتها الاستراتيجية من خلال توفير المعلومات المناسبة للأشخاص المناسبين التي تساعدهم على اتخاذ القرارات الصائبة حول مستقبل المنظمة، وكذلك يبرز دوره في مواجهة المخاطر والتحديات التي تتعرض لها المنظمات وتحديد الفرص المتاحة.

من خلال ما تم الإشارة إليه في أكثر من موضع في المبحث الحالي فإن أهمية الذكاء الاستراتيجي حملت معها تنوعا كبي رفي المحاولات البحثية السمة الأساسية نحو تحديد اهم الابعاد الخاصة بهذا المتغير وبالتالي ومن خلال اطلاع الباعث على عمق من الاديبة ات والنتائج البحثية تم اختيار (الابعاد) الاساسية التالية: التفكير بأسلوب النظم، الرؤية المستقبلية، الدافعية، السمة اركة (باعتبارها حققت شئته اتفاق بين الباحثين وهي الابعاد التي سيتم اعتمادها في الدراسة الميدانية كونها تتسق مع طبيعة العمل الرقابي المالي الذي يقع على عاتق الإدارة والقيادات في المنظمة محل البحث، ويمكن بيان هذه الابعاد بشئته كل مفصلة كما يلي :

أ. الاستش ارف :

[illegible]

كما ان هذا البعد يتعلق بالقدرة التي تمكن فهم القوة التي تشهدها كل المؤسسة المستقبل ونسبة تنفذ معظم أنشطتها الاساسية ارف في المنظمات إلى دافعين رئيسيين: إما أن تكون هناك خصائص محددة لعملية أعمال الشراكة تتطلب بطبيعتها مثل هذا التوجه طويل الأجل، أو يتم تنفيذ أنشطة الاساسية ارف كخطوة استباقية للتعامل بشدة كل أفضة مع حالات عدم اليقين في بيئة أعمالهم إضافة لذلك يعد الاساسية ارف جزءاً حيوياً من المعلومات الإستراتيجية، حيث يقدم لوضعية السياسات مؤشرات حول الظروف المستقبلية المحتملة والمساعدة في اتخاذ القرارات السليمة (Mandel & Barnes, 2014: 1).

وبتمثل الهدف الاستراتيجي من الاساسية ارف في المقام الأول في إعداد الق لارات الإستراتيجية والحفاظ على القدرة التنافسية بشدة كل مؤسسة، كما يهدف لتعزيز قدرة المنظمة على التعلم والابتكار من خلال التعامل مع التوجه المستقبل للمنظمات، وأن دور الاساسية ارف لا يكمن في الإدارة الإستراتيجية الكلاسيكية فحسب، بل يلعب دوراً مهماً أيضاً في إدارة الابتكار الاستراتيجية (Masson et al., 2017: 46)، كما أشارة (Melkas & Uotila, 2007: 59) إلى أن عملية الاساسية ارف الناجحة تتكون من ثلاث مراحل متتالية:

1. تشمل المرحلة الأولى جمع المعلومات المتوفرة وتلخيصها لغرض إنتاج المعرفة الاستشرافية.
  2. تشتمل المرحلة الثانية ترجمة وتفسير هذه المعرفة لإنتاج فهم لآثارها على المؤسسة المستقبل من وجهة نظر محددة المنظمة معينة.
  3. المرحلة الثالثة تضم استيعاب وتقييم هذا الفهم لإنتاج الت ازم بالعمل في منظمة معينة.
- ويرى الباحث الاساسية ارف المنسقة للقدرة العقلية للقادة، ويمنحهم الرؤية والإبداع والتبصر بقضايا السوق والمنافسين، وهو ما يعد أمراً مهماً في صفة تفاعل الق لارات بصلة تلك القضية، كما آفاقهم التحليلية لها، وتبادلهم الآراء والمقترحات مع بعضة هم البعض كخب اراء أكثر من كونهم قادة لكل منظمة على حدة، مع زيادة فهمهم للقضايا الاستراتيجية البعيدة الأمد، وبما يساعدهم على ربط الماضي ويوسعه بالحاضر لتحديد معالم المؤسسة المستقبل، عن طريق التخمين العقلاني والتنبؤ واستنتاج السيناريوهات المتعددة، ويمكن تعريف هذا البعد اج ارنياً على أنه ( القدرة على توقع تيارات التغيير التي يمكن أن تهدد المنظمة أو توفر الفرص المناسبة لها، لذا يجب أن تكون قادراً على إدراك الأنماط التي تشهدهم إلى التهديدات والفرص للمنظمة بما يؤمن عملية تحديد المستقبل ووضع الخطط اللازمة للطوارئ ).

#### ب. التفكير بأسلوب النظم :

يمثل التفكير بمنطق النظم يمثل (القدرة على تكامل وتركيب العناصر المختلفة لفهم كيف تتفاعل مع بعضة هم البعض لغرض الوصية إلى أهداف المنظمة، بحيث يتم دراسة الأجزاء وعلاقتها بالكل وتقييمها من حيث نجاحها في خدمة أهداف النظام) (Yuha, 2017: 5)، كما أن التفكير في النظم بصلة مع النظام في ستيفاق البيئة الأوسع نطاقاً التي يشهدهم جزءاً منها ويدرس الدور الذي يلعبه في المنظمة ككل،

ويوصف بالقدرة على تجميع العناصر أو دمجها بدلاً من تقسيمها إلى أجزاء لغرض التحليل، وفهم كيف تتفاعل هذه العناصر مع بعضها البعض لصنع النظام الكلي (Shake & Schachter, 2013: 772)

ويحاول العديد من المديرين والقادة النجاح بطريقة تشكّل نقيضاً لتفكير النظم، فغالبا ما نسمع الأسف على أن المنظمات يتحدثون عن العمل في صوامعهم وعن تحديات إنشاء تعاون وتآزر عبر المنظمة. وهذا النمط من التفكير يسهل في التعرف على هيكل الظاهرة المعقدة، فمن الممكن الحصص على المعرفة من خلال اكتشاف التفاعلات والعلاقات بين عناصر النظام، ويمكن أن تكون هذه المعرفة مفيدة في حل المشكلات المتكاملة المسببة والتعامل مع القضايا المتعلقة بالأنظمة الأخرى، وتسهل طريقة عرض النظام في تحديد المشكلات التنظيمية كمشكلة في الأنظمة، بحيث تتيح الاستجابة بطرق أكثر إنتاجية، حيث أن نجاح النظام يعتمد بشدة على بنية النظام، وتتطلب السيطرة على النظام فهم ذلك النظام، وأن أسس اليب ووسيلة التفاعل في الأنظمة تسهّل على فهم النظم الاجتماعية والتأثير عليها، وبالتالي يوصف تفكير النظم على أنه كفاءة مهمة وقيمة للقائد (عبد الجليل وآخرون، 2020: 6).

ويجب على المنظمات تطوير نظم التفكير في موظفيها، حيث أن تطوير التفكير في النظم يسهّل التكامل في جميع أنحاء المنظمة، والتي يمكن أن يعزز الأداء وزيادة قيمة المنظمة، ويسهّل على تحقيق العديد من الفوائد لكل من: علي، 2017: 9)

1. العمليات: يمكن لمفكري الأنظمة تحسّن العمليات داخل المنظمة، عن طريق تعيين تدفق القيمة وهي أداة تسهّل لعمل لتعزيز التفكير في النظم، عندما يقوم الموظفون بتخطيط عمليات المنظمة، وبمجرد تحديدها يمكن إجراء النصائح التحسينية الضرورية للتخلص من الأخطاء والاختلالات في المنظمة.
2. أصحاب المصالح: يسهّل التفكير في النظم في تحقيق التوازن بين احتياجات أصحاب المصالح في المنظمة، وبمجرد تحديد احتياجاتهم وتقييمها من قبل المنظمة، قد يسهّل كل أصحاب المصالح وكذلك قد يحصّل الزبائن على منتجات أفضل وتحسين الخدمة وبالتالي يكتسب الموظفون الدافع الداخلي للعمل، ورضا الزبون، والجودة الأكثر خبرة.
3. التكنولوجيا: يسهّل مفكرو النظم في تسهّل عملية تطوير التكنولوجيا من قبل المنظمة، فإذا كان المصمم يفكر بشدة على منهجي على المستوى العالمي، فربما يسهّل المصمم أساليب عمل مواد قابلة لإعادة التدوير أو على الأقل صديقة للبيئة في تصميمه.
4. الهيكل التنظيمي: يمكن أن يسهّل تفكير النظم في تعزيز التواصل والتعلم عبر الحدود الوظيفية، من خلال إعداد الأشكال التنظيمية التي تعزز التفكير في النظم.

5. المعلومات: يمكن أن يؤدي التفكير النظامي بالمنظمة إلى نظم أكثر سعة في نقل المعلومات، مما يؤدي إلى زيادة تبادل المعلومات على نطاق واسعة، وبالتالي يسهل إعداد المفكرين على إنشاء أدوات فعالة لتبادل المعلومات والمعرفة بهدف التحسين المستمر.

ويرى الباحث مساهمة مهمة التفكير في النظم لمساهمة عدة القادة على الارتقاء بمنظمتهم نحو النجاح والتميز وعملية قائمة على دمج العناصر المختلفة بدلاً عن تقسيمها إلى أجزاء وذلك من أجل تحليلها، ومن الناحية النظرية يمكن أن يسهل إعداد تفكير النظم الموظفين في المساهمة بتويات الأدنى في المنظمة على رؤية المنظمة بالكامل، مما قد يسهل أيضاً في جهود التكامل ويمكن تعريف هذا البعد (أرنا) إمكانية ترسيخ اليات التفكير التي من خلالها يتم تفكيك الإشكالات وتحليل عناصرها الظواهر وت اركب عمليات اتخاذ القرار بأسلوب عملي ممنهج تتحقق من خلاله الآلية العلمية في تحديد الخيارت الأفضل بالنسبة للمستقبل المنظمة).

**ت. الرؤية المستقبلية:**

تمثل الرؤية الاستراتيجية الفكرة القريبة من طبيعة الحلم الإنسانية والمتعلقة بمساهمة المنظمة هذا بالاطار العام اما بشأن كونها بعدا من ابعاد التفكير الاستراتيجية فتعرف على انها (النتائج الملموسة من التفكير الاستراتيجية والتي تعطي تشخيصاً لما تنوقه للمساهمة المستقبل والتي في ضوءها يمكن القيام ببناء غايات المنظمة وأهدافها المتوخاة) (Gahonzire, 2020:59)

كما تعرف على انها (التطلعات والتوصيات التي مساهمة المنظمة والطموحات والأمال التي ترغب المنظمة إلى تحقيقها مع مراعاة إمكانية تنفيذها بالاستناد إلى البيئة التي تعمل فيها) (محمد وإبراهيم، 2022: 58) فالدور الأساسي للقائد توليد الرؤية المستقبلية للمنظمة، والرؤية هي صورة شمولية متسعة لما يريده قائد المنظمة ان تكون عليه منظمته فالقائد هو الذي يضعه الاستراتيجية التي لخلق قيمة للمساهمة ولتحقيق الربح في نفس الوقت، اذ ان تحديد الرؤية المستقبلية ورسمها المستقبل لا يعتبر كافياً بل خلق الرغبة الأكيدة لدى القائد لتحقيق الرؤية واعتبارها جزء من أدواره القيادية الواجبة لتحقيق الأداء المميز (اليساري، 2017 : 107)

ان مساهمة الرؤى تتفاوت من فرد الى اخر وفق المساهمة التي يعملون فيه فتكون بمساهمة عالية لدى الإدارة العليا ومستوى متوسط للإدارة الوسطى بينما في المستويات الدنيا تكون بمساهمة أقل فالرؤية المستقبلية للقادة تكون مرتبطة بالتفكير الاستراتيجية والتي على تشخيص الفرص التي لا يسهل مديرو المساهمة بتويات الأخرى رؤيتها كون إمكانية القادة في الفهم للمواقف والقدرة الإدراكية تكون أوسع وأسهل وبالتالي يؤدي الى استغلال الى تلك الفرص قبل المنافسين الآخرين (محمد وإبراهيم، 2022: 58) ويرى الباحث أن الرؤية المستقبلية هي قدرات خاصة يكتسبها قادة المنظمات الناجحين التي تجعلهم أكثر قدرة على تصورات أساليبهم في العمل، وبموجبها يتم تحديد اتجاه وهدف المنظمة نحو المستقبل،



وتعتبر بمثابة المخطط المنهجي لمسيرة المستقبل مثالي يحقق هدف المنظمة بشهـةكل أكثر كفاءة وفاعلية، ويمكن تعريف البعد ا ج ارنيا على انه (السياسات والقدرات التي تتسمـةبـم بها فرق القيادة والتي من خلالها يمكن رسمـةرسم صـةصـةتقوية عن مسـةمسـةتقبل المنظمة وحسـةحسـةالجهود من قبل كافة الاف ارد على العمل باتجاه تحقيق هذه الصـةصـةتقوية بشكل ملموس وواقعي).

### ث. الدافعية:

يعرف الدافع بأنه القدرة على تحفيز الناس على تبني هدف مشة، وتنفيذ رؤية معينة، وهذا ينطوي على نوع من الاسمة تتنام الجيد، لمعرفة ما الذي يحرك الناس، لكن هذا الاسمة تتنام لا يتم بالضمة ضرورية بالتعاطف) جديدي، 2014: 216)، فضة لأ عن الدافع يتضة ممن مجموعة من المعتقدات والتصة توارت والقيم والمصمة الح والأفعال التي ترتبط جميعها ارتباطا وثيقا، نتيجة لذلك يمكن أن تركز الأسمة اليب المختلفة للتحفيز على السمة لوكيات المعرفة) مثل المراقبة واسمة تعامل الاسمة ات ارجية)، والجواب غير المعرفة مثل) التصة توارت والمعتقدات والمواقف)، أو كليهما، حيث إن فهم الدوافع بالضمة سمة تبة تاد المديرين على تحديد الإجراءات التي يجب اتخاذها للتشة جميع موظفيهم) العجرش ، 2016: 5)، وهناك مجموعتان متعارضةتان تماما مع بعضة هما البعض وترويان الطرق المختلفة لكيفية تحفيز الناس لفعل شةيء ماء، وهما الدوافع الخارجية والدوافع الداخلية فالدوافع الخارجية هي التي تحفز الناس على فعل شةيء ماء، على سمة قبيل المثال يمكن أن تكون مكافأة مالية، كتاب شة تكرر .. إلخ، في المقابل تنبع الدوافع الداخلية من داخل البشة تتر مثل الدافع الجوهرى والذاتي للشمة شخص فإذا كان الشمة شخص مدفوعا جوهريا، فسوف يعمل على إنجاز مهمته بحماس لأنها مثيرة للاهتمام بالنسبة له (Filimonov, 2017: 91). وأشمة تارت العديد من الدراسات السابقة إلى أن الدوافع) الخارجية والداخلية( تلعب دورلهما في مشة تاركة المعرفة، وكشفنت نتائج د ارسة متعددة أن الدافع الداخلي والخارجي يؤثرن على مواقف الموظفين تجاه مشة تاركة المعرفة، بالإضافة لتأفة إلى ذلك فإن الدافع المعرفي باعتباره دافعا جوهريا، له تأثير مهم على مشة تاركة المعرفة.(Zhang, et al, 2020: 47) ، ويلاحظ إن الدافعية تمر م ارحل متعددة وهي ) الاحتياج إلى وسمة أائل دفاعية، البحث عن طرق لتلبية الاحتياجات السمة تلوك الموجه نحو الأهداف، تقييم الأهداف المنجزة، المكافات أو العقوبات القصدة تهور في الحاجة يتطلب إعادة التقييم من قبل الموظف .(Gibson et al, 2012: 128).

ويرى الباحث القائد الذكي يتحتم عليه أن يعمل على إشباع حاجات العاملين من دون التأثير على قرارته وذلك من خلال فهم رغبات العاملين وعواطفهم، كما يجب أن يكون لدى القائد الأسس التي ترتبها نوعين من الذكاء هما الأسس التي ترتبها والشعوري في آن واحد وتسخير عناصر الذكاء التي ترتبها لا سيما الدافعية لإيجاد قيادة متميزة تكون مسؤولة عن أهداف العاملين ونواياهم وتبني الفضة التي ترتبها عنهم ،

فمنذ أن عن ذلك فإن إشباع العاملين في المنظمة إحدى الأسس التي ترتبها التي ترتبها فضاءها

المنظمات الناجحة لخلق بيئة عمل إيجابية وتنفيذ الأعمال المخطط لها بنجاح من خلال تبني هدف مشترك وتنفيذ رؤية مشهورة مشتركة، ولكن التحدي الذي يواجه قادة المنظمات كيف يتم إشراك العاملين وتحفيزهم نحو الهدف العام للمنظمة، لأن المورد البشري يعد المكون الأساسي لأساسية لأي منظمة وبغياهم يصعب على أي منظمة تحقيق أهدافها.

ويمكن تعريف البعثة (اج) (رؤية) على أنها (قادرة القدرات العتامة في المنظمات على تحريك القوى الكفاءة داخل أعضاء التنظيم بما يضمن الوصية قول إلى حالة الأداء التي تفوق المساهمات المعتمدة والمقدمة من قبل الاف ارد في سبيل تحقيق الأهداف الاستراتيجية للمنظمة).

### ج. الشراكة:

تعني الشراكة القدرة على إقامة تحالفات استراتيجي، بحيث يمكن للقادة الذين لديهم مساهمات عالية من الذكاء الاستراتيجي أن يدركوا أنهم بحاجة إلى الشراكة مع المديرين الذين لديهم الذكاء العاطفي الذي يفتقرون إليه، وتعرف الشراكة (تطوير علاقات استراتيجية ناجحة وطويلة الأجل بين الزبائن والموردين استنادا إلى تحقيق أفضل الممارسات والميزة التنافسية المستدامة، وبالتالي فإن الشراكة هي وضعية استراتيجية لتصور النظام إنتاج جديدة مساهمة تتوقف ينتج منتجات وخدمات جديدة أو محسنة (Atwa,2013:39)، ويشتهر الباحثين إلى أن أدوات الشراكة المساهمة المستخدمة كانت موجهة لهدفين

رئيسيين (Kotha & Srikanth,2014) :

- زيادة وضوح الإحاراء وظهور شبكات المعرفة من خلال الشركات الشريكة. - تحفيز الشركاء على اتخاذ الإحاراء التي من شأنها تحسين الرؤية .

ويشتهر إلى وصية الشراكة (الاستراتيجية) كونها عملية يقوم فيها المشركون عن طيب خاطر بتعديل ممارساتهم التجارية الأساسية بهدف الحد من الازدواجية والتبديد مع تسهيل الأداء المحسن، لذلك يجب أن تساهم الشراكة (الاستراتيجية) في التنفيذ الناجح للخطوة الاستراتيجية، ويشتهر أحيانا إلى التحالفات الاستراتيجية بأنها شراكة توفر للمنظمات فرصا لتوحيد قواها من أجل فرصة مفيدة للطرفين وميزة تنافسية مستدامة (الشراكة) 2022: 241)

إن الثقة والالتزام وقدر الشراكة على حل الصعوبات عندما تبرز بينهم وتشتركهم في المعلومات وفي تصميم المنتج تعد من المقومات الرئيسية لتعزيز دور الذكاء الاستراتيجي من خلال عنصر الشراكة مما يؤدي إلى نمو المنظمات التي تعمل تحت لواء الشراكة واستثماراتها من المزايا المتحققة من أعمال الشركاء .

ويرى الباحث أن الشبكات اركة اتفاقات طوعية بين اثنين أو أكثر للوصلة.....تقول الى الاهداف ذات الاهتمام المشقةترك وتؤدي الى تطوير علاقات مثمرة وناجحة، بما في ذلك الاشقةت ارك مع فريق من زملاء يتمتعون بقدرت تكميلية، فالقدرة على التطوير والاحتفاظ بعلاقات شقة اركة مثمرة هي نوعية أسةأسةتية يقوم بها القادة الناجحين لبناء فرق قيادية فعالة، ويمكن تعريفها (مجموعة الإح اراءات التي تتخذها الإدارة في سة.....تتقبل توسعةقاعدة العلاقات مع جمهور العاملين والتي تتسعةتت من اطلاع الجميع على البيانات والمعلومات التي يتم اعتمادها في اليات وب ارمج اتخاذ الق لارت المستقبلية للمنظمة ).

ويمكن القول ان الذكاء الاسةت اريجي كسعةمة ذاتية من سةتمات القيادات العاملة في أي منظمة او كسعةلوب تنظيمي يعد احد العوامل المهمة والمحددة لنجاح أي منظمة في صة لرع التنافس الاخذ بالاستعداد في خضمة البيئة المتغيرة ،وفي المنظمات المتعاملة في القطاع المةالي مثل ديوان الرقةابة المةالية تتسعةتت.....أف أهمية الذكاء الاسةت اريجي باعتبار ان أي تكة او ت ارجع عن تبني المعايير العالمية في الأداء سةتكون معه حجم الخسائر اكبر بكثير وتأتي ارته وتداعيته على بقية القطاعات أوسع بكثير لذا يفترض على العاملين في مثل هذه المنظمات الالتفات بشةكل اكبر لنشرة ثقافة هذه المنغي ارت والمفاهيم ضمة من مختلف المستويات العاملة .

#### 4. مفهوم الأداء الإبداعي

يمكن الإشارة الى ان مفهوم الاداء والابداع فالأداء مصطلح يشير الى الطريقة التي يتم بها انجاز المهمة أو الفعل في حين يشةتتير مصعةمصطلح الابداع القدرة على الإبداع والتفكير بطريقة مختلفة، اذ يتألف المفهوم من المصعةمصطلحين (الأداء والابداع ) ، اذ شةتتهد حالة من الجدل والتنوع في الأفكار والطروحات كونه نتاج تفاعل أكثر من مفهوم مختلفة بالأسعةاس وبالتالي انسعةتتبت حالة الاختلاف تلك على ماهية تعريف (الأداء الإبداعي ) ومن جانب اخر اختلف العلماء والباحثين بشةتت أن ايجاد تعريف للأداء الابداعي والسعةتتت يعود إلى تنوع المداخل والاهداف والاتجاهات التي تناولها هؤلاء العلماء ويعد أحد المحددات لتقييم مدى قدرة المنظمة على النجاح والاسعةتتتت اررية في وقتنا الحاضر.....تت في ظل وجود تنافس شةتتتتتت والتغي ارت في بيئة العمل والتطور التكنولوجي المتسارع (Al-Ababneh,2020:247) .

ويعرف الاداء الابداعي (بانه ارادة الفرد في تقديم افكار جديدة تسعةتتتتتت في ايجاد التنظيم الكفوء والعمل على تحسعةتتتتتت وزيادة القدرة على تحقيق الاهداف ووضعةتتتتتت الاسعةتتتتتت اريجيات بما يولد اداء فريد من نوعه (Vinding,2016:158)، وشةتتتتتتتتتتتتتت الى الاداء الإبداعي بأنه )اتباع الاف ارد نمط جديد من التفكير وحصعةتتتت على السيقا غير عادي في التفكير الذي يتمثل بالخصعةنص العقلية واهمها الطلاقة والمرونة والاصعةتتتتتت وظهور كل ما يؤدي الى انتاج شةتتتتتت جديد وفريد من نوعه يمثل خلاصةتتت التفاعل بين الفرد والخبرة والقدرات (Hammadat,2017:50) ، كما يعرف على انه ) افكار أو سلوكاً أو معارف جديدة

تلي الاحتياجات المتعددة وإمكانية تنفيذها وتطبيقها (Cabrilot,2018: 4) ، كما يعبر عنه بأنه قدرة المنظمة على تحويل مدخلات الإبداع إلى مخرجات وتحويل القدرات والجهود والأنشطة إلى إبداعية إلى أفعال تنفيذية في بيئة المنظمة (Huang et al,2018:89) ، كما يعرف أنه (أحد الجوانب الفعالة الذي يضمن الاستمرارية والنمو والاستمرارية في العمل وسهولة المنظمة الناجحة إلى تطوير أداء موظفيها وتحفيزهم ومن ثم سيؤدي إلى تحسين مستوياتهم وتحقيق أهداف المنظمة بكفاءة وفعالية (De Jong,2018: 43).

من جانب آخر عرف (بناء أفكار أو إجراءات أو عمليات أو طرق جديدة في التعلم والتفكير بشدة كل رئيس نحو عمليات المنظمة ومخرجاتها والتصرف بعيداً عن السياقات التقليدية مع استحضار كل أشكال المغامرة في تبني عمليات التغيير ودعمه بما يحقق تحولات إبداعية في بيئة المنظمة وعملياتها، وصلة تؤول إلى ميزتها التنافسية وأسلوب التعلم الداعم لإيجاد منتجات فريدة (Kim et al,2019:57) ، ويعد الأداء الإبداعي انعكاساً لقد ارت المنظمة في تحويل مدخلات الإبداع إلى مخرجات ملموسة فضة لا عن تحويل الجهود والقدرة الإبداعية إلى أفعال تنفيذية بوصفها أحد مؤشرات ارت تقييم نجاح أو فشلة المنظمة في الوقت الحاضر (Mukhles,2020:245).

ويقصد به أيضاً (محصلة القدرات المتعددة التي يتخذها الإنسان وتبدأ بالإدراك للوضع القائم ثم الاهتمام به وجمع المعلومات عنه ثم إيجاد البدائل وتقييمها وتجربة هذه البدائل والتي تنتهي بالأداء الإبداعي ببنيتها (Ossalamia et al,2020: 111) ، ويتحقق الأداء الإبداعي عندما تمتلك المنظمة مجموعة من القدرات الدينامية وأن تتبنى استراتيجيات وتوجهات إدارية غير تقليدية (Zhao, et al,2020: 20)، كما عرفه (Afifah & Canyone, 2020:60) (هو تكييف وتنفيذ أفكار جديدة تؤدي إلى القدرة على خلق أفكار جديدة وتطبيقها لابتكار خدمات ومنتجات وعمليات وإجراءات جديدة في يمكن وصلة تؤوله بالنتيجة النهائية لجهود التجديد والتطوير والتحسين للمجالات المتنوعة التي تتبناها المنظمات ، ويعرف بأنه ( السلوك الذي يتفرد به الموظف عندما يواجه مواقف يتأثر بها ثم يستجيب لها والتي تتفق مع ذاته فأنه أي استجابة إيجابية مختلفة عن استجابة إيجابية الآخرين (Hussain et al, 2020: 40) ، ويرى (Muzafarya et al,2021:704) (الأداء الإبداعي) (سمة سلوك مميز ينتهجه الفرد ويأتي كنتيجة لمجموعة من القدرات التي يتخذها وتبدأ بالإدراك والتحليل للموقف القائم ثم جمع المعلومات وتقييم البدائل المتاحة ثم اختيار البديل الأمثل، ويكون هذا السمة سلوك إبداعاً بذاته عندما يمارسه الفرد لأول مرة في مكان العمل (Kawa, et al,2021:382).

ومن خلال الاطلاع على عديد التعريفات الواردة في أكثر من مصطلح يمكن القول أن الأداء الإبداعي يمثل بمراجعة المهام في حال شدة عبء الفرد بالضيق من أجل إعادة تحفيزه ونشاطه والشعور بقدرته على

تحقيق التغيري ارت والتخلص من الروتين ومن ثم القيام بأفكار جديدة، وابتكار تطوير الافكار الجديدة والخلاقة، والثبات والاصابة ارر على تحقيق وتنفيذ تلك الافكار من دون ان تؤدي النتائج الى الاحباط (Streicher et al,2012:1100)

كذلك يعني بناء مركب ذو ابعاد متنوعة يمكن قياسها بطرق مختلفة مثل اسةتخدامات وب اراءات الاخت لع وتقديم منتجات وعمليات جديدة اذ يشةتغير الاداء الابداعي الى الانجاز في الابداع بأكمله من تصةتقيم الفكرة الى ادخال اخت لع الى تنفيذ المهام (Amanda, and, et al,2020:3) ، كذلك يمكن التعبير عنه بأنه ايجاد ط ارتق جديدة للتفكير والتعلم يؤديها الفرد والتي تغير على نحو رئيس من عمليات المنظمة ومخرجاتها ، ويرى الباحث ان الاداء الابداعي يعد مصد ر من مصد ر تقدم المنظمات والسلوك المميز الذي يعمل على ايجاد وتوحيد الافكار ومن ثم تطبيقها وتحديد الفرص واسةتغلالها بشةتكل أمثل فضةتلا عن أنه يمثل المخرجات الانتاجية كافة او الخدمة المتميزة للموارد البشةتقوية التي تحمل بصةتومات ابداعية تجعل المنظمة تتفوق على نظري ارتها وتتجه نحو التميز والنجاح، ويمكن تعريف الأداء الإبداعي) الحالة التي يكون فيها المورد البشةتقوي داخل المنظمة مصد ر للتفكير بطريقة مختلفة ومنبع ايجاد حلول مبتكرة للمشكلات التي غالبا ما يتعرض لها وبأساليب غير مسبقة بما يؤمن مستوى متقدم من الإنجاز).

## 5. أهمية الأداء الإبداعي

ينبغي على المنظمات أن تنتهج سةتةتولوكا ابداعيا إذا ما أردت ان تحقق الاداء المتميز وان اهمية الاداء الابداعي اتجاه نطاق العمل الذي يسهم في الاتي: (Asbari et al, 2021:69 )

- أ. الاسةتةتجابة للفرص المتاحة بفاعلية ومواجهة التحديات والمسةتةتقويات والتكيف مع المتغيري ارت والانفتاح على الأفكار الجديدة وتبنيها.
- ب. تنمية المهةت ارت والم اوهةت وإد ارك العمل بطريقة مثلى وتطوير المنتجات والخدمات الابداعية وتحقيق الذات الإبداعية وتطوير قد ارت الاف ارد لخلق افكار جديدة والمسةتةتاهمة في ايجاد حلول ناجحة للمشكةتلات بطريقة صةتحيحة وتهيئة المنظمات لتكون أكثر ملائمة لاكتشف مواهب العمل وتميئها وتطويرها .
- ت. رفض رتبة العمل والوامر التي تعيق التفكير والابداع وتوظيف واستخدا م أساليب جديدة للعمل .
- ث. تبني التغيير ومسةتةتاهمة نشةتةتقوره داخل المنظمة وتحمل المخاطر من خلال المرونة والتكيف في موقع العمل.
- ج. بسةتةتند الاداء الابداعي الى الامكانات الابداعية التي تظهر مع التغيير والاندماج المتنامي من المعرفة العلمية في اج اراءات العمل ونتائج لان المنظمات في وقتنا الحاضر تةت بحاجة الى الاداء الابداعي من اجل تحقيق اهداف المنظمة.

ويرى الباحث ان الأداء الابداعي ترتبط اهميته بما تشهده تلك العملية الابداعية من تحديد المساهمة وتسهيل  
اعادة تشيكل الواقع فالثوارت والتقدم الهائل في كل المجالات بما فيها خلق اهداف جديدة وطرائق جديدة للعمل يؤكد أن المورد  
البشري امامه تحديا كبيلا لبيضة تبحو مبدعين، فضاة لا عن ذلك فان الاداء الابداعي يستند اهميته كونه عنصرا اساسيا في كل  
المنظمات وانه وساهمة مهمة تضاف من نجاحها في ظل التنافس العالمي المتسارع والتغير البيئي السريع في شتى الميادين العلمية  
والفكرية والسلوكية .... الخ، وعليه يمكن القول يمثل الأداء الابداعي القلب النابض لأنشطة المنظمة من خلال تحقيقه الامتداد الدائم  
للموارد

البشرية في دعم الافكار او المنتجات أو الخدمات الجديدة بنجاح من خلال هجر التقاليد البالية  
والتخلص من السياقات التنظيمية والسلوكيات التقليدية المستهلكة.

## 6. ابعاد الاداء الابداعي

اختلف الباحثين في تحديد ابعاد الاداء الابداعي الامر الذي يقدم لاي مهتم بتطوير أي بحث او دراسة  
متعلقة بهذا المتغير العديد من النماذج والابعاد وبالتالي يمكن انتخاب الأقرب لواقع الدراسة والأكثر ملائمة لطبيعة البيئة  
الميدانية والمجتمع، وتم اعتماد عدد من الابعاد التي تعد قريبة من طبيعة وتفاسير العمل في المنظمات العامة عينة البحث، وادناه  
عرض للأبعاد بالتفصيل:

### أ. المخاطرة :

تعني الاساهمة لتعدد تحمل المخاطرة والتحدى الناتج عن الاعمال التي يقوم بها الفرد في تبني الافكار  
الجديدة وتبني مساهمة قولية نتائج تلك الافكار كما تعني اخذ زمام المبادرة في تبني الاساهمة واليب والافكار  
الجديدة والبحث عن حلول لها في الوقت نفسه يكون فيه الفرد قابلا لتحمل المخاطر الناتجة عن  
الاعمال التي يؤديها (عوني، ٢٠٢٠: ٢٥)، كما يكون لديه الشجاعة في تعريض نفسه للفشل أو النقد  
وتقديم التخمينات والعمل تحت ظروف غير واضحة متحة مع الدفاع عن افكاره الخاصة، ولديه الاساهمة لتعدد  
لمواجهة المساهمة قوليات المترتبة على ذلك، وفي نفس السهولة يثق توصية المخاطرة بأنها قدرة الفرد على  
اقتحام المجهول الغامض معتمداً بذلك على الاساهمة قولية في الممارسة والتفكير مع الاخذ بنظر الاعتبار ان لا يفهم هذا السلوك بعدم  
الانتظام والوضوح بل انه اثاره للفكر من اجل الخوض في مسائل غامضة وصعبة بهدف تنظيمها واكتشافها  
(Harada,2021:88)

تؤدي المخاطرة المحسنة بشهنة جيد والتي يتصف بها الأفراد والجماعات والمنظمات الى ابداع فعلي، اما السلوك المتحفظ  
فيؤدي لتكيف بطيء، إذ تستند المخاطرة اهميتها من تطور الحضارة الانسانية فلو

لم تكن سمة متميزة المجازفة موجودة لبقيت تلك السمة متميزة في م ارحل العصمة تتور الحجرية (Taylor et al 2020:33) فضة لا عن ان المخاطرة تعبر عن ثقة الشمة مخصص المبدع بقدرته وما يدفعه الى تبني افكار جديدة وغير مألوفة او مجربة بالسمة اذ من دون مبالاة بالتهديدات التي قد تواكب تطبيقها ومن دون ان يكون للخوف أو الفشة مكاناً في تلك البيئات، لذلك لا بد ان تمتلك المنظمات طرقاً خاصة للسمة لتجميع الاف ارد على الابداع والمخاطرة بالافكار الابداعية كما يطلق على تلك المنظمات التي تمتلك تلك الطرق بأن لديها مهارة ادارة الابداع التي تحقق التوازن بين الأهداف وضمة غط الوقت (Henriksen et al 2020:86) .

وبناء على ذلك يرى الباحث ان تبني الأداء الإبداعي يقتضيه\*\*\*\*\* إلى عدم الخوف من الأفكار الجديدة والمطورة لان الحاضر مهما كان مناسباً فإن هناك الشيء الأفضل والاولف في المستقبل والذي يجب ان السة\*\*\*\*\* عليه لذا على الاف ارد المبدعون ان يقبلون على الأفكار الجديدة وان لا يخافوا من المجهول بل يقبلون عليه وبحثونه على الظهور، ويمكن تعريف هذا البعد اج ارثيا على انه (قدرة الفرد في اخذ المبادرة والمجازفة وتبني الأفكار واعتماد الطرق والأساليب الجديدة وإيجاد الحلول لها للمواقف المختلفة). ب. مرونة :

توصف المرونة بأنها بعد اسعة اسعة من ابعاد الاداء الابداعي ولها دور كبير في الاخت ارات والابتكا ارت  
مثل على ذلك الاث اراء الوظيفي الذي يحقق المنفعة للعمل واشة تقايح حاجات الذات عند الفرد والصة  
العام ،اذ تتمثل المرونة بالجانب النوعي للأداء الابداعي، كما يمكن عرض مفهومها من اوجه مختلفة اذ  
تعتبر التجديد والتغير للأشياء بمنظور جديد، كما يعبر عنها بأنها القدرة على اتخاذ طرق مختلفة  
بالفكر والتصنيف عن ما هو معتاد عليه والنظر لموقف ما بأبعاد مختلفة(مصطفى ،2020: 563)،  
بمعنى آخر رؤية الأشياء عن طريق زوايا ومناطق مختلفة باستخدام اساليب ارتيبيات متنوعة متمثلة هذه  
القدرة بالعمليات العقلية التي تميز بين الفرد الذي لديه القدرة على التغيير لاتجاه تفكيره والفرد الذي يجمد تفكيره باتجاه واحد ، كما تمثل قوة التفكير  
من اجل الوصية الى معارف وتجارب جديدة وواسعة و ايجاد معنى في الحياة وبصحة لدى الاف ارد علاقات مع الآخرين  
والانفتاح على تجارب جديدة (Eslamlou et al,2021: 80).

من جانب آخر تتسم المرونة الى درجة السهولة التي يغير بها الفرد موقفاً أو جهة نظر معينة وعدم العصّة لأفكار بحد ذاتها وهي عكس النصة العقلية الذي ينتجه الفرد والذي بمقتضاه تبنى أنماط فكرية محددة لمواجهة مواقف مختلفة والمرونة التي تظهر عند الشئخص دون الحاجة الضرورية التي يتطلبها الموقف هنا يعطي الشئخص عددًا من الاستجابات التي تنتمي إلى عدد متنوع من تلك الاستجابات، إذ يبرز بعد المرونة أهمية تغيير اتجاه أفكارنا كذلك تتكيف المرونة مع المتغيرات التي

يميز بها الفرد بين مسةئوياته الفكرية المتعددة ، بعبارة أخرى اذ ان المرونة تولد الفرصةئيات المتنوعة اذ يمكن ملاحظتها من خلال تنوع الحلول المختلفة للمشكلة بكافة الاتجاهات اذن فالمرونة هي ذلك التنوع في الافكار التي يأتي بها المبدع كما تشتهير المرونة الى درجة السعةءهولة التي يعبر بها الشةءفخص المبدع

عن موقفاً ما او وجهة نظر معينة نحو مشكلة (Nakano & Wechsler, 2018: 238)، ويمكن الربط بين الافكار المتنافرة لتوصيف في شدة تلك من الممكن ان تكون المرونة قدرة الفرد في اعطاء معلومات متنوعة بشدة تلك تلقائي والتي لا ينتمي لفئة واحدة أو أصنافاً واحدة فضاءاً عن انها المرونة التي تظهر لدى الفرد دون حاجة ضرورية يتطلبها موقف معين أو مشكلة بذاتها، اذ يعطي الفرد عدداً من الاستجابات التي تنتمي الى عدد متنوع وهذا ما يميزها اذ يبرز عامل المرونة اهمية تغيير اتجاه افكارنا تجاه الموقف أو المشكلة ، أو تكون المرونة القدرة التي يمتلكها الفرد لتغيير وجهته الذهنية عندما ينظر لموقف معين يرد له حل وهنا يكون الفرد المرن المتكيف عقلياً عكس الفرد المتصلب بتفكيره ومواقفه اي ينظر لهذا النوع من المرونة بأنها الطرف الموجب للكيف العقلي وسهولة هذا الاستجابة المرونة التكيفية لأنها تحتاج الى تعديل في السلوك ليتلاءم مع الحل السليم (مرواني، 2021: 128).

ويرى الباحث إذا ما اريد تحقيق ال ارحة المطلوبة من التعامل مع الأفكار يجب رؤية نتائجها فإذا حققت تلك الأفكار الجديدة نتائج مرغوبة والتي ستمتد على اليها الاف ارد المبدعون بدون خوف ولا تردد هنا يتطلب الأمر الى العمل على تطويرها ويجب التشجيع للحصول على أفكار أخرى جديدة تكون ملائمة للظروف المتطورة وبهذا تتحقق المرونة اللازمة للإبداع من خلال الاستجابات والتكيف مع طبيعة الأفكار والبيئة والظروف التي تتولد بها تلك الافكار ، ان يرتبط بعد المرونة بالأداء الابداعي لأنه يتبنى انماط

ذهنية محددة سلفاً وغارقة في الافكار، أي التخلي عن الطرائق القديمة في التفكير واستبدالها بأفكار جديده، ويمكن تعريف هذا البعد اجرائياً على انه (استراتيجية متعددة الفرد في قدرته على تغيير وجهة نظره نحو المشكلة المعينة التي هو بصدد معالجتها وإمكانية تبني أساليب مختلفة والتفكير بطريقة غير مألوفة).

ت. الاحساس بالمشكلات:

(ويشتهر وجود مشكلات وصمة عيوب او نقاط ضعف في البيئة ومن يلاحظ تلك المشكلات كالات هم الاف ارد والتحقق من وجودها في المواقف وان اولى خطوات معالجة المشكلة هي اكتشفها بلا شدة، وبالإمكان اضافة تعديلات وتحسينات على المعارف او الافكار والقدرة ترتبط بملاحظة الاشياء غير العادية واعادة توظيفها واستخدامها واثارة التساؤلات حولها)) (Griffin,2019:17)

وفي السمة تباين ذاته الاحساسية بالمشكلة كالت يعني الوعي بوجود حاجات او عناصر أكثر ضعفا في البيئة او الموقف اي ان بعض الأفراد اراد اسمة أكثر من غيرهم في ملاحظة المشكلة كالت والتحقق من وجودها في الموقف ويمثل اكتسبة كالت المشكلة كالت الخطوة الاولى في عملية البحث عن حل لها كم يرتبط بهذه القدرة ملاحظة



الاشياء الشاذة الغير عادية ومحيرة في محيط الفرد واعادة توظيفها واثارة التساؤلات حولها فضة لا عن ان الاف ارد الذين تزداد حسنة اسئلتهم لأد ارك اط ارف القصة تهور في المواقف المتنوعة تزداد فرصة لهم اخوض غمار

[illegible]

- المرحلة الأولى هي فهم المشكلة وتتركز هذه المرحلة بالاهتمام على تحسنة فهم المشكلة والموقف ال ارهن وتحديد المسار
- المرحلة الثانية هي توليد الأفكار هذا يتم التوصية بالتفكير الى افكار متنوعة وغير تقليدية تساهم في تطوير الموقف
- المرحلة الثالثة هنا يبدأ الفرد المبدع بالتخطيط للتنفيذ متى ما تتوفر لديه البدائل المتنوعة ويكون الفرد في حاجة الى ان يتخذ قرار والحصول على تأييد لهذا القرار.
- واخي رلتجسنة قدرة التحسنة للمشكلات بوصفها عنصر مهم من خلال توظيف الفرد لفهمه العقلية ومعارفه ومهاراته في ايجاد حلول مبدعة لموقف او مشكلة ومعالجتها أينما وجدت اذ يميز علماء النفس بين اساليب حل المشكلات الاولى: الاساليب العقلية التي يمثل الشئ عوار بالمشكلة وتحديد وصيغتها والعمل على جمع البيانات والمعلومات المتصلة بها ووضع الفروض المحتملة ومن ثم اختبار صحة الفروض والصحة التي الى حل للمشكلة التي تكون هنا محدودة وواضحة، اما الاساليب الثانية هو حل المشكلات الابداعي الذي يكون بحاجة الى درجة عالية من الحساسية في تحديد واستنباط الافكار والعلاقات الضرورية حتى يتم التوصية الى النتائج الابداعية. (Islami et al.,2018:252) ، ويرى الباحث ان صاحب الاداء الابداعي يمتلك حساسية مفرطة تجاه المشكلة فهو أقدر من غيره على رؤيتها والتعرف على اساليبها ويعرف بعمق ما الذي يجعله يفكر في قضية دون اخرى ويدرك الاهداف التي دفعته للتفكير ويؤمن به، ويمكن تعريف هذا البعد اج ائياً (إمكانية الاف ارد العاملين على النظر في عدد من المشكلات في ذات الموقف واكتشافها فضة لا عن إمكانية رؤية المشكلات كالتصور والنقص من خلال نظريته للمشكلة نظرة غير مألوفة).

### ث. الإصالة :

تعني انتاج اشياء غير مألوفة او هي قدرة الفرد على ابتكار الافكار الجديدة والمفيدة الغير مرتبطة بتك ارر الافكار ستبق وان طرحت (341: Kharkhuri,2014) ، وتمثل الاصالة اهم عوامل القدرة على التفكير

الابداعي والفرد المبدع الذي تتميز افكاره بالاصالة بإمكانه الابتعاد عن المؤلف والشائع وبسعة تستطيع ان يفكر بحلول وبأفكار جديدة واصيلة، وهناك من يعد الاصالة م اردفة للإبداع ذاته بوصفها التفرد بالأفكار والتجديد (48: Ibrahim et al, 2020) ، ومن جانب اخر تمثل الاصالة المقدرة على الاتيان بأفكار جديدة مفيدة ونادرة غير مرتبطة بتك ارر للأفكار السابقة اي انها نتاج غير مألوف وبعيد المدى وهناك شئنا ان اتفاق لعدد من الباحثين ان الاصالة هي القدرة على اسئلة استجابات اصيلة وقليلة التكرار بال معنى الاحصائي داخل الجماعة التي تنتمي لها الفرد المبدع او صااحب الفكرة الاصيلة، لذلك كلما قلت درجة شئنا الفكرة ازدت درجة اصالتها ، والجدير بالذكر ان للأصالة ثلاث جوانب رئيسية وهي كالآتي : (57: Walia,2019)

- الاستجابة الغير شائعة اي القدرة على انتاج افكار نادرة.
  - الاستجابة البعيدة اي القدرة على ذكر تداعيات بعيدة غير مباشرة.
  - الاستجابة الماهرة اي القدرة على انتاج استجابات يحكم عليها بالمهارة
- اذ نستخدم الاصالة الفرد المبدع الى التوصية الى ما هو جديد بوصفها تهتم بالتجديد والانف ارد بالأفكار فالفرد المبدع هنا يأتي بالأفكار الجديدة غير تقليدية او مألوفة ومختلفة عن افكار الزملاء في العمل وهذا لا يعني ان تهمل الافكار المألوفة والتي سةتبق التوصية اليها، ويمكن تعريف هذا البعد اج ارنيا على انه (وتعني ان الاف ارد لتدعيم القدرة على اقت ارح أفكار غير نمطية ولأنشاء أفكار محيطهم التقليدي وبما يؤمن حةالة من الحداثنة في تتاول مفردات العمل المعروفة وبأسئلة مطلوب غير مقلد )، ويرى الباحث الأداء الإبداعي اصلةتصبح ظاهرة تلون محيط الاعمال كافة فلم يعد بالإمكان إتمام الإح اراءات بطريقة نمطية مكررة تشابهه مع بعضهها البعض كما انها تشةكل صةتورة تشةتة المنظمة بصةتورة تشةتة نظي ارتها ،لذا فان الامر بضةتورة ضرورة العمل بالطرق الإبداعية المبتكرة في حال لا يمكن التخلي عنها او النظر اليها على انها امر غير ضةتوري وبالتالي لابد من تعميق الرؤى بشةتان حتمية ترسةتخ ثقافة الأداء الإبداعي داخل ذهنية كل فرد من اف ارد المنظمة .

اولاً: صدق وثبات الاستبانة:

تضمن المتغير المستقل الذكاء الاست ارجي أربعة ابعاد، ليقاس من خلال (25) فقرة ، حصلت على معامل كرونباخ الفا (0.794)، فيما حصل المتغير المعتمد الاداء الابداعي على معامل كرونباخ الفا (0.897) (من خلال (20) فقرة، وحصلت الاستبانة بشكل اجمالي ومن خلال (45) فقرة على معامل الفا

كرونينج (0.850)، فيما كان اختبار (KMO) للسبعة ابعاد التي شكلت الاستبانة مقداره (0.843)، وبقيمة كاي تربيع (1001.923) وبدرجة حرية (378) عند القيمة الاحتمالية (0.000)، لتكون نسبة كاي تربيع الى درجة الحرية (2.650) وهي تقل عن (5)، فيما كان التباين الت اركمي المفسر (69.157%)، وجذر التباين (19.365)

الجدول 1) ثبات الاستبانة

TVE		$\chi^2/df$	P	DF	$X^2$	KMO	$\alpha$	معامل كرونينج الفا	عدد الفترات	في لرت
19.365	69.157	2.650	0.000	378	1001.923	0.834	0.850	0.794	25	كاء اريجي
								0.897	20	داع اعي

المصدر: مخرجات برنامج (SPSS V.28)

ثانياً: الإحباء الوصفي لمتغي ارت البحث:

تمثل البحث بمتغيرين (الذكاء الاست اريجي، الاداء الابداعي)، استقصي عنهما عبر إجابات (45) مستجيب من العينة من قيادات ورة الكهراء ، فحصل المتغير المستقل الذكاء الاست اريجي على وسط حسابي (3.55)، وانه ارف معياري (0.705)، فيما حصل المتغير المعتمد الاداء الابداعي على وسط حسابي (3.78)، وانه ارف معياري (0.511)، مما يدل على ان اتفاق العينة على الذكاء الاست اريجي في الترتيب الثاني نتيجة لحصوله على معامل اختلاف نسبي (19.85%)، بينما كان الترتيب الاول للمتغير المعتمد (الاداء الابداعي) وبمعامل اختلاف نسبي (13.51%) مما يدل الى اتفاق العينة على التوجه نحو الأداء الإبداعي في ورة الكهراء اولاً، ومن ثم اعتماد الذكاء الاست اريجي عاملاً مسانداً للارتقاء مستوى أداء يعتمد الأفكار التي يقدمها قيادات الورة على اختلاف مستوياتهم التنظيمية كركيزة أساسية لتحقيقه ، اما على مستوى الابعاد فكانت بحسب الاتي :

1. ابعاد الذكاء الاست اريجي:

رتبت الابعاد بحسب معامل الاختلاف، فحصلت الش اركة على الترتيب الأول وبمعامل اختلاف نسبي (20.65%) وبوسط حسابي (3.53) مرتفع ، فيما كان الترتيب الثاني لبعاد الدافعية وبمعامل اختلاف

نسبي) 22.27% (، ووسط حسابي) 3.60 ( مرتفع ، بينما حل بعد التفكير بأسلوب النظم ثالثاً وبمعامل اختلاف نسبي) 23.50% ( ووسط حسابي) 3.57 ( مرتفع ، وحل بعد الرؤية المستقبلية رابعاً وبمعامل اختلاف نسبي) 23.57% ( ووسط حسابي) 3.50 ( مرتفع ، واخي رُحل بعد الاستش ارف بالترتيب الخامس وبمعامل اختلاف نسبي) 24.22% (، وبوسط حسابي) 3.55 ( مرتفع، مما يدل على لجوء الورة الى هذه الابعاد بشكل متوالي عند تحسينها الذكاء الاست اريجي وان مستواه مرتفع، وكما موضح بجدول) 2(.

## 2. الاداء الابداعي:

رتبت ابعاد الاداء الابداعي بحسب معامل الاختلاف، فحصل البعد الإحساس بالمشكلات على الترتيب الأول وبمعامل اختلاف نسبي) 15.64% ( وبوسط حسابي) 3.77 ( مرتفع، فيما كان الترتيب الثاني لبعد الاصالة وبمعامل اختلاف نسبي) 15.69% (، ووسط حسابي) 3.76 ( مرتفع، بينما حل بعد المرونة ثالثاً وبمعامل اختلاف نسبي) 16.36% ( ووسط حسابي) 3.82 ( مرتفع، واخي رُاتضح توجه و إرة الكهرباء الى تبني المخاطرة بالترتيب ال اربع وبمعامل اختلاف نسبي) 18.59% ( وبوسط حسابي) 3.78 ( مرتفع، وكما موضح بجدول) 2(.

الجدول 2) الإحصاء الوصفي لمتغي ارت البحث

الترتيب	معامل الاختلاف %	الأهمية النسبية %	الانح ارف المعياري	الوسط الحسابي	المتغي رت
ال اني	19.85	71	0.705	3.55	الذكاء الاست اريجي
5	24.22	70.6	0.855	3.53	الاستش ارف
3	23.50	71.4	0.839	3.57	التفكير بأسلوب النظم
4	23.57	70	0.825	3.50	الرؤية المستقبلية
2	22.27	72	0.802	3.60	الدافعية
1	20.65	70.6	0.729	3.53	الش لكة
الاول	13.51	75.6	0.511	3.78	الأداء الابداعي
4	18.59	75.6	0.703	3.78	المخاطرة

3	16.36	76.4	0.625	3.82	المرونة
1	15.64	75.4	0.590	3.77	الإحساس بالمشكلات
2	15.69	75.2	0.590	3.76	الإصالة

ثال أ: الإحباء الاستدلالي واختبار فرضية البحث

اختبار الفرضية الرئيسة للبحث (ف ثر الذكاء الاستراتيجي بأبعاده مجتمعة في الاداء الابداعي معنوياً) تأثير

تبين وجود نموذج مختبر للتأثير مقبولاً بقيمة  $F(22.991)$  (المحسوبة) وهي تزيد عن قيمتها الجدولية عند درجة الحرية 88، فيما أظهرت نتائج الجدول 3 وجود معامل تفسير للنموذج الأفضل مقداراه 0.345 (0.345)، ومعامل تفسير معدل (0.340)، إذ استطاعت ابعاد (الذكاء الاستراتيجي مجتمعة) (من ) تفسير ما نسبته 34% من التغيرات التي تطرأ على الاداء الابداعي، فيما تعزى النسبة المتبقية (66%) لمتغيرات أخرى لم تدخل في النموذج المختبر، إذ يعد نموذج التفسير نموذجاً مقبولاً احصائياً ويمكن اعتماده في تفسير ما يطرأ على الاداء الابداعي يعزى للذكاء الاستراتيجي بأبعاده مجتمعة. بينما تبين وجود تأثير لبعيد التفكير بأسلوب منظم في الاداء الابداعي مقداراه 0.321 (0.321) وبقيمة احتمالية 0.000 (0.000) وبقيمة  $T(4.328)$ ، فيما تبين وجود تأثير لبعيد الشراكة في الاداء الابداعي مقداراه 0.326 (0.326) وبقيمة احتمالية 0.000 (0.000) وبقيمة  $T(4.399)$ ، فيما لم يظهر أي تأثير لبعيد الاستشراف، الرؤية المستقبلية، الدافعية في تحسين الاداء الابداعي لدى عينة البحث، إذ لاحظ الباحث اعتماد ابعاد الذكاء الاستراتيجي (التفكير بأسلوب النظم، الشراكة) مجتمعة في الاداء الابداعي، إذ تقود هذه النتائج الى قبول الفرضية الرئيسة (ف ثر الذكاء الاستراتيجي بأبعادها مجتمعة في الاداء الابداعي تأثيراً معنوياً)، وبحسب المعادلة الآتية:

$$\text{الاداء الابداعي } Y = (1.256 + 0.321 * ) \text{ التفكير بأسلوب منظم} + 0.326 * \text{ الشراكة}$$

الجدول 3) تأثير ابعاد الذكاء الاستراتيجي مجتمعة في الاداء الابداعي (n=89)

المتغير المستقل	الاداء الابداعي
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F	T	P	A R <sup>2</sup>	R <sup>2</sup>	β	α	
22.991	1.731	0.072	0.340	0.345	0.117	1.256	الاستشراف
	4.328	0.000			0.321		التفكير بأسلوب النظم
	1.491	0.103			0.106		الرؤية المستقبلية
	0.895	0.374			0.077		الدافعية
	4.399	0.000			0.326		الشراكة

المصدر: مخرجات برنامج (SPSS V.28)

أربعاً: الاستنتاجات والتوصيات

### 1. مناقشة النتائج ووضع الاستنتاجات

تضطلع هذه الدراسة بأهمية الاهتمام ورؤى الكهرياء بالأداء الإبداعي بشخصية متفكر مرتفع ، وإن هذا الاهتمام نابع من خلال امتلاك اف اردها إمكانية النظر لعدد من المشهات المتكاثرات في نفس الموقف واكتسبت هذه المشهات افها ، فضاءاً عن إمكانية رؤية المشهات المتكاثرات ضمةً من الموقف الواحد وتحديد القصة المتور والنقص بنظرتها للمشهات المتكاثرة نظرة غير مألوفة ، وامتلاك القدرة على اقتراح أفكار غير نمطية ولأنشئة المشهات المتكاثرة أفكار تشبه المشهات النمطية تفكير محيطهم التقليدي ، وبما يؤمن حالة من الحداثة في تناول مفردات العمل المعروفة وبأساليب متنوعة غير مقلد، واسعة المشهات المتكاثرات الفردية والفرقية على تغيير وجهة نظرهم نحو المشهات المتكاثرة المعينة التي بصمةً من معالجتها وإمكانية تبني أساليب وطرائق عمل مختلفة والتفكير بطريقة غير مألوفة (خارج الصلة المتكاثرة المتوقعة)، حتى أنهم في بعض الأحيان يوظفون قدرتهم وإمكاناتهم لأخذ زمام المبادرة والمجازفة وتبني الأفكار واعتماد الطرائق والأساليب الجديدة وإيجاد الحلول لها للمواقف المختلفة وبذلك سعةً من قصص المتكاثرات من خلال هذه السعة المتكاثرات الى الحالة التي يكون فيها قادة واف ارد الوارة مصمةً من التفكير بطريقة مختلفة ومنبعاً لإيجاد حلول مبتكرة للمشهات المتكاثرات التي غالباً ما تتعرض لها الوارة وبمختلف مواسم الطلاب على الطاقة وبأساليب غير مسبقة وبما يؤمن مستوى متقدم من الإنجاز.

فيما يتضلع هذه الدراسة امتلاك قيادات ورؤى الكهرياء الذكاء الاسعة المتكاثرة ترتيباً بالترتيب الثاني والناجم عن توجيهها الى مجموعة الإحاراء التي تتخذها ادا ارثها في سعةً من توسيع قاعدة العلاقات مع الجمهور والتي تتضلع من اطلاعهم على البيانات والمعلومات التي يتم اعتمادها في البعثات وب ارجح اتخاذ الق لارات المسعة المتكاثرة من خلال توأمة العمل مع شمةً من تركيزات خارجية والعمل على إقامة عدد من محطات التوليد مقل شمةً من تركيزات سعةً من تميز وجن ارل الكترك، فضاءً عن تحريك القوى الكامنة داخل اف ارد الوارة وبما يضمةً من الوصول الى حالة الأداء التي تفوق المسعة المتكاثرة المعتادة والمقدمة من قبلهم وبمختلف المسعة المتكاثرة التنظيمية في سعةً من تبديل تحقيق

الأهداف الإستراتيجية لارتجحية للوزارة، بضعة أهداف لذلك إمكانية ترسية التفكير التي من خلالها يتم تفكيك الإستراتيجية وتحليل عناصرها وتوزيع الظواهر وتوزيع عمليات اتخاذ القرار بأستراتيجية علمية ممنهج تتحقق من خلاله الآلية العلمية في تحديد الخيارات الأفضل من بين البديلة لمصلحة مستقبلها، وقد امتلك الوزارة الإستراتيجيات والقدرات التي تستثمر بها فرقها ومديريتها والتي تمكنها من رسم صورة عن مستقبلها ورصد الجهود من قبل جميع أفرادها على العمل باتجاه تحقيق هذه الصورة المستقبلية بشدة مملوس وواقعي، وعلى هذا الأسس الإستراتيجية عملت إلى

تعزيز قدرتها على توقع تيارات التغيير التي يمكن أن تهددها أو توفر الفرص المناسبة لها، لذا أوجبت عليها أن تكون أكثر قدرة على إدراك الأنماط التي تراقب التهديدات والفرص، وبما يؤمن عملية تحديد المستقبل ووضع الخطط اللازمة للطوارئ.

وعلى أساس هذا التوجه استتطاعت الوزارة من اعتماد التفكير بأستراتيجية النظم وإقامة الشبكات مع أصناف المصالحات بغية تحسنة أدائها الإبداعي، إلا أنها لم تستطع من توظيف الإستراتيجية أرف والرؤية المستقبلية والدافعية في ذلك التوجه.

## 2. التوصيات:

- أ. ضرورة العمل الدؤوب على تحسين الذكاء الاستراتيجي لوزارة الكهرباء من خلال الاهتمام بتعزيز الشبكات، وتحسين اهتمامها بالدافعية والتفكير بأستراتيجية النظم، والاستراتيجية أرف، واعتماد رؤية مستقبلية.
- ب. العمل على تعزيز اهتمام الوزارة بالأداء الإبداعي من خلال الإحسان بالمشكلات التي تواجهها حول توفير الطاقة لجمهورها، وتقديم خدمة ذات أصالة وبشدة مملوس يزيد من سعة معرفتها، في ظل الإستراتيجية المتجارية السريعة لمختلف الظروف بمرونة عالية، مع تقديم منتجات تستند بالمبادأة وتحمل المخاطرة عندما يكون مشروعها فريد ولم يسبقها إليه أحد.
- ت. ينبغي تعزيز الأداء الإبداعي للوزارة من خلال توظيف ذكائها الاستراتيجية بشبكة عام، فضاءاً عن الاعتماد على إقامة الشبكات والتحالفات مع مختلف الجهات، والتفكير بأسلوب النظم.
- ث. العمل على دراسة تأثير الإستراتيجية أرف، الرؤية المستقبلية، الدافعية بشبكة كل منفصلة أو مجتمع في الأداء الإبداعي.

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# The Largest Army in Ancient History

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## ABSTRACT

*As indicated by Megasthenes, who filled in as a minister from the Seleucid Realm, Chandragupta Maurya fabricated a military comprising of 30,000 mounted force, 9,000 conflict elephants, and 600,000 infantry. Chandragupta vanquished a lot of Indian subcontinent, laying out a realm from the Middle Eastern Ocean to the Strait of Bengal. Ruler Alauddin Khilji is known to have the biggest standing armed force because of his tactical changes. For additional perusing really take a look at the accompanying articles: Mamluk Tradition. Mansabdari Framework. The best ruler known to Indian history is Ashoka The Incomparable. His realm was established by Chandragupta Maurya, who was a granddad of Ashoka, over a long time back. Ashoka was incredibly upheld and lead by the renowned man Chanakya, additionally known by Kautilya. Para-Commandos: Para extraordinary power is one of the most prepared powers of the Indian Armed force. Marcos: Marcos otherwise called marine commandos, it is the deadliest power of the Indian Safeguard Power.*

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## INTRODUCTION

Old fighting is war that was led from the very start of written history to the furthest limits of the antiquated period. The contrast between ancient and antiquated fighting is more associational than innovational. The improvement of first city-states, and afterward realms, permitted fighting to emphatically change. Starting in Mesopotamia, states delivered adequate horticultural excess. This permitted full-time control by elites and military authorities to arise. While the greater part of military powers were still ranchers, the general public could divide off every year. Consequently, coordinated armed forces created interesting situations. These new armed forces had the option to assist states with filling in size and become progressively unified.

In Europe and the Near East, the end of days of yore is frequently compared with the Fall of Rome in 476 Promotion, the conflicts of the Eastern Roman Realm on its Southwestern Asian and North African lines, and the starting points of the Muslim victories in the seventh hundred years. In China, it can likewise be viewed as the finishing of the developing job of mounted champions expected to counter the consistently developing danger from the north in the fifth century and the start of the Tang line in 618 Promotion. In India, the old time frame closes with the decay of the Gupta Domain (sixth century) and the start of the Muslim victories there in the eighth century. In Japan, the antiquated period is considered to end with the ascent of feudalism in the Kamakura time frame in the 12-thirteenth 100 years.

Early old militaries proceeded to utilize quits, the very weapons that had been created in ancient times for hunting essentially. The discoveries at the site of Nataruk in Turkana, Kenya, have been deciphered as proof of bunch struggle and fighting in antiquity [1], but this translation has been challenged.[2] Early militaries in Egypt and China followed a comparative example of utilizing massed infantry equipped with bows and lances. Infantry right now is the predominant type of war, somewhat because of the camel saddle and the stirrup not being concocted at this point. The infantry right now would be separated into ran and shock, with shock infantry either charging to cause infiltration of the foe line or standing their ground. These powers would, in a perfect world, be consolidated, hence giving the rival a situation: bunch the powers and leave them powerless against ran, or spread them out and make them helpless against shock. This equilibrium would ultimately change as innovation considered chariots, rangers, and ordnance to assume a functioning part on the field.

The ancestors to the contemporary Multitude of India were quite a large number: the sepoy regiments, local cavalry, sporadic pony and Indian sapper and excavator organizations raised by the three English administrations. The Multitude of India was raised under the English Raj in the nineteenth century by taking the recent administration's armed forces, combining them, and bringing them under the Crown. The English Indian Armed forces battled in both Universal Conflicts. The military succeeded the military of English India following India's autonomy in 1947. After The Second Great War, a considerable number of the wartime troops were released and units disbanded. The decreased military was divided among India and Pakistan. The Indian Military battled in

each of the four battles with Pakistan and the two battles with the Individuals' Republic of China in 1962 and 1967. India additionally battled in the Kargil Battle with Pakistan in 1999, the most noteworthy mountain fighting in history.[citation needed] The Indian Military have taken part in a few Joined Countries peacekeeping tasks and are as of now the second biggest benefactor of troops to the peacekeeping power.

### **TEN BIGGEST AND MOST REMARKABLE MILITARY POWERS IN ANTIQUATED AND CURRENT HISTORY**

It would be difficult to figure out which military power in history would be thought of as the most remarkable. Might it at any point be the Spartans and their spurious 300 men who held off the Persian armed force? Or on the other hand the Mongols, whose extraordinary numbers cleared the world while the bigger Chinese armed force remained at home? It could in all likelihood be Alexander the Incomparable's, who possibly turned around at the Euphrates when his men were drained and nostalgic.

Deciding the biggest armies is somewhat more straightforward. This rundown takes us through history to look at the biggest militaries during every period.

It is significant while taking a gander at them, we think about the total populace, as well as the number of inhabitants in the country the military developed from. For instance, almost 1% of the Ming Tradition were dynamic troopers, equivalent to assuming the advanced US military was multiple times greater than it is today.

### **THE URUKS OF MESOPOTAMIA**

From 4100-2900 BCE, Mesopotamia and the center east went through the Uruk Time frame. It was named after perhaps the earliest "urban areas" of the Center East, Uruk, which Ruler Enmerkar established. It is trusted that "Uruk" would gradually develop into the Aramaic word "Erech" and at last the English word "Iraq."

Uruk is renowned for its later lord, Gilgamesh, the main Ziggurats, and the "chamber seal" (utilized for the primary marks). At its level, it is accepted that the realm had a multitude of 4,000 soldiers or five percent of its kin. This military would be made of troops of 50-100 men, who might be equipped with lances and tomahawks, wearing steerages of bronze and shrouds with bronze plates sewn into them. These soldiers might have faced conflicts in present day Syria yet experienced issues keeping up with command over places so distant.

While the realm was fleeting, the city stayed significant for 4,000 years under the Akkadians, Assyrians, Babylonians, and ultimately the Greeks. Nonetheless, because of dry seasons and potentially the consistently changing flows of the Euphrates, by 700 Promotion, the city was deserted totally. While never in fact lost, it was first appropriately investigated again in 1849.

### **THE XIA ADMINISTRATION**

While China might have had troops before Uruk, the principal recorded armed force was that of the Xia Administration, around 2000 BCE. Unfathomably better than the Mesopotamian armed forces, it numbered twelve thousand men. Customary records of the time demonstrate that the fighters of this military were thoroughly prepared as well as utilized for non-military purposes. Most broadly, Head Yu the Incomparable set his soldiers to work building channels to stop the kept flooding of the Yellow Stream. The main military struggle we are aware of was the fight against the Sanmiao clan, which was profoundly uneven. The military pushed them south of the Han stream, leaving them far away, banished for good. This act solidified Yu's place as the ruler of the principal Chinese Line.

### **THE ANTIQUATED EGYPTIAN ARMED FORCE**

The primary armed force to gather more than a hundred thousand men was that of Ramesses the Incomparable around 1250 BCE. The Egyptian Pharaoh was taken part in many fights during his time, including a twenty-year battle against the Hittites. As well as his military, Ramesses had an amazing naval force, and his most memorable military triumph was over privateers who had been going after his exchanging vessels along the north coast. There is archeological proof that a significant number of these privateers mutinied and joined the Egyptians, in the long run turning into a piece of the military. This military would thusly stretch out into Libya, Numibia, and the Levant.

## THE PERSIAN DOMAIN

By around 500 BCE, the dominating domain on the planet was the Persians. As per numerous texts, Cyrus the Incomparable was the head of a multitude of north of 500 thousand in number. These included spearmen, toxophilite, chariots, and mounted cavalry. The realm likewise utilized "safeguard conveyors," who might shape a brief yet successful wall for bowmen to fire from behind. Then thousand of these fighters would get additional preparation, turning into the world's first "unique powers." After some time, these troopers fostered the moniker "the Immortals." This military was, obviously, essential. The Achaemenid Domain of Cyrus was perfect to the point that it covered an expected 44 percent of all living people groups on earth at that point. It traversed 5.5 million square kilometers across the globe. This military probably developed throughout the long term. As per Herodotus, Cyrus' grandson, Xerxes I, took more than 1,000,000 men with him into fight against the Greeks. In any case, under 100 years after the domain's establishing, Xerxes was killed. Under Alexander the Incomparable, the Greeks would ultimately overcome the Persian Realm by 330 BCE.

## THE MAURYAN REALM

The iron-age realm of Chandragupta Maurya and his children managed over India and its encompasses from 322 BCE to 185 BCE. To make this gigantic realm, Maurya expected to raise a military to go after the northern domain of Nanda. As indicated by customary Indian writing, the military included 600,000 infantry, 9,000 elephants, and another 30,000 mounted force. The specific subtleties of Maurya's mission are obscure. A few texts guarantee that the capital of the Nanda realm fell rapidly, while others say the actual capital won't ever fall. With the passing of Alexander the Incomparable, Maurya likewise pushed west prior to making a deal with Seleucus; the Lord would offer up land to Maurya as a trade off for troopers and elephants to battle on his western front. Maurya's military developed to an enormous size incompletely because of inventive ideas, for example, the centralization of duties and a public cash, which made it simpler to guarantee warriors were constantly paid for their work and stayed steadfast. Maurya likewise had a tremendous covert operative organization, and Ashoka (Chandragupta's child) would use it to watch the long boundaries between the domain and its potential foes.

## THE MING LINE

In 1500, the Ming Line of China had somewhere in the range of 60 and 150 Million individuals. This reach is challenging to limit further because of the absence of evaluation taking of regular folks. Notwithstanding, simultaneously, it is recorded that tactical individuals from the Tradition numbered over 1.3 Million. This has all the earmarks of being whenever humankind first saw a country with a military more than 1,000,000 in strength.

The Ming Tradition depended intensely on Bowmen and Rangers, and warriors would join Legions in light of family lines. Roughly 20% of families in China were known as "Military Houses." These families were legitimately committed to give one male as a fighter for China. On the off chance that this warrior kicked the bucket or was injured too seriously to battle, the family would have to give another. Along these lines, the military would constantly be huge, and no family would lose every one of its men. Dissimilar to numerous different militaries ever, the fighters of the Ming Administration were viewed as falling short on the cultural stepping stool. Little notoriety to was being an officer, and society saw a "military family" with scorn. Officers would be given a lance or saber. During this period, bowmen were popular and started to be prepared in riflery. The Ming Tradition likewise had a little naval force with fifty warships. A few scholastics have introduced the warriors of the naval force as the principal illustration of military units that depended on guns, as troopers seldom conveyed some other weapon.

## THE FRENCH DOMAIN

On the opposite side of the world to China, it took significantly longer for the following goliath jump in military ability to happen. In any case, the could of the French Domain toward the start of the nineteenth century would be noteworthy. The Napoleonic Time, between when Napoleon played out an overthrow and became despot in 1799 and when he lost the clash of Waterloo in 1815, is presently viewed as perhaps of the most basic time frame in French history. Denoting the finish of the French Insurgency, Napoleon's rule carried a brief time frame of steadiness to the country and its settlements, made the "Common Code," and officially fostered a military from recruited undeveloped ranchers. This military was 2,000,000 in size in a nation of thirty million individuals. The military battled many conflicts over its brief period under Napoleon. The Egyptian lobby took into consideration logical and archeological examinations, while Napoleon likewise battled various "alliances" of European nations who adjusted themselves against his domain. Sadly, the fall of the military and the domain came after an unfortunate choice to attack Russia in the colder time of year of 1812. With 600,000 of his men, Napoleon anticipated pushing the Russian powers back so England would lose shipping lanes to the remainder of the world.

Nonetheless, oneself broadcasted "Ruler of France" lost over around 50% of his soldiers to starvation, hypothermia, and infection in six weeks or less. Toward the finish of the 6th month, it is assessed that only one-fourth of the military had made due.

#### **GERMAN THIRD REICH (1935-1945)**

All through the ten years known as "The Third Reich," more than thirteen million Germans were to take positions in the military. All the more significantly, in any case, it was the main country in Europe to have a committed heavily clad (or "panzer") division that learned tank-explicit procedures and the most mechanically progressed flying corps on the planet. Germany additionally would be advised to prepared troops. Current military scholars have guaranteed that, for each two German troopers, America would expect three to have an even fight. Barely any individuals accept Germany's military could have bombed them during The Second Great War. All things being equal, it was the frenzied systems of its most noteworthy pioneers, the hounded endeavors at extension at any expense, and the absence of strong partners that would prompt its defeat.

#### **THE US ARMED FORCE (THE SECOND GREAT WAR)**

By 1945, The US had shaped the biggest military power throughout the entire existence of mankind, with a huge 12.2 Million troopers. This number has not been reached since. The US entered The Second Great War later than numerous different nations and just appropriately begun storing up a huge military after the besieging of Pearl Harbor in 1941. Be that as it may, the reaction of individuals in the country. At any rate, while military induction existed starting around 1940, numerous people of the military would have chipped in. Of ten million recruited troopers, just sixteen thousand would be seen as at fault for avoidance. Of 43 thousand faithful dissenters, over half actually enlisted in the military in non-warrior jobs. The quantity of warriors in 1945 is made even more noteworthy by the information that the nation had proactively supported by far most of its losses. North of 124 thousand American troopers were injured or killed on D-Day or during its resulting activities. That was more than one percent of the whole military. The could of the American military came not simply from its men. From the M1 rifle and 1911 gun to the Bazooka, the little arms of the American powers were infinitely better to some other country. At home, the logical personalities of the nation were chipping away at significantly more noteworthy weapons, including those that would change the essence of fighting until the end of time.

On the sixth of August, 1945, The US Military dropped the main atomic weapon onto the City of Hiroshima, killing around a hundred thousand individuals. Just 20% were officers. After three days, the US besieged Nagasaki, which turned into the main twice atomic weapons have been utilized in military fighting.

#### **NORTH KOREA (PRESENT DAY)**

With the biggest extent of the military to the populace at any crossroads in mankind's set of experiences, the Korean Nation's Multitude (of North Korea) has roughly 9,000,000 individuals. Military enrollment is mandatory for all guys who don't have an exception and around one of every nine females. All men north of 14 should enlist for induction, with wellbeing checks consistently until they are seventeen. They are legitimately committed to spend the following decade in the military. This remembers preparing as troopers and working for ranches and in processing plants claimed by the public authority. While this might seem like the public assistance of different nations, it is fundamental to perceive that all recruits are prepared for the fight to come and, as per US government reports, are "knowledgeable in the rudiments much under unfavorable circumstances." Past this labor supply, it is accepted that North Korea has around forty submarines, 730 battle airplane, and more than 4000 tanks. It frequently performs "tests" of long range rockets and is atomic proficient. With everything taken into account, the North Korean powers, while little contrasted with bigger nations, are strong and undeniably greater than some other nation of its size.

#### **THE MILITARY OF THE US OF AMERICA - PRESENT DAY**

The sheer force of the US is inconceivable. 2 million complete labor supply, 13,362 airplanes, 6000 tanks and 40,000 Heavily clad Battling Vehicles. 415 maritime vessels, with 20 plane carrying warships and 66 submarines. This gigantic capability upheld by a tactical spending plan greater than the spending plan of the following nine countries joined. The US Military is the most impressive military power in the whole mankind's set of experiences.

Also, that isn't referencing the second biggest reserve of atomic combat hardware on the planet, second just to Russian League. Despite the fact that, hindered by guerrilla wars and rebellions, the US Military is an integral asset for projecting US power all through the world. Despite the fact that its impact is by all accounts blurring strategically, The US with its tactical power is the main genuine superpower on the planet.

## CONCLUSION

The quantity of individuals in any military has kept on developing, as you would expect with mankind's populace. In any case, with the expansion in military advances, we might have arrived at our top in 1945. The strength of the tactical will, nonetheless, forever be undeniably more testing to decide. At each new phase of military history, we see an unexpected ascent in trooper numbers and an adjustment of fight strategies. Naval forces (and presently the flying corps) have been of crucial significance at each particular moment, while every military perceived the force of moving rapidly between areas of war and going after from a good ways. Might the goliath French armed force at some point have made due against the a lot more modest Ming Line battling in China? Could the German armed force be the most remarkable if not run by the people who had any desire to manage the world? These are questions best took a subtle approach with.

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## The Political Activism of Dalits in India

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### ABSTRACT

*At the point when I concentrate on the improvement of Dalit legislative issues, I see an expansion of privileges. During the 1980s, pioneers submitted legitimate petitions to state specialists, mentioning that they take care of specific complaints, for example, position badgering in the working environment or unfilled confirmation activity amounts. Essentially, they were guaranteeing, 'these are your regulations; we deferentially ask that you order them.' DPI activists looked to construct associations with state authorities and then utilize these contacts to determine explicit issues. On occasion, their composed backing was compelling, however, it was normally met with silence. The bid frames a particular grumbling, referring to relevant regulations or legitimate points of reference, and afterward deferentially demands that the authority mediate and uphold Dalit freedoms. This underlying project sought lawful support through institutional channels to change explicit infringements of privileges. In any case, from 1990, the development moved from specific freedom infringement to the more extensive underlying disappointment of Dalits in the public arena, the economy, and governmental issues. Post-political talk in India has been fundamentally impacted by Dalit government issues. To stay away from the scattered social power and disciplinary outcomes of common society, they have restored their rationalistic method of activity, though with a particular spotlight on personality and governmental issues. Dalit governmental issues should be seen through a prism that can be named "legislative issues of yearnings." In various verifiable periods, the moving democratic examples of Dalits were an impression of their changing and developing objectives. These objectives have outperformed the old comprehension of "recognizable proof governmental issues," in which*

*oppressors and erudite people strongly sort Dalits. Dalit legislative issues, which relate to bunches previously considered untouchables, are most obvious in the developing impact of Dalit ideological groups in crowded North India and in by and large Indian governmental issues. In this examination paper, the history and present of Indian Dalit legislative issues will be talked about.*

**Watchwords:** India; Indian Legislative issues; Culture; Dalit government issues.

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## INTRODUCTION

Until the late twentieth century, it was expected that Dalit political activism would just start vigorously during the 1970s and that during the mission for autonomy, Dalits would transcendently uphold Congress. Nonetheless, in a new talk at LSE, Dr. Slam Rawat articulately tested these suppositions. Drawing on research embraced for his book *Reevaluating Distance: Chamars and Dalit History in North India*, he followed a chain of energetic Dalit developments in Uttar Pradesh (UP), from the Adi Hindu Mahasabha during the 1920s–1940s to the Bahujan Samaj Party (BSP) today. At the core of this supported activism has been the worry among Dalit groups for balance and nobility.

In 1999, the Dalit political pundit Chandra Bhan Prasad contended "The English came past the point of no return except for leaving too soon", highlighting both the worth of the English accentuation on schooling in engaging Dalits and the steadiness of rank in autonomous India, regardless of the protected accentuation on secularism. Dr. Rawat contended not just that this questionable view is shared by a lot of people among the Dalits he has gone over throughout his hands on work, but also by and large. In 1927, the All-India Adi Hindu Gathering of Dalit Pioneers started with a parade of 25,000 "untouchables" conveying banners bearing trademarks saying thanks to the English for freeing them from Hindu control. This gathering was accounted for and talked about widely in the UP press at that point, and it is only one model that shows that not all Dalits were completely persuaded by the patriot crusade.

Going to zero in explicitly on the Charmar position's part in making a strong development in north India, Rawat defied the normal misguided judgment around "customary" station jobs. It is regularly expected that Chamars depended on leatherwork—a ceremonially messy occupation—for their vocations. Rawat showed rather that, as per 1911 registration information, 96% were utilized in horticulture, either as inhabitance occupants with lawful and transferrable freedoms to land, lease paying non-inhabitance inhabitants, or workers. They were viewed as among the best cultivators, and they even paid an income to the English as a feature of the bhaiachara residency framework.

Occupation is critical, on the grounds that, up to this point, Dalit contributions in early political fights were discounted as deft plundering and revolting. Nonetheless, Dr. Rawat convincingly contended that the connection to the land brought about connected cooperation in political dissent. Land was of the utmost significance to Charmar vocations, so they were able to battle, and now and again even kick the bucket, to safeguard their property privileges. For instance, of the 25 workers who were killed when police terminated dissenters in Rae Bareilly in 1921, 18 were Chamars and Pasis, demonstrating that those viewed as untouchables were something other than a minimal gathering in the dissent.

Patriotic translations of Charmar occupations and exercises likewise cover the Dalit gathering's commitment to artistic activism. In his book, Rawat has looked to feature the different Charmar plans he has found through the stories that exist from the primary portion of the 20th century. Charmar activists were responsible for a portion of the main station chronicles, wrote in response to provincial stories, drawing on Puranic sources, well-known fable records, and frontier ethnographic sources. Rawat alluded to texts distributed somewhere in the range of 1910 and 1942, some of which outline claims made by Chamars, for instance, demanding they were Suryavanshi Kshatriyas—Kshatriyas with sunlight-based heredity who had consistently followed unadulterated Hindu ceremonies and practices. Different texts put emphasis on the Dalit guarantee to be "Adi Hindus", or unique occupants of India. The Adi development was famous from its beginning in the mid 1920s; for instance, in 1922, 25,000 Chamars prepared to invite the Sovereign of Grains to Delhi (sabotaging the Congress blacklist of the visit). They gave him a notice, which they trusted would shape significant-level conversations on political and established freedoms.

## WHO IS A DALIT ?

Dalits have various names in various pieces of our country. They are called Holaya, Panchama, Chandala, Samagara, Chammar, Adikarnataka, and Adidravida, etc. The word "Dalit" is derived from the Sanskrit word Dal,

, "smothered", "squashed", or "broken to pieces". It was first utilized by Jyotiba Phule, the organizer behind the Satya Shodak Samaj, a non-Brahmin development in Maharashtra. He utilized the term to allude to the outcastes and untouchables as the survivors of the rank-based social division of Indian culture in the nineteenth century. Victor Premasagar writes that the term communicates the Dalits' "shortcoming, neediness, and embarrassment because of the upper ranks in Indian society." The term Dalit has turned into a political character, like the manner in which African Americans in the US created some distance from the utilization of the expression "Negro", to the utilization of "Dark" or "African-American." Dalits today utilize the expression Dalit," as they accept that the term is more than being broken and is, as a matter of fact, a personality brought into the world of battle and declaration. The word dalit is a corrupted term that was supplanted by the English rulers, who named it as discouraged class in 1919. Gandhij affectionately called them Harijan. In 1935, the British organization characterized them as Planned positions. Again, the term Dalit was promoted by the Dalit Puma Development of Maharashtra in 1970. In Varna Vyavastha, untouchables are called Panchama Varna. They possess the least status in Indian culture. They are the individuals from the humble rank, and they are thought of as sullied and dirtied, and they have been consistently confronting separation and brutality, which keeps them from partaking in the essential common freedoms and poise vowed to all residents of India. They were denied admittance to streets, sanctuaries, schools, and so on to stay away from "contamination" from different positions. They are compelled to acknowledge contaminating occupations like arranging dead bodies, working with cowhide, cleaning latrines and sewage, and so forth. The all out level of Dalits is 16.6 percent in India. They are exceptionally strong in states like Uttar Pradesh, Punjab, Bihar, West Bengal, Tamil Nadu, Andhra Pradesh, Rajasthan, Orissa, and Maharastra. Dalits are predominantly unfortunate workers, tenant farmers, and horticultural workers in the rustic economy. In the metropolitan economy, they essentially structure the majority of the laboring populace. Sutrdhar (2014) argues that Dalits started their development against the double-dealing of Brahmins, and that they have not succeeded even at this point. There are differing justifications for why the development couldn't find success, and one of the most significant is that Brahmanism is well established in the social design of India. The Arya-Brahmins, the originators of the Vedas, really organized segregation through the organization of positions. The greater part is tolerating the position framework on the grounds that the predominant philosophy is caused in individuals' brains by the course of authority. Brahmanism, to proceed with segregation, has utilized Gramscian hegemony through social organizations like schools, and sanctuaries, to keep up with their authoritative status. The Brahmins have efficiently denied the Dalits of their own property and assets. The predominant Brahmanical philosophy of rank is being opposed by a little gathering that took the state of Dalit Development. A couple of Dalits coordinated the larger part to start the development. As Gail Omvedt (1976) discernibly notices, the independent Dalit development needed to draw in three powers in pioneer society: 1) It was created contrary to the socially unavoidable and generally well established authority of Brahminical Hinduism. 2) It needed to fight with the authority of the Patriot Development, which, under the administration of the Congress, endeavored to assume control over the plans of a few inferior developments while limiting their popularity based and libertarian potential. 3) It needed to confront a troublesome relationship with socialist development.

## RISE OF DALIT POLITICAL PARTY

Established in 2015 as the Bhim Armed force in the town of Gharkoli in western Uttar Pradesh to battle the ascent of station based viciousness in India, the association acquired ubiquity between the more youthful ages of Dalits. Azad trusts that by changing the development into an ideological group, He would have the option to fabricate a political alliance with the oppressed ranks as a whole. It is not yet clear whether the party can address the country's ongoing Dalit political emergency. The development's review uncovers a contention. Dalit parties are seeing their help decrease in races as a developing number of Dalits decide to join non-Dalit parties, jeopardizing the solidarity and strength of the development. At the point when it came to the 2014 Lok Sabha political decision, the BSP had a larger part, yet it didn't win a solitary seat. In any case, in 2017 and 2019, the BSP won 19 seats in the get together races, then 10 seats inside the 2019 Lok Sabha political decision. Despite the fact that Mayawati stays a tall Dalit pioneer, her party is in confusion. Alternately, On the ground, the Dalit development keeps on monumental itself. As new Dalit pioneers assume control of associations and developments, like Azad's ASP, Jignesh Mevani's Una Ayuchar Ladat Samiti in Gujarat, and Prakash Ambedkar's Vanchit Bahujan Aghadi in Maharashtra, the previous philosophy and activation techniques utilized through more seasoned Dalit pioneers never again give off an impression of being compelling. They address a new, forceful Dalit governmental issues and are youthful, instructed, and well known with the more youthful age. It is reflected in their brief answer to barbarities against Dalits and the colossal help they get. Dalits are searching for a further developed ideological group. During the 1990s, they got a specific measure of political power, character, and self esteem.



## **B.R. AMBEDKAR AND BUDDHIST DALIT MOVEMENT**

Babasaheb Ambedkar has been the spearheading figure in the dalit development. Ambedkar dedicated and forfeited each snapshot of his life pondering and battling for the liberation of Dalits. Ambedkar turned into the country's most memorable Regulation Clergyman on 15 August 1947. On 29 August 1947, he was designated as Director of the Constitution Drafting Council, charged by the Gathering to compose India's new Constitution. Ambedkar gave established certifications and securities to many common freedoms for individual residents, including opportunity of religion, the annulment of distance and the prohibiting of all types of segregation. Ambedkar battled for broad monetary and social privileges for ladies, and furthermore won the Gathering's help for presenting an arrangement of reservations of occupations in the common administrations, schools and universities for individuals from planned ranks and booked clans, a framework similar to governmental policy regarding minorities in society. India's legislators wanted to destroy the financial disparities and absence of chances for India's discouraged classes through these actions.

## **CONVERSION TO BUDDHISM**

Ambedkar leaned toward Buddhist religion. He concentrated on Buddhism for his entire life. In 1950, he turned his consideration completely to Buddhism and went to Ceylon (presently Sri Lanka) to go to a gathering of the World Cooperation of Buddhists. He upheld for change to Buddhism. Ambedkar two times visited Burma in 1954; the subsequent time to go to the third meeting of the World Partnership of Buddhists in Rangoon. In 1955, he shaped the Bharatiya Bauddha Mahasabha. Ambedkar coordinated a conventional public service for him as well as his allies in Nagpur on 14 October 1956. Ambedkar finished his own transformation to Buddhism alongside his better half. He then continued to change over exactly 500,000 of his allies who were accumulated around him. He then made a trip to Kathmandu in Nepal to go to the Fourth World Buddhist Meeting. Ambedkar was persuaded that Buddhism had an ethical tenet with two significant goals to perform. Right off the bat, in the political space, it would will be useful for the dalits in making a non-shared political philosophy and personality against other existing viewpoints of savage governmental issues. During the Mahar Gathering at Bombay Administration in 1936, Ambedkar was persuaded that change is the strong weapon for Dalits to free themselves. He understood that the "station framework among the Hindus has the underpinning of religion". Thus lengthy as the Dalits "remain Hindus, Dalits should battle hard for social intercourse for food and water, and for intercaste relationships on the off chance that they go on as Hindus. Ambedkar changed himself over completely to Buddhism in 1956 in Nagpur. His capable administration could assemble four lakh Dalits to switch themselves over completely to Buddhism. In 1981, for instance, answering standing outrages, in excess of 1,000 Dalits in Tamil Nadu switched over completely to Islam. In 2002, in Jhajjar, Haryana, after five Dalits were lynched by a crowd on the doubt that they had killed a cow, the region saw mass transformations. In 2014, in Shivpuri, Madhya Pradesh, four Dalits maddened by standing segregation switched over completely to Islam. Recently, 180 Dalits changed over completely to Buddhism in Uttar Pradesh to challenge the capture of activists from the Bhim Armed force, a Dalit rights association. Ambedkar was the main engineer for the underpinning of the development. He passed on the development with a mission to satisfy its objective, despite the fact that initiative changes after some time. Ambedkar chalked out a merged financial improvement plan without being impacted by the communist methodology of the extreme communist reasoning that he once saw as appropriate to depict the discouraged classes in India. Ambedkar was extremely worried about the financial matters of the hardship of persecuted classes in India. In State and Minorities Ambedkar set out the methodology of India's monetary improvement without shutting each road of private undertaking and furthermore accommodating the equivalent circulation of riches. He supported a financial structure pointed toward giving security to the weak segments of society against monetary double-dealing (Jadhav, 1993). As per the 2001 evaluation, there are as of now 7.95 million Buddhists in India, somewhere around 5.83 million of whom are Buddhists in Maharashtra. This makes Buddhism the fifth-biggest religion in India and 6% of the number of inhabitants in Maharashtra, yet under 1% of the general populace of India. The Buddhist restoration stays gathered in two expresses: Ambedkar's local Maharashtra, and Uttar Pradesh — the place that is known for Acharya Medharthi and their partners. Bhoj Dev Mudit, changed over completely to Buddhism in 1968 and set up his very own school. Rajendranath Aherwar showed up as a significant Dalit pioneer in Kanpur. He joined the Conservative Faction of India and switched over completely to Buddhism alongside his entire family in 1961. In 1967, he established the Kanpur part of "Bharatiya Buddh Mahasabha". The Dalit Buddhist development in Kanpur picked up its speed with the appearance of Dipankar, a Chamar bhikkhu, in 1980. Dipankar had come to Kanpur on a Buddhist mission and his most memorable public appearance was booked at a mass change drive in 1981. The occasion was coordinated by Rahulan Ambawadekar, an RPI Dalit pioneer. In April 1981, Ambawadekar established the Dalit Jaguars (U.P. Branch) roused by the Maharashtrian Dalit Pumas.

## CONCLUSION

Dalit Development has presumably gotten a significant social change the conventional order of Indian culture. It has energized the vote based standards of freedom, balance and civil rights among the various positions and classes of individuals. The Dalit developments raised the issues connected with character and reservations of government occupations and political positions. There was areas of strength for a to the act of unapproachability and segregation. The developments have brought the dalits to the standard legislative issues and permitted them to hold significant and regulatory posts in various pieces of the country. The dalit writing prepared the dalit savvy people to state their privileges and keep up with their pride in the progressive society. The Dalit development was an immediate test to the upper station and class and they have been going about as areas of strength for a gathering to the public authority in the standard governmental issues. Subsequently the dalit development has turned into a strong social development to bring a significant financial and political change in the states of dalits.

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## Physico-Chemical Parameters of N-Arylhydroxamic Acids in DMSO at Various Temperatures

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### Abstract

Densities ( $\rho$ ) and refractive indices ( $n$ ) for solutions of (0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09 and 0.1 M) N-Phenyl-2-bromobenzohydroxamic acid (PBBHA) and N-Phenyl-4-methylbenzohydroxamic acid (PMBHA) in dimethylsulphoxide (DMSO) have been measured at temperatures (298.15, 303.15, 308.15 and 313.15 K) under atmospheric pressure. Apparent molar volume ( $V_f$ ) and partial molar volume ( $V_0$ ) have been calculated from experimental values of densities. The refractive index data have been used to calculate molar refraction (RM), polarizability ( $\alpha$ ) and thermal co-efficient of the refractive index ( $dn/dt$ ) for the hydroxamic acids. These parameters have been used to discuss the solute-solvent interactions.

**Keyword:** *Density; refractive index; hydroxamic acid.*

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