PROCEEDING OF 1ST INTERNATIONAL E-CONFERENCE ON

RECENT ADVANCEMENTS AND EXPLORATION IN COMPUTER APPLICATIONS

20TH FEBRUARY 2023

EDITOR

ASST.PROF.SWAPNALI KADGE
ASST. PROF. SAYMA NATEKAR

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ORGANIZED BY DEPARTMENT OF INFORMATION TECHNOLOGY

KLE SCIENCE AND COMMERECE COLLEGE KALAMBOLI NAVI MUMBAI

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE

(Affiliated to University of Mumbai)

Plot No. 29, Sector No. 01, Kalamboli, Navi Mumbai,

Ph.-8828979594 Website:https://www.klessccmumbai.edu.in

ONE-DAY INTERNATIONAL

E-CONFERENCE

ON

RECENT ADVANCEMENTS AND

EXPLORATION

IN COMPUTER APPLICATIONS

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BOOK OF

PROCEEDINGS

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ORGANIZED BY DEPARTMENT OF INFORMATION TECHNOLOGY IN COLLABORATION WITH IQAC

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ON

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CHAIRMAN'S MESSAGE
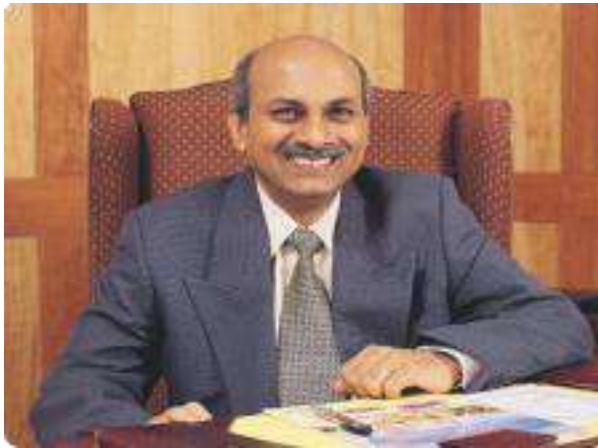
The more we learn, the more we realize that we possess less knowledge. The world we live in today is significantly different from what it was 5 or 10 years ago and the pace of change continues to rapidly increase. As human beings with intellect we need to constantly find things unknown to us. Technology driven by digitization has unraveled new paradigms including in the fields of education, research and publications. Organization is an opening platform for all students, teachers, industry persons, researchers and delegates for sharing their ideas and contributing in the deliberation on current developments in the field of Science and Technology.

Times are changing. People are beginning to realize the importance of ideas and the power of thinking and learning. We need inspiration, not just information that is gathered mechanically. We need passion and courage to bring forth the unknown to the scientific community who shall further concepts beneficial to mankind. KLE is a wonderful platform for breeding disciplined young minds with research orientation aptitude. Conferences are taking place to mold inquisitiveness into a concrete reality through exercises into experiments.

K.L.E., Kalamboli's International Virtual Conference on the theme, **"RECENT ADVANCEMENTS AND EXPLORATION IN COMPUTER APPLICATIONS"** shall provide an apt path for creation and re-creation of existing as well as new teaching and learning technological wonders now and in the future to come.

I applaud the efforts of the Organizing Committee of the Conference and wholeheartedly welcome all distinguished speakers, scholars presenting papers and the participants to this conference.

Lastly with quotes of William A. Ward, I advise young and beautiful minds:

"**PLAN PURPOSEFULLY, PREPARE
PRAYERFULLY, PROCEED
POSITIVELY, PURSUE PERSISTENTLY**"

GOVERNING BODY CHAIRMAN'S MESSAGE

SHRI. MAHANTESH KAVATAGIMATH

(Governing Body Chairman)

In the present-day world, we need to explore and study the various aspects of technical innovations and scientific discoveries for the development of humans as well as machines. The Information Technology Department of K.L.E, Kalamboli has organized an International Conference on the theme **"RECENT ADVANCEMENTS AND EXPLORATION IN COMPUTER APPLICATIONS"** to showcase the technological development in the field of computer science and information technology . The theme hereby provides a platform to researchers, academicians, scholars and industrialists to share and further explore their findings.

As human beings with intellect we need to constantly find things unknown to us. I am sure that this Conference will provide delegates from various parts of India, a great opportunity for fruitful deliberations and enhance the knowledge of young minds in various fields thereby providing an opportunity to interact with one another and experts to enhance their research skills and knowledge. Best wishes to the Organizing Committee and researchers for the successful outcome of the Conference.

PRINCIPAL'S MESSAGE

Dr. G. D. GIRI
Principal

On behalf of KLE Institutions, I extend my very warm welcome to all delegates and participants, who are present for the International Conference on the Subject **"RECENT ADVANCEMENTS AND EXPLORATION IN COMPUTER APPLICATIONS"**. K.L.E.Society was founded on November 13, 1916 by seven young visionary teachers known as 'Saptarishis'. For the last 105 years the society has been committed towards ensuring the students their own space to learn, grow and broaden their horizon of knowledge by indulging into diver's spheres of learning. Under the guidance of our management KLE continues to lead the way of success with zeal and confidence.

Presently, our nation India stands among the world's top 10 countries in terms of high-quality scientific research and publications. Further, India ranks third among the most attractive investment destinations for technology transactions in the world. Science and Technology are key elements in economic growth.

However, many challenges are being faced at the transformation stage in respect of strategic planning. We wish to discuss 5 deliberate dynamics of recent changes and trends in science and technology.

The confession aims to exchange different ideas, ideologies and also to develop long term relations amongst the researchers and institutions. The main theme and subthemes for this conference are expressive of concerned research areas to give the potential participant innovative prepositions about the scope of discussion. We have invited eminent dignitaries from different sectors for the better understanding of subject matters.

Welcome you all to K.L.E institutions Kalamboli, Navi Mumbai and hope that this conference will provide a platform for all of us present here to give thought to the topic discussion and encourage us.

Thank You!

Preventing Living Life: Step Towards Green IT

Asst. Prof. Sayma Natekar[1] Kadam Prathamesh Bajrang[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

Technology plays a crucial role in daily life and has both beneficial and detrimental impacts. Children and teenagers who are still developing may be more negatively impacted by excessive usage of technology. Office work, retail, entertainment, television, travel, transportation, and long distance communications are just a few of the fields that have been revolutionized in recent decades by digital technology. Nowadays, it's hard to find an electrical gadget or a big equipment that doesn't use digital technology in some capacity. However, digital technology also has a very sinister side. Your head hurts a lot, and your eyes tingle from staring at screens all day. Your back hurts from hunching over your desktop or laptop while working. Additionally, you are unable to spend more than an hour without checking your phone. Studies confirm that technology does not, in fact, benefit your health in any positive way. However, prevention is essential now since failing to act now could lead to a major disaster later on.

Keywords : Technology – Overuse - Revolution – Prevention – Crisis

Introduction:

We must be aware that everything in this world has its own disadvantages in an era where people have evolved and are now representing everything digitally. Green IT practices aim to reduce the use of hazardous chemicals, increase energy efficiency over the course of a product's lifetime, and encourage the biodegradability of unused and old items. Unknowingly, our bodies adapt to technology, and we are unaware of what occurs or how different bodily parts are impacted. Technology has advanced so much over the past ten years that more than 45% of people

worldwide are now dealing with various health problems. Depression, eye strain, bad posture caused by back difficulties, sleep concerns, engaging in fewer physical activity, aggression, and many other symptoms are among them.

Green IT:

The technique of developing and utilizing ecologically sustainable computing is known as green IT (green information technology). Green IT works to reduce the harm that IT activities cause to the environment by designing, producing, using, and disposing of PCs and computer-related products responsibly. Reducing the use of hazardous materials, increasing energy efficiency over the course of a product's lifetime, and promoting the biodegradability of unneeded and outmoded items are some of the goals of green IT practices. The U.S. Environmental Protection Agency introduced Energy Star, a voluntary labelling scheme that highlights goods that achieve exceptional energy efficiency, in 1992, introducing the idea of green IT. Utilizing Energy Star products helps businesses and consumers cut costs and greenhouse gas emissions. Redesigning data centers, using more virtualization, green networking, and cloud computing are other aspects of green IT. However, green IT also provides us with prevention strategies so that in addition to the environment, living things may also be treated for a variety of issues.

Technology:

Not only is technology advancing, but it is also altering how we live. In a very short amount of time, it is assisting us in producing more than we could have imagined. We now have the chance to discover other worlds thanks to technological advances. We can now communicate with people all around the world thanks to the internet. Nowadays, sending emails, images, and even money throughout the world has gotten far too simple. All of these things are easily accomplished while seated at home and with a few mouse clicks. What impact does technology have on our lives, and what can be done to make them better as a result?

Causes:

Children's growing brains may be more vulnerable than adult brains to the negative impacts of technology and its misuse. Children utilizing various technology may have unfavorable impacts, according to a 2018 analysis of several research. Children who use technology excessively may be more susceptible to problems such as:

- Low academic performance
- Lack of creativity
- Delayed language development
- Delayed social and emotional development
- Obesity
- Poor sleep
- Social difficulties including social incompatibility and anxiety
- Aggressive behavior
- Technology addiction and increased BMI are just a few examples.

The majority of daily digital technologies are passive. Extended use of these technology promotes sedentary behavior, which is known to have harmful impacts on health, including causing obesity, cardiovascular disease, type 2 diabetes, and early mortality.

Green IT Prevention Methods:

Every problem begins at a small size, and green computing not only works on larger scales. By utilizing technology for the right amount of time, getting enough rest, and relaxing our minds from those harmful ongoing digital works, we can protect ourselves from technology. Whenever you plan to sit for an extended period, use appropriate furniture. Avoid using the gadgets excessively since this might cause eye strain. keeping the appropriate distance from displays.

You can't just toss your phone away, no matter how much you might want to. It offers a lot of advantages that improve, simplify, and make life more convenient. The secret is to be deliberate about how you use your phone and other devices. Chat applications, social networking, and other new technologies all have their drawbacks. They might be useful tools, but they can also drain you dry and leave you feeling emotionally drained, worried, and preoccupied. Examine your current patterns and make technology detoxification a top priority if you want to have a better relationship with technology. To regulate your technology use, hit the reset button, and create new and improved tech habits going ahead, there are several things you can do.

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What is green IT (green information technology) and why is it important? (techtarget.com)

Technology destroys people and places. I'm rejecting it | Mark Boyle | The Guardian

Introduction To Microsoft

Asst. Prof. Kuldeep Prabhu[1] Vinit Vijay Singh[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

INTRODUCTION:

Microsoft Corporation Technology is an integral part of life in today's constant and fast-paced world. A plethora of companies have worked to advance this technology, and the Microsoft Corporation is one of the largest in the industry.   Microsoft is Owned by the world's richest man Mr. Bill Gates. His Full Name is William Henry Gate, he was born in a Upper middle class family on 28 October 1955. He now holds a net worth of 10,500 Dollars . Many books are written on him on of the famous books is BILL GATES Success secrets (VISIONARIES WHO CHANGED THE WORLD SERIES) written by George Ilian a famous writer. *"Business is a money game with few rules and a lot of risk" -BILL GATES*

The birth of Microsoft is a interesting story. In 1975 Bill Gates and Paul G. Allen, two boyhood friends from Seattle, converted BASIC, a popular mainframe computer programming language, for use on an early personal computer (PC), the Altair. Shortly afterward, Gates and Allen founded Microsoft, deriving the name from the words microcomputer and software. During the next few years, they refined BASIC and developed other programming languages. In 1980 International Business Machines Corporation (IBM) asked Microsoft to produce the essential software, or operating system, for its first personal computer, the IBM PC. Microsoft purchased an operating system from another company, modified it, and renamed it MS-DOS (Microsoft Disk Operating System). MS-DOS was released with the IBM PC in 1981. Though Microsoft has many offices — more than 600 worldwide — its main headquarters is about thirty minutes outside Seattle in Redmond, Wash.Interactive chart of historical net worth (market cap) for Microsoft (MSFT) over the last 10 years. How much a company is worth is typically represented by its market capitalization, or the current stock price multiplied by the number of shares outstanding. Microsoft net worth as of February 06, 2023 is $1911.35B. Today, Microsoft

entities in India have over 18,000 employees, engaged in sales and marketing, research and development and customer services and support, across 9 Indian cities – Ahmedabad, Bengaluru, Chennai, Guru gram, Noida, Hyderabad, Kolkata, Mumbai and Pune.

LITERATURE REVIEW:

Since the relaunch of Microsoft Academic Services (MAS) 4 years ago, scholarly communications have undergone dramatic changes: more ideas are being exchanged online, more authors are sharing their data, and more software tools used to make discoveries and reproduce the results are being distributed openly. The sheer amount of information available is overwhelming for individual humans to keep up and digest. In the meantime, artificial intelligence (AI) technologies have made great strides and the cost of computing has plummeted to the extent that it has become practical to employ intelligent agents to comprehensively collect and analyze scholarly communications. MAS is one such effort and this paper describes its recent progresses since the last disclosure. As there are plenty of independent studies affirming the effectiveness of MAS, this paper focuses on the use of three key AI technologies that underlies its prowess in capturing scholarly communications with adequate quality and broad coverage: (1) natural language understanding in extracting factoids from individual articles at the web scale, (2) knowledge assisted inference and reasoning in assembling the factoids into a knowledge graph, and (3) a reinforcement learning approach to assessing scholarly importance for entities participating in scholarly communications, called the saliency, that serves both as an analytic and a predictive metric in MAS. These elements enhance the capabilities of MAS in supporting the studies of science of science based on the GOTO principle, i.e., good and open data with transparent and objective methodologies. The current direction of development and how to access the regularly updated data and tools from MAS, including the knowledge graph, a REST API and a website, are also described.

METHODOLOGY & EXPERIMENTATION:

Microsoft's Experimentation Platform (ExP) provides a platform used by product teams across Microsoft to run 1,000s of A/B tests every month. From a product perspective this means that we

have a big responsibility both as a steward for data-driven decision-making and as an innovative center of excellence. As a result ExP's product team must prioritize effectively to maximize the impact of investments, balancing long-term goals with ongoing customer feedback. In this post we describe some of the strategies and processes that we use to build a world–class scalable experimentation platform with a core focus on trustworthy A/B testing.

Regularly engage to accelerate the A/B testing flywheel: As a platform team we have several ways to engage with our customers to accelerate their A/B testing flywheel journey [1]. To ensure that our customers are successful at ramping up A/B testing for their products, we support their continuous and iterative development process by organizing periodic joint initiative reviews that include participants from product, data science, and engineering. To prepare for each initiative review, we collaborate with our customers to write a document that summarizes highlights and lowlights, checks in on progress, and captures opportunities for improvement and new feature requests [2]. These documents are reviewed in a meeting with dedicated reading and commenting time during the first half followed by discussion of any feedback, comments, and decision in the second half to encourage a high-quality conversation.

RESULT & DISSCUSION:

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following Management's Discussion and Analysis ("MD&A") is intended to help the reader understand the results of operations and financial condition of Microsoft Corporation. MD&A is provided as a supplement to, and should be read in conjunction with, our financial statements and the accompanying Notes to Financial Statements.

OVERVIEW AND OUTLOOK:

Microsoft is a technology leader focused on helping people and businesses throughout the world realize their full potential. We create technology that transforms the way people work, play, and communicate across a wide range of computing devices.

We generate revenue by developing, licensing, and supporting a wide range of software products and services, including cloud-based services, by designing and selling hardware, and by delivering relevant online advertising to a global audience. Our most significant expenses are related to compensating employees, designing, manufacturing, marketing, and selling our products and services, and income taxes.

Industry Trends:

Our industry is dynamic and highly competitive, with frequent changes in both technologies and business models. Each industry shift is an opportunity to conceive new products, new technologies, or new ideas that can further transform the industry and our business. At Microsoft, we push the boundaries of what is possible through a broad range of research and development activities that seek to anticipate the changing demands of customers, industry trends, and competitive forces.

Key Opportunities and Investments:

Based on our assessment of key technology trends and our broad focus on long-term research and development of new products and services, we see significant opportunities to drive future growth.

Smart connected devices:

The price per unit of processing, storage, and networks continues to decline while at the same time devices increase in capability. As a result, the capabilities and accessibility of PCs, tablets, phones, televisions, and other devices powered by rich software platforms and applications continue to grow. At the same time, the information and services people use increasingly span multiple devices enabled by the adoption of cloud computing.

For example, the delivery and quality of unified entertainment experiences across devices is undergoing dramatic evolution. These rich media experiences include books, magazines, newspapers, games, movies, music, television, and social interactions with family, friends, and

colleagues. At Microsoft, our approach is to simplify and increase the accessibility of these entertainment experiences to broaden market penetration of our software, hardware, and services.

Additionally, web content and social connections have increased tremendously as people spend more time online, while discoverability and accessibility has been transforming from direct navigation and document links. There is significant opportunity to deliver products and services that help users make faster, better decisions and complete tasks more simply when using their devices. Our approach is to use machine learning to understand user intent, and differentiate our products and services by focusing on the integration of speech, visual, social, and other elements to simplify people's interaction with the Internet.

We invest significant resources in enabling and developing smart connected devices that offer a unified, seamless experience across a common platform. Whether a PC, Windows Phone, Xbox 360, or the newly announced Surface

Figure 1ation

 devices, our goal is to provide users with a consistent and compelling experience through a common user interface and our services such as SkyDrive, Xbox LIVE, Bing, Skype, and our Windows Azure cloud platform.

RESULTS OF OPERATIONS:

Summary

(In millions, except percentages and per share amounts)   2012   2011   2010   Percentage

Change 2012

Versus 2011   Percentage

Change 2011

Versus 2010

Revenue $ 73,723 $ 69,943 $ 62,484   5%   12%

Operating income	$ 21,763	$ 27,161	$ 24,098	(20)%
13%			

Diluted earnings per share	$ 2.00	$ 2.69	$ 2.10
(26)%	28%		

CONCLUSION:

Microsoft Word allows you to create simple word processing documents like letters and reports effortlessly, allowing you to add color and clip art. Writing in various fonts and sizes and using tables, borders & bullet formatting reduces tediousness and increases productivity.

REFERENCES:

References for the above topic Microsoft on this research paper are books and some helpful websites in internet. One of the famous note which is written by Microsoft.

EMPOWERING OTHERS

" Our mission is to empower every person and every organization on the planet to achieve more……" -MICROSOFT

The Impact Of Technology On Performance Analysis In Sports

Asst. Prof. Rajashree Salokhe[1], Tanay Kudale[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

The impact of technology on performance analysis in sports has been significant in recent years. With the advancements in wearable technology and sports data analytics, it is now possible to gather, process, and analyze an immense amount of data related to an athlete's performance. This data can be used to gain a deeper understanding of an athlete's strengths and weaknesses, track progress, and optimize training regimes. The use of technology also helps to provide more accurate and objective performance assessments, which can be used to improve decision-making in sports. This research paper aims to explore the various ways in which technology is being used to improve performance analysis in sports, the benefits and limitations of these methods, and the future outlook for this field. Through a review of existing literature and case studies, this paper will provide insights into the current state of the art in performance analysis technology and its impact on the sports industry.

INTRODUCTION:

The world of sports has been revolutionized by technology in recent years. With the advent of wearable technology, advanced data analytics tools, and new technologies, it is now possible to collect and analyze vast amounts of data related to an athlete's performance. This has led to a new era of performance analysis, where data and technology play a crucial role in improving athlete performance, tactical decision-making, and overall sports performance. Technology has opened up new opportunities for coaches, sports scientists, and athletes to better understand an athlete's strengths, weaknesses, and performance trends. This data can be used to optimize training regimes, prevent injuries, and provide a more accurate assessment of an athlete's

performance. The use of technology in performance analysis has also had a significant impact on the way fans engage with sports, with new data-driven insights and analysis helping to deepen their understanding of the game.

LITERATURE REVIEW

The use of technology in sports performance analysis has been the subject of much research in recent years, with numerous studies exploring the benefits and limitations of these methods. Here, we will provide a review of some of the key findings from this literature. One of the main areas of research in this field has been the use of wearable technology, such as GPS devices and accelerometers, to collect data on athlete performance. These devices can provide real-time data on an athlete's physical activity levels, including speed, distance, and intensity, which can be used to track progress and optimize training regimes. For example, studies have shown that GPS data can be used to monitor the physical demands of soccer players during training and games, with this information being used to plan and adjust training programs to reduce the risk of injury (Baron et al., 2018). Another important area of research has been the use of data analytics in sports performance analysis. With the vast amounts of data that can be collected from wearable technology and other sources, it is now possible to use machine learning algorithms and data visualization tools to identify patterns and trends in performance data.

METHODOLOGY & EXPERIMENTATION

The methodology and experimentation section of a research paper on the impact of technology on performance analysis in sports can involve several different approaches. Depending on the research questions being addressed and the specific focus of the study, the methodology used may include a combination of experimental design, data collection, and analysis methods. Here, we will outline some of the key components of a methodology for this type of research.

 Experimental Design: The experimental design used in a study on the impact of technology on performance analysis in sports will depend on the research questions being addressed and the data being collected.

 Data Collection: The data collection process will vary depending on the type of technology being used and the specific research questions being addressed. For studies using wearable technology, data collection may involve the use of GPS devices, accelerometers, or other wearable sensors to track physical activity levels in real-time.

 Data Analysis: The data analysis methods used in a study on the impact of technology on performance analysis in sports will depend on the specific research questions being addressed and the type of data being collected.

RESULTS & DISCUSSIONS:

Results: The results section would present the findings of the study in a clear and concise manner, using tables, figures, and descriptive statistics as necessary. The results would provide answers to the research questions posed in the introduction and should be presented in a way that allows the reader to easily understand the key findings. For example, if the study focused on the effectiveness of wearable technology in tracking physical activity levels in soccer players, the results section might present descriptive statistics on the physical activity levels of the intervention group and the control group, along with inferential statistics to compare these groups.

Discussion: The discussion section would provide a deeper interpretation of the results, exploring the implications of the findings and placing them in the context of the broader literature. The discussion would address the strengths and limitations of the study, highlighting any unexpected findings and exploring the implications of these results for future research.

CONCLUSION

The conclusion section of a research paper on the impact of technology on performance analysis in sports would summarize the main findings of the study and provide insights into the broader implications of these results. This section should be concise and clearly articulate the key contributions of the study to the field of sports performance analysis. Here, we will outline some of the key components of a conclusion section for this type of research.

Summary of Key Findings: The conclusion section should provide a clear summary of the key findings of the study, highlighting the main contributions of the research to the field of sports performance analysis. This section should be concise and should focus on the most important results of the study, avoiding the use of extraneous or irrelevant information.

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The Impact Of AI On Society And The Workforce

Asst. Prof. Rajashree Salokhe[1], Priti Pujari[2]

[1]Assistant Professor, [2] T.Y.BSc(IT) Department of Information Technology

K.L.E SOCIETY'S SCIENCE AND COMMERCE COLLEGE KALAMBOLI, NAVI MUMBAI

ABSTRACT:

AI has the potential to revolutionize many industries and transform the way we live and work, but it also presents challenges and risks that need to be addressed. This research paper aims to examine the current and future impact of AI on society and the workforce, exploring both the benefits and the challenges that AI presents. On the positive side, AI has the potential to improve efficiency, productivity, and decision-making across a wide range of industries, from healthcare and finance to retail and education. For example, AI algorithms can process vast amounts of data, identify patterns and trends, and make predictions in ways that would be impossible for humans. This can lead to improved outcomes and reduced costs in many areas. However, AI also presents a number of challenges that need to be addressed. One of the biggest challenges is the potential impact of AI on employment, as automation and the use of AI systems may displace human workers in many industries.

INTRODUCTION:

As AI systems become more advanced, their potential impact on society and the workforce is becoming increasingly significant. However, the effects of AI are complex and multifaceted, and can be both positive and negative. On the one hand, AI has the potential to improve efficiency, productivity, and decision-making across a wide range of industries, leading to improved outcomes and reduced costs. For example, AI algorithms can process vast amounts of data, identify patterns and trends, and make predictions that would be impossible for humans. On the other hand, AI also presents a number of challenges and risks, including the potential for job displacement and the need for policies and programs to help workers adapt to the changing landscape of the workforce.

Additionally, AI systems are only as fair and unbiased as the data they are trained on, raising concerns about the potential for bias and discrimination in AI-powered decision-making.In this research paper, we will examine the current and future impact of AI on society and the workforce, exploring both the benefits and the challenges that AI presents. We will consider the potential for job displacement, the need for policies and programs to help workers adapt, and the potential for bias and discrimination in AI-powered decision-making.Our goal is to provide a comprehensive and nuanced understanding of the impact of AI on society and the workforce.

LITERATURE REVIEW:

Many experts have explored the potential benefits and challenges of AI, and the ways in which it may impact the workforce and the wider society.One of the key areas of concern is the potential for job displacement, as automation and the use of AI systems may displace human workers in many industries. Studies have shown that AI has the potential to automate many tasks that are currently performed by human workers, and that this could lead to significant job losses in certain industries.

However, other studies have suggested that the impact of AI on employment may be more nuanced, and that AI may also create new job opportunities in areas such as data analysis and AI development. Another area of concern is the potential for bias and discrimination in AI-powered decision-making. Studies have shown that AI systems are only as fair and unbiased as the data they are trained on, and that if the data used to train an AI system is biased, the system may perpetuate that bias in its predictions.

METHODOLOGY & EXPERIMENTATION:

In order to understand the full impact of AI on society and the workforce, a combination of qualitative and quantitative research methods may be used. Quantitative research methods, such as surveys, may be used to gather data on the current and future use of AI in various industries and to understand the extent to which AI is likely to displace human workers.

Surveys may be used to gather data from workers in different industries, employers, and experts in the field of AI. This data may then be analyzed to identify trends, patterns, and projections for the future use of AI in the workforce. Qualitative research methods, such as interviews and case

studies, may be used to gain a deeper understanding of the human and social impacts of AI. Interviews with workers, employers, and experts in the field of AI may be used to explore the attitudes and experiences of different stakeholders with regards to the impact of AI on society and the workforce.

RESULTS & DISCUSSIONS:

One of the key findings is likely to be the extent to which AI is changing the job market and the workforce. Studies have shown that AI has the potential to automate many tasks that are currently performed by human workers, and that this could lead to significant job losses in certain industries. However, it is also clear that AI may also create new job opportunities in areas such as data analysis and AI development. Another key finding is likely to be the impact of AI on privacy and data security. As AI systems become more widespread, there is a growing concern about the security of personal and sensitive information.

CONCLUSIONS :

While AI has the potential to improve efficiency, productivity, and decision-making across a wide range of industries, it also presents important challenges and risks that need to be addressed. Studies have shown that AI has the potential to automate many tasks that are currently performed by human workers, and that this could lead to significant job losses in certain industries. However, it is also clear that AI may also create new job opportunities in areas such as data analysis and AI development. Another area of concern is the potential for bias and discrimination in AI-powered decision-making. It is clear that AI systems are only as fair and unbiased as the data they are trained on, and that if the data used to train an AI system is biased, the system may perpetuate that bias in its predictions and decisions. Finally, the impact of AI on privacy and data security.

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Exploring the Possibilities of Cloud Gaming: A Look into the Next Generation of Computer Games

Asst. Prof. Rajashree Salokhe[1] , Ankit Singh[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT:

Cloud gaming, also known as gaming-as-a-service or gaming on demand, is a concept where game software is run on a powerful server and streamed to a less capable device using lightweight software. This allows users to interact with the game. Unlike traditional gaming where games are stored and played on the user's device using accessories like a mouse, keyboard, and monitor, cloud gaming eliminates the need for local storage and heavy hardware. The purpose of this research paper is to investigate what cloud gaming is, its potential to transform the gaming industry, and its capability to reach every gamer in an efficient and effective manner.

INTRODUCTION:

In June 2010, the concept of cloud gaming was introduced. Instead of relying on local servers, it utilizes cloud servers to run games with the aim of providing a more accessible and cost-effective gaming experience. A key benefit of cloud gaming is that users don't have to constantly upgrade their hardware to play the latest games.

To play a game via cloud technology, there's no need for external devices or prior installations. The server handles all that for you by streaming the game from a remote location, allowing you to see and interact with it on your device in real-time.

What makes cloud computing a game changer is its cost-effectiveness, allowing users to enjoy high-end gaming experiences without breaking the bank. Similar to streaming services like

Amazon Prime, the only difference is that the video is streamed from a server instead of being stored locally. This eliminates the need for expensive hardware like a PlayStation, Xbox, or graphic card and instead, only requires a stable and fast internet connection. The added bonus is the ability to play games on mobile devices, opening up a wide range of possibilities for cloud gaming.

ARCHITECTURE:
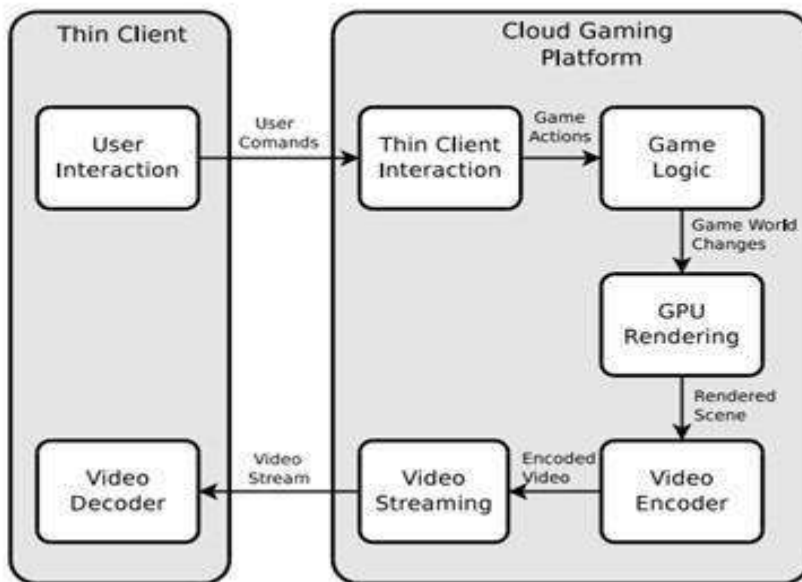
Typically, there are three different types of remote delivery systems for real-time applications:

• 3D Graphics Streaming

• Video Streaming

• Video Streaming with Post-Delivery Operations

In the 3D Graphics framework, the cloud worker sends graphical commands to the client, which then interprets and renders the scene accordingly. With Video Streaming, the worker is responsible for processing the 3D commands, converting them to 2D, and then transmitting the video stream to the client. The third framework is a hybrid of the first two, where the majority of the heavy processing for delivering the 3D graphics is handled by the worker, while some low-intensity tasks are completed on the client side through a thin client.

There have been various designs proposed for thin client systems in distributed gaming environments([4]). These designs can be divided into two categories: command-based systems and image-based systems. The main difference between the two is that in command-based systems, only the instructions for generating the graphics in response to a control event are transmitted remotely, while in image-based systems, all the computationally intensive rendering of the game scene is done on the worker side and transmitted remotely as a video stream. Most Cloud Gaming Systems (CGSs) utilize image-based thin client designs because they eliminate the need for customers to have computing resources, which is the key selling point of Cloud Gaming.

THE PROCESS FLOW:
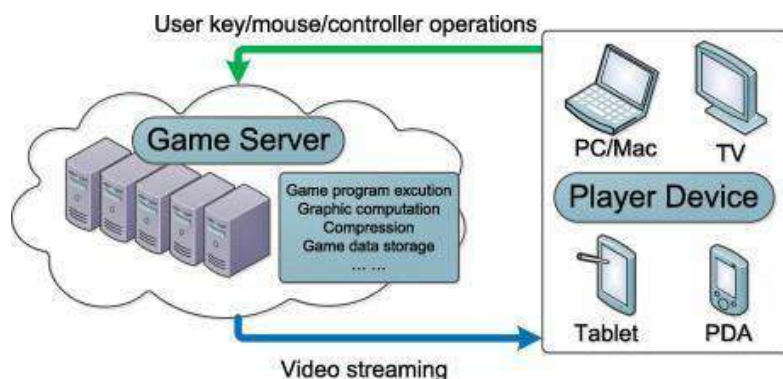
When a player utilizes a cloud gaming service, a sequence of events takes place to initiate the gaming experience.

The steps involved in a cloud gaming experience can be summarized as follows:

• The player performs an action, such as pressing a button, moving a joystick or mouse, or anything else.

• The customer device collects the player's actions.

• It sends the actions to the cloud server over a specified network route.

• Upon receiving the player's actions, the cloud server processes them in the game.

• The server then executes the results in the game, such as firing a weapon, jumping, or flipping a switch.

• For each frame of the game, the server must send the results back to the player. It encodes the changes in the scene and compresses the information into a stream that can be transmitted back to the player.

• The server then sends the encoded game scene to the player's downlink device.

• The customer device receives the stream and decodes it into a video format that the player can see.

• The process repeats itself over and over again.

This sequence must occur smoothly and continuously in a matter of milliseconds. If it takes longer, the player may experience the frustrating phenomenon of lag.

ADVANTAGES:

The growth of the gaming industry has been exponential and it generates an estimated revenue of $68 billion. Cloud gaming has several benefits, including:

A. Enhanced Security:

Cloud gaming ensures the safe storage of user and game data on secure servers, reducing the risk of data breaches. This means that players can enjoy their favorite games without having to worry about their privacy.

B. Reduced Piracy:

The use of cloud servers helps to reduce piracy as game content is organized and managed by the service providers, making it difficult for the game to be manipulated.

C. Accessibility:

Cloud gaming allows players to access games from anywhere in the world and play them on any device, without the need to download any specific applications. This means that players can enjoy their games on laptops, phones, desktops, and other devices.

D. Multiple Games

Cloud gaming offers a wide variety of games, allowing players to play multiple games at once. This not only provides an immersive experience for gamers, but also helps gaming companies to increase their revenue growth.

DISADVANTAGES:

A. Internet Speed Requirements:

One of the main drawbacks of cloud gaming is that it requires a high-speed internet connection in order to take advantage of the technology.

B. Latency:

Cloud gaming can experience latency, where there is a delay between the player's inputs and the game's response. This can be tolerable in single-player games, but it can be problematic in multiplayer games where responsiveness is crucial. Currently, no cloud gaming service is responsive enough for popular multiplayer games like Valorant and Counter-Strike: Global Offensive.

C. Ownership:

Another issue with cloud gaming is the issue of ownership. Players do not physically own the games they play, but rather stream them, similar to watching a movie on a streaming platform instead of purchasing a DVD.

D. Business Model:

The cloud gaming industry does not yet have a fully established business model. The cost of the servers and infrastructure is high, and there is still a debate on whether to charge a full price for game purchases or to offer a subscription service.

E. Video Compression:

Additionally, cloud gaming providers compress the images in order to reduce the amount of data transmitted. This can result in lower quality graphics, and players may not experience true 4K definition even if they opt for 4K streaming. Furthermore, cloud gaming consumes more data compared to video streaming, so it is important to have an unlimited data plan if connecting to the service via a mobile network.

GRAPHICS QUALITY:

Regardless of the smoothness of the streaming experience, the quality of the video is just as important. Cloud service providers must make sure they have top-notch worker hardware, equipped with the capability to handle multiple resolutions at high graphic quality. They must also have a robust network infrastructure in place to ensure the video transmission service is consistent.

OPTION FOR CLOUD GAMING SERVICE:

The choice of cloud gaming service varies based on the preferences of individual players. Here are some of the options available that can enhance the gaming experience.

A.   PC:

GeForce Now is a top choice for many gamers as it provides the convenience of playing games with a keyboard and mouse, along with an easy-to-use software.

B. Console:

Xbox Cloud Gaming and PlayStation are excellent options for those who prefer to play games on their consoles. All you need to do is install a single app to get started.

C. Mobile:

Mobile phones can be limited in terms of resources for gaming, but cloud gaming can provide high-end games to even low-end devices with a stable internet connection.

D. Tablet:

Tablets offer a better gaming experience compared to mobile phones due to their bigger screens and longer battery life, but still face similar limitations.

E. TV:

Although there are currently no services that offer cloud gaming in resolutions above 1080p, such as 4K, users with 4K TVs are unable to take full advantage of their devices' potential due to these limitations.

CONCLUSION:

The article discusses the subject of cloud gaming, covering its development and growth over the past ten years. It delves into the technical aspects of cloud gaming, including its architecture and mode of operation, as well as the advantages and disadvantages. The different cloud gaming services available in the market today and the various platforms where it can be accessed are also discussed. Finally, the article explores the potential future of the cloud gaming industry.

The article highlights the challenges faced by organizations in implementing cloud gaming, as it involves significant costs for resources such as cloud and networking. To ensure both cost efficiency and a high-quality gaming experience, careful planning and development is necessary. Without proper planning, cloud gaming providers may struggle to efficiently allocate clients to each physical machine, leading to decreased profits and potentially even bankruptcy, as seen with some early pioneers in the industry. The article is a comprehensive analysis of the current and future state of the cloud gaming market, and seeks to determine its overall potential and identify profitable trends. The market report provides insight into the key drivers, limitations, and opportunities within the industry, with a focus on the impact they may have.

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Observation Of Dynamic Climate Variation

Asst. Prof. Swapnali Anant Kadge[1] , Gaurav dubey[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract

Earth observation technology has provided highly useful information in global climate change research over the past few decades and greatly promoted its development, especially through providing biological, physical, and chemical parameters on a global scale. Earth observation data has the 4V features (volume, variety, veracity, and velocity) of big data that are suitable for climate change research. Moreover, the large amount of data available from scientific satellites plays an important role. This study reviews the advances of climate change studies based on Earth observation big data and provides examples of case studies that utilize Earth observation big data in climate change research, such as synchronous satellite aerial ground observation experiments, which provide extremely large and abundant datasets; Earth observational sensitive factors (e.g., glaciers, lakes, vegetation, radiation, and urbanization); and global environmental change information and simulation systems. With the era of global environment change dawning, Earth observation big data will underpin the Future Earth program with a huge volume of various types of data and will play an important role in academia and decisionmaking. Inevitably, Earth observation big data will encounter opportunities and challenges brought about by global climate change

Changes in mean climate are the main topic of the vast majority of studies on the impacts of climate change. These changes are more significant than changes in climate variability in terms of the output of climate models. The true effects of climate change on biological and human systems are likely being substantially understated by focusing only on changes in climate. Here, with an emphasis on the developing world, we explore briefly the potential effects of changes in climate variability and the frequency of extreme events on biological and food systems. We present new research that suggests a possible connection between future increases in food insecurity and rising climatic variability. We investigate how people currently respond to climatic variability and extremes as well as potential future adaptations. In order to effectively address the effects of climate variability and extreme events on human vulnerability and food

security, especially in agriculturally based developing countries facing the challenge of having to feed rapidly expanding populations in the coming decades, improved understanding of the full range of impacts of climate change on biological and food systems is a critical first step.

Introduction

Numerous factors contribute to climate change, which has a variety of effects on biological and human systems. Numerous studies have examined the significant spatial heterogeneity of climate change impacts; global average temperature rises conceal significant differences in temperature rise between land and sea and between high and low latitudes; precipitation increases are very likely in high latitudes, whereas decreases are likely in the majority of tropical and subtropical land regions (IPCC, 2007). It is widely predicted that climate and weather variability would rise as the earth warms. For both human and environmental systems, changes in the frequency and severity of extreme climate events as well as in the unpredictability of weather patterns will have a substantial impact. For the remainder of this century, more frequent heat stress, drought, and flooding occurrences are anticipated, and these are anticipated to have numerous negative effects in addition to those brought on by changes in mean factors alone (IPCC, 2012).

With an emphasis on the tropical and subtropical developing countries, where the negative effects of human climate change are generally expected to be highest, we address the potential effects of changes in climate variability on biological and food systems in this review. With human populations continuing to grow at an unchecked rate throughout the twenty-first century, these less developed regions of the world already face a tremendous challenge to food security (UNDESA, 2013). We begin by briefly examining the significance and costs of climatic variability and extreme events on a global scale.

The main effects of climate variability and extremes on biological and agricultural systems at various scales, as well as on human health and nutrition, are next briefly reviewed. Then, we discuss how individuals cope with climate variability and extremes and how they may adapt in the ensuing decades. Our novel research aims to link future increases in climatic variability with future increases in food insecurity. We conclude by talking about research gaps in the biophysical and socioeconomic fields and what needs to be done to better comprehend how climate variability affects people.

Climate change, climate variability and extreme events

Climate variability, as well as the frequency, severity, spatial extent, length, and timing of extreme weather and climate events, are all unavoidably changing as a result of climate change (IPCC, 2012). Fig. Fig.11 illustrates how variations in probability distributions can be shown in connection to variations in climate variability and extremes (IPCC, 2012). The top panel depicts a change in the mean, which indicates that the entire distribution has shifted towards a warmer climate. In this scenario, more hot (and record hot) weather would be anticipated along with less cold (and record cold) weather. In the middle panel, a change in the probability distribution of temperature is depicted that keeps the mean value constant while increasing the variance of the distribution.

The temperature is generally the same, but inThe probability distribution of temperature changes in the middle panel while maintaining the mean value while increasing the variance of the distribution: while the average temperature remains constant, there will be more hot and cold (and record hot and cold) weather in the future. The bottom panel depicts a scenario in which the mean of the temperature probability distribution is maintained, but the variability changes as the asymmetry moves towards the hotter portion of the distribution; in this case, we would experience relatively constant (and record-breaking) cold weather, but increases in hot weather (and record hot weather).
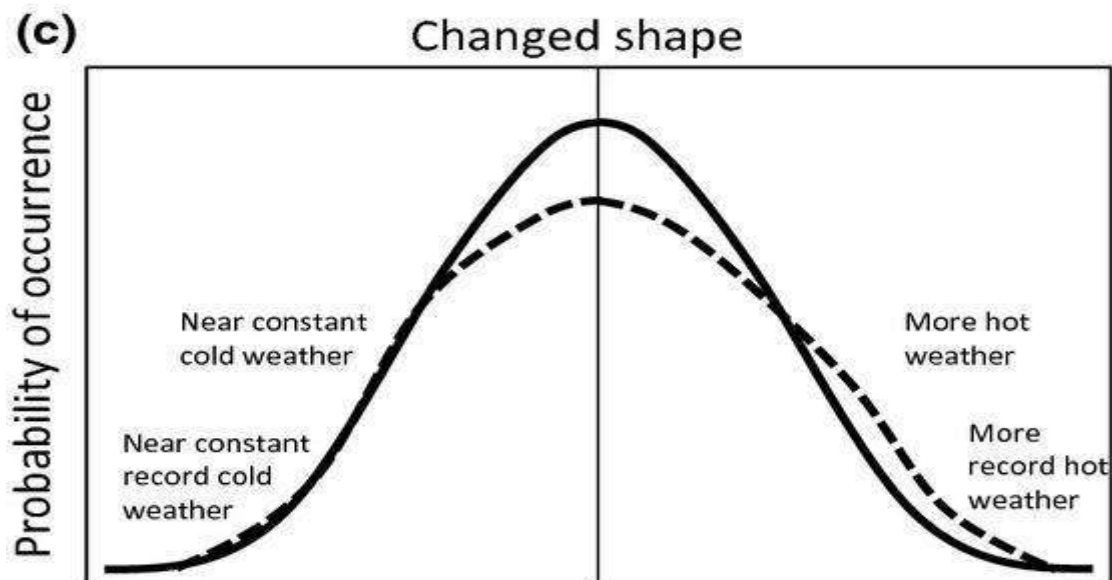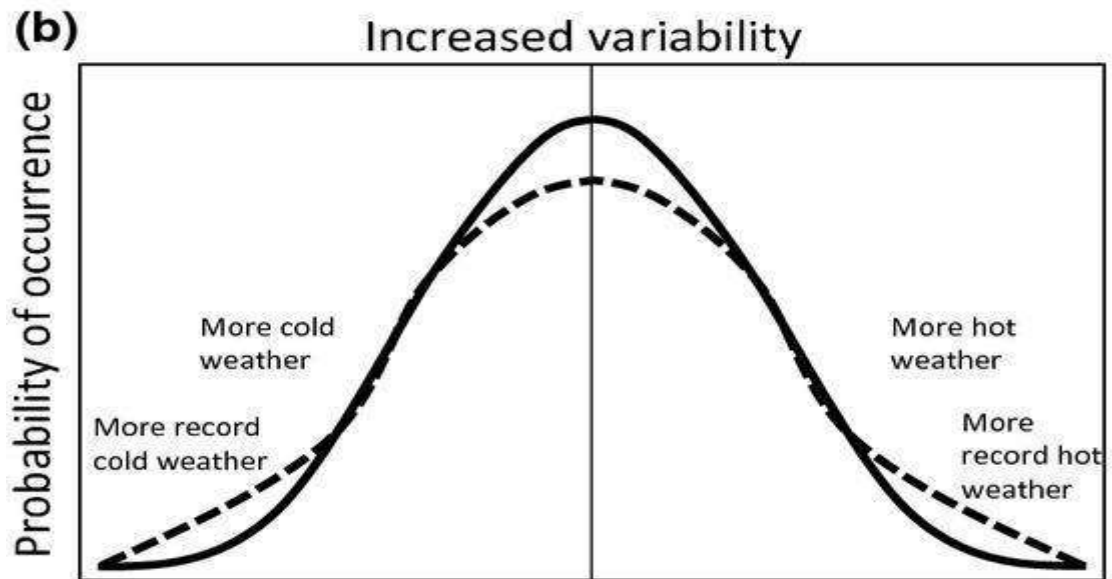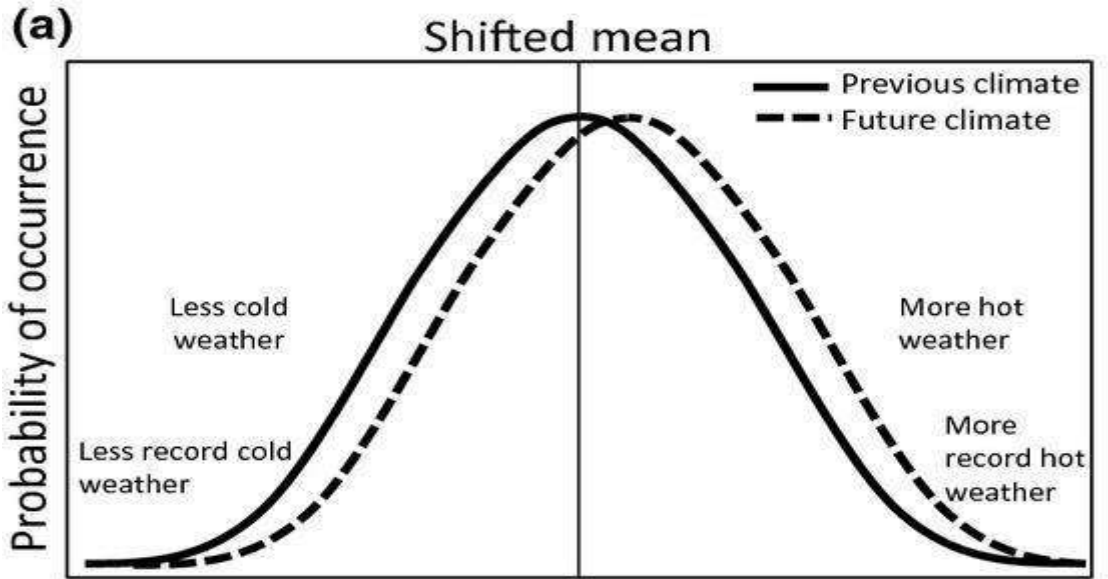
Fig.1

The impact of temperature distribution changes on extremes. Different shifts in temperature distributions between the current and future climates and their effects on extreme distribution values include (a) effects of a simple shift of the entire distribution towards a warmer climate; (b) effects of an increase in temperature variability without a shift in the mean; and (c) effects of an altered shape of the distribution, in this case a change in asymmetry towards the hotter part of the distribution. the IPCC (2012).

The effects of climate change on biological systems and the smallholders, communities, and nations that depend on them are already profound. Fig. Fig.2,2, which depicts the relationship between annual rainfall variability and changes in the gross domestic product and agricultural gross domestic product for three countries in sub-Saharan Africa, serves as an example of the significance of rainfall variability at the national level. The 12-month Weighted Anomaly of Standardized Precipitation (WASP), calculated from overlapping multimonth sums of standardised precipitation anomalies weighted in accordance with the percentage of mean annual precipitation at the given time of year, is used in Figure 2 to represent interannual rainfall variability (from the data library of the International Research Institute for Climate and Society, iridl.ldeo.columbia.edu).
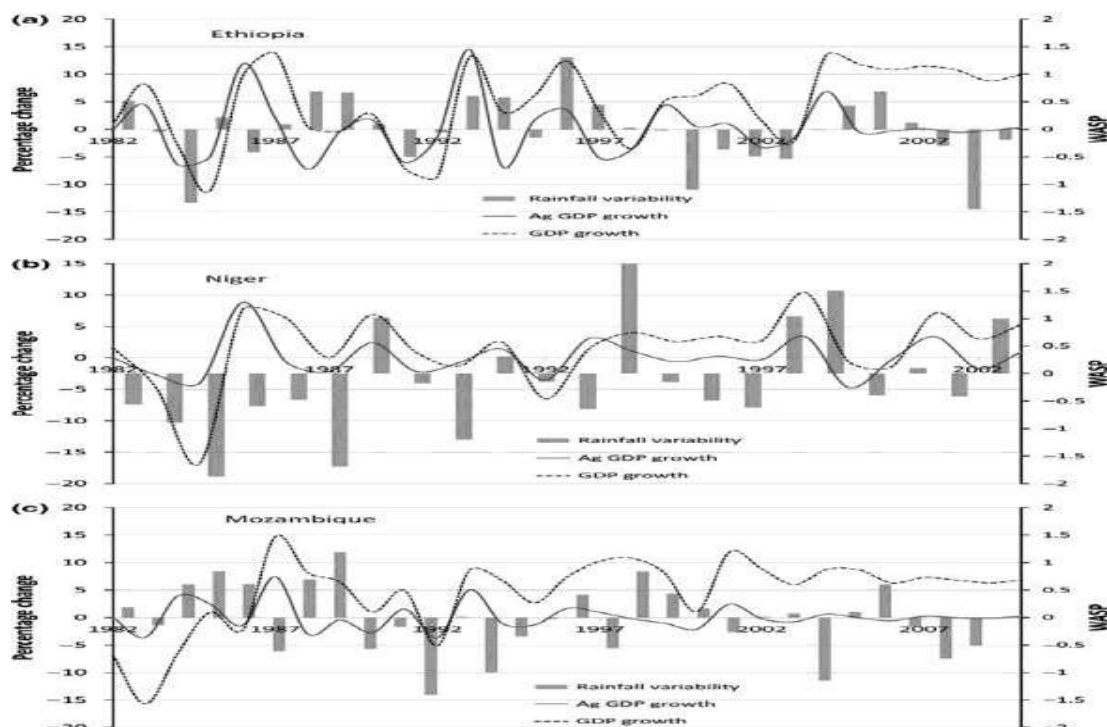
Fig.2

In three nations in sub-Saharan Africa, the 12-month Weighted Anomaly of Standardized Precipitation (WASP), which measures rainfall variability, has the following relationships with GDP growth and agricultural GDP: A) Ethiopia; B) Niger; and C) Mozambique. World Bank data can be found at data.worldbank.org/indicator, while the IRI data library can be found at iridl.ldeo.columbia.edu.

2. Background

Fossil energy combustion produces hothouse gas emigrations that serve as a mask around the earth, enmeshing heat from the sun and adding temperatures. Carbon dioxide and methane are two exemplifications of hothouse gas emigrations that are contributing to climate change. These are produced, for case, while burning coal or gasoline to heat a structure. Carbon dioxide can also be released during timber and land clearing. Methane emigrations are primarily produced by waste tips. Among the major emitters are energy, assiduity,transportation, structures, husbandry, and land use.

According to the SAR, between the late 19th century and 1994, the average global increase in land-surface air and sea surface temperature was between 0.3°C and 0.6°C. This section reexamines the recent warming using current data. We also discuss recent evaluations of the geographic pattern and diurnal asymmetry of the warming. The traditional temperature observations are complemented with satellite-based data and indirect evidence. Though these are just estimates at this point, we make the first objective evaluations of uncertainties in the surface temperature data. We also evaluate current efforts to create hemispheric and global temperature records from palaeoclimatic data, with a focus on the most recent millennium.

2.1 Temperation In The Instrumental Record for land and oceans

Note that all data sets are adjusted to have zero anomaly whenaveraged over the period 1961 to 1990

<u>Land-surface air temperature</u>

The SAR examined the three land-surface air temperature databases created by Jones (1994), Hansen and Lebedeff (1988), and Vinnikov et al (1990). Jones et al. (2001) and Hansen et al. (1999), respectively, revised the first and second datasets, and a new analysis is now accessible (Peterson andVose, 1997; Peterson et al., 1998a, 1999). The last paper additionally separates rural temperature stations from the entire set of stations in the Global HistoricalClimatology Network (GHCN) (Peterson and Vose, 1997), which, like the previous three analyses, has been checked for effects of urbanisation. While there isn't much of a difference between the whole set of station temperature trends (1880 to 1998) and the long-term (1880 to 1998) rural temperature trends (actually less at 0.65°C/century), more recent data (1951 to 1989), as stated in Peterson et al (1999), Do point to a small difference between the trends for the entire set of stations and the rural (0.80°C/century vs. 0.92°C/century). Neither difference pair, however, is statistically significant. In addition, Peterson et al. did not mention it, but the urban station trend from 1951 to 1989 was 0.10°C each decade. We come to the conclusion that whether the station distribution typically used by the four global analyses is used, or whether a special effort is made to concentrate on rural stations using elaborate criteria to identify them, has relatively little impact on estimates of long-term (1880 to 1998) global land-surface air temperature variations and trends. This lack of sensitivity is partially due to the fact that the average trends in the available worldwide urban stations for the period 1951 to 1989 are not much higher (0.09°C/decade) than those for all land stations.

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Artificial Intelligence And Machine Learning: Overview

Asst. Prof. Sayma Natekar[1] , Anmol Kakade[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

Artificial Intelligence otherwise known as AI, it is the development and the theory of some computer systems which are able to undertake certain tasks which will normally need the intelligence of humans. The tasks that are normally in need of the human intelligence are the likes of translation of languages, making decisions recognition of speech among others. Good examples of these technologies that fall under the AI are; augmented reality, Virtual Assistants, and robots. On the other hand, employee productivity can also be called workforce productivity. Productivity is evaluated in terms of the output of employees within a given time. A Lot of US multinational have embraced the use of this technology as it has been touted as leading to some financial benefits(Bobrow,2005). My research is limited to American multinational corporations like Amazon and Google.

Introduction:

I have chosen this topic to spotlight on one of the most technological trend these days known as AI (Artificial Intelligent). Therefore; I will discuss some of the most important aspects related to AI in which it will help in a better understanding of Artificial Intelligent and both its advantages and disadvantages to be able to protect ourselves from the upcoming technological trend. This paper will also discuss some of the algorithms used in AI systems.

Literature Review:

Okoli (2015) propose a systematic review process that consists of 8 steps, namely planning (2 steps), selection (2 steps), extraction (2 steps) and execution (2 steps) that are completed across 4 phases (see Fig. 1.). Each of these four phases and eight steps are discussed in detail in the remainder of the section.

Methodology:

This paper proposes a normalization of experimental designs for computational intelligence problems, such as those from cheminformatics or bioinformatics, as well as from all related disciplines where it is necessary to select the best ML model. In order to evaluate our methodology, a well-known methodology implemented in an R package was used to automate predictive modeling in regression problems. Authors observed that there was a need for standardization of methodologies in different parts of the analysis: data splitting, cross-validation methods, specific regression parameters and best model criteria.

It is important to note that this methodology uses ML algorithms in order to solve regression problems and consequently, it is a universal methodology. Unfortunately, despite the ability of those techniques to solve real-world problems, they also have drawbacks and obviously particular limitations that should be taken into account when used. Thus, a statistical analysis of the variability and stability of the techniques is essential within different runs and different initial seeds to separate the data. Moreover, cross-validation is necessary not only to select the best parameters (internal tuning phase) for each technique as proposed, but also externally, to ensure that the training of the model is not biased. There is also a minor consideration about the pre-processing of the data that arise when machine learning models are applied: how to deal with count data and imbalanced datasets.

Discussion:

This section summarises the findings of the SLR and highlights some areas that research to date as focused and the key findings from these studies. It is then followed by a discussion on the theoretical contributions and implications for practice. The overall goal is to uncover themes that are relevant for research and practice and identify areas which warrant further research. This section will discuss relevant insights we found from the literature, starting with the lack of cohesion around the definition of AI, the resurgence of AI interest and research in recent years, the specific contribution types of AI literature, and the disproportionate focus on machine learning and process automation.

In this study we conducted a SLR that provides a comprehensive overview on AI in IS related studies. By using a systematic literature review, we identified, classified, and analysed 1877 studies on AI and ML in IS that were published between 2005 and 2020. Of these, 98 were

identified as primary studies, after a rigorous filtering process. To understand the fundamentals of AI in IS we examined and studied the articles based on studies by year, publication channel, research methods used, and their contribution to IS contributions research. Prior to commencing this task however, we had to consider the problem that the definitions of artificial intelligence were largely varied and ambiguous.

Conclusions:

The term "Artificial Intelligence" include within its scope a wide range of technological processes, making it tricky to understand and hence create policy for. This literature synthesis attempts to provide a broad overview of the key technologies that compose the umbrella term referred to as AI and the key common factors/issues to its different disciplines. As is evident from this literature synthesis, the field of AI offers tremendous promises as solutions and optimisation for a variety of problem statements we face. However, equally importantly, AI also throws up key normative and practical questions of ethics and governance that will play a central role with increased adoption of these technologies. While the some of the tensions between efficiencies promised by AI, and the criticisms pointed to by those advocating greater caution in its adoption may appear irreconcilable, it is important to delve into these points of conflict, so that we are able to rethink some the existing legal and regulatory paradigms, and create new ones if required.

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AngularJS : The Newest Technology In Creating Web Applications

Asst. Prof. Kuldeep Prabhu [1] Tamanna Jangra[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

This article is the result of searching and selecting new technologies that help programmer in web applications. It also represents a way for using it, showing its advantages and disadvantages. It is a synthesis and a guide of good practice for innovative programmers. All technical issues presented by a case study.

Keywords: AngularJS , Java point, MVC.
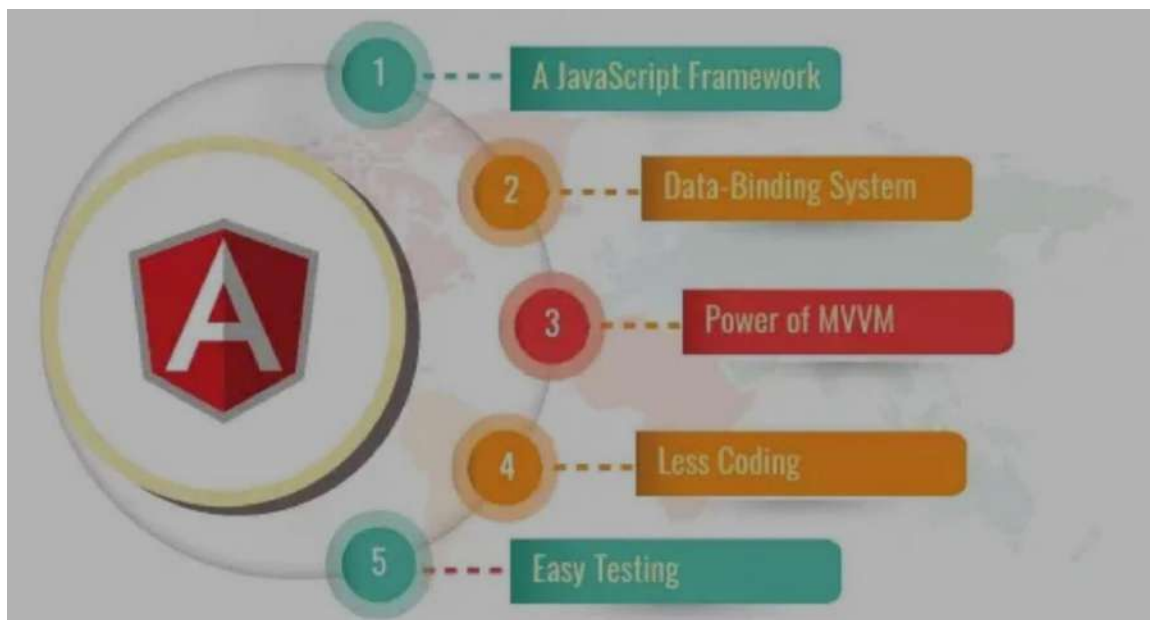
Introduction:

AngularJS is a JavaScript open-source front-end structural framework that is mainly used to develop single-page web applications (SPAs). It is a continuously growing and expanding framework which provides better ways for developing web applications. It changes the static HTML to dynamic HTML. AngularJS is rapidly growing and because of this reason, we have

different versions of AngularJS with the latest stable being 1.7.9. It is also important to note that Angular is different from AngularJS. It is an open-source project which can be freely used and changed by anyone.

Why AngularJS?

Rather than abstracting away HTML, CSS, and/or JavaScript or by offering an autocratic way to manipulate DOM, AngularJS overcomes HTML competence with dynamic views in a rich web application (RWA).

AngularJS is the frontend part of the MEAN stack, which is also consist of   Mongo DB database, Express.js web application server framework, Angular.js itself, and Node.js server runtime environment. MEAN stack is the long-term replacement to LAMP stack (Linux, Apache, MySQL, and PHP).

- **Single Page Applications (SPA)**

AngularJS is a JavaScript-based front-end web framework based on bidirectional UI data binding and is used to design Single Page Applications. Single Page Applications are web applications that load a single HTML page and only a part of the page instead of the entire page gets updated with every click of the mouse.

Popular applications such as Facebook, Gmail, Twitter, Google Drive, Netflix, and many more are examples of SPA

- **Bidirectional data-binding**

In AngularJS, **Data Binding** refers to the synchronization between the model and view. In **Two-way data binding**, the flow of data is bidirectional i.e. when the data in the model changes, the changes are reflected in the view and when the data in the view changes it is reflected in the model.

- **Rich Internet Applications (RIA)**

A rich Internet application (RIA) is **a Web application designed to deliver the same features and functions normally associated with desktop applications**. The distinguishing characteristics of RIAs are related to technological features used to build this kind of web applications. These features are **data distribution, distribution of page computation, asynchronous communication between client and server and enhanced user interface behaviour**.

- **Model View Controller (MVC)**

The Model View Controller segregates user interfaces into 3 parts: The model, which contains the data. The view, to which the data is presented to. The controller, which acts as a negotiator between user and model.

- **Model–View–View Model (MVVM)**
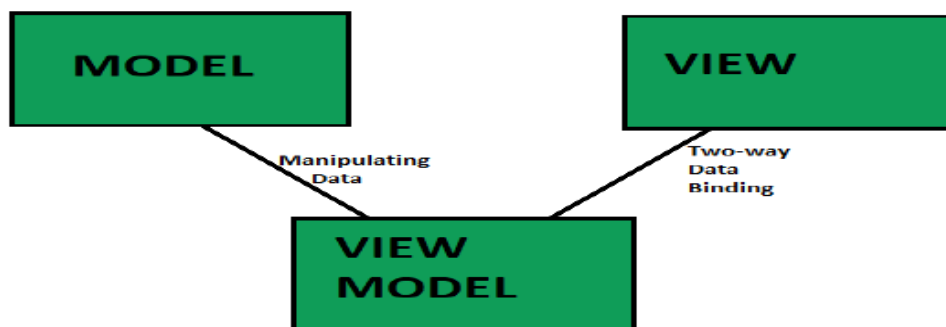
- **MODEL:** Business Objects that encapsulate data and behavior of application domain, Simply hold the data.
- **VIEW:** What the user sees, The Formatted data.
- **VIEWMODEL**: Link between Model and View OR It Retrieves data from Model and exposes it to the View. This is the model specifically designed for the View.

- **REST Easy:**

RESTful actions are quickly becoming the standard for communicating from the server to the client. In one line of JavaScript, you can quickly talk to the server and get the data you need to interact with your web pages.

AngularJS turns this into a simple JavaScript object, as Models, following the MVVM (Model View View-Model) pattern.

- **Dependency Injection (DI)**

A developer just passes the dependency to the module and AngularJS takes care of everything and will inject them whenever the application needs.

To produce a controller, pass scope object and other dependencies to the module's controller function. For instance, to produce a Product Controller, we are passing scope object and Calculator service dependencies.

Angular JS – MVC Architecture

Model View Controller or MVC as it is popularly called, is a software design pattern for developing web applications.

The Model

The model is responsible for managing application data. It responds to the request from view and to the instructions from controller to update itself.

The View

A presentation of data in a particular format, triggered by the controller's decision to present the data. They are script-based template systems such as JSP, ASP, PHP and very easy to integrate with AJAX technology.

The Controller

The controller responds to user input and performs interactions on the data model objects. The controller receives input, validates it, and then performs business operations that modify the state of the data model.

JavaScript (JS)

JavaScript (JS) is a lightweight, interpreted, or just-in-time compiled programming language with first-class functions. While it is most well-known as the scripting language for Web pages, many non-browser environments also use it, such as Node.js, Apache CouchDB and Adobe Acrobat.It is a text-based, object-oriented programming language used to make web pages and apps more dynamic and interactive for visitors.JavaScript is a programming language that adds interactivity to your website. This happens in games, in the behavior of responses when buttons are pressed or with data entry on forms; with dynamic styling; with animation, etc.

Conclusion:

AngularJS is a structural framework for dynamic web apps. AngularJS provides developers options to write client side application (using JavaScript) in a clean MVC way. Application written in AngularJS is cross-browser compliant.

AngularJS is built around the belief that declarative code is better than imperative when it comes to building UIs and wiring software components together, while imperative code is excellent for expressing business logic.

Overall, AngularJS is use to build large scale and high performance web application while keeping them as easy-to-maintain.

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Image Processing With Scikit And Pillow

**Asst. Prof. Kuldeep Prabhu[1], Jagdish Dnyandev Kate[2]**

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract–-As the name implies, image processing entails processing the image, which may involve a variety of ways before we achieve our aim. The output can either take the form of a picture or a feature that corresponds to an image. This can be applied to future analysis and decision-making. PIL will be replaced going forward with Pillow, it was stated. Scikit-Image is an open-source, image processing toolkit for Python that works with both 2D and 3D pictures and a wide range of file formats.

Keywords— python ,image processing, scikit, pillow, IoT.

I.INTRODUCTION
WHAT IS IMAGE PROCESSING?

Image processing, as the name suggests, involves processing the image, which may entail a variety of approaches before we achieve our objective. The output can either take the form of a picture or a feature that corresponds to an image. This can be applied to future analysis and decision-making.

II. Need of python ?

Image processing enables us to change 42 and edit thousands of photos at once and gain insightful information from them. In practically every field, it has a wide range of uses. For this, Python is one of the most popular programming languages. Its incredible libraries and tools make it possible to complete the task of image processing extremely effectively. A group of related modules make up a Python library. It includes code bundles that can be used repeatedly in various programmes. For the coder, it makes Python programming easier and more practical. We don't have to write the same code for various apps over and over again. Our two libraries 1.scikit (scikit-learn) 2.pillow (PIL library) .

1) Scikit-image is an open-source image processing toolkit for Python that supports a wide range of file types and is compatible with 2D and 3D pictures. A straightforward programming interface

is exposed by the toolkit, and functionalities are grouped into themed modules based on their intended use, such as image restoration. The most practical and reliable Python machine learning library is Scikit-learn (Sklearn). It offers a variety of effective methods for statistical modelling and machine learning, including dimensionality reduction, clustering, regression, and classification, all through a consistent Python interface. NumPy, SciPy, and Matplotlib are the foundations upon which this library—which is primarily written in Python—is based.

Defining characteristics of scikit -

1. Efficient and straightforward tools for data mining. It has a number of clustering, regression, and classification techniques, including as support vector machines, random forests, gradient boosting, and k-means, among others.

2. Reusable in a variety of circumstances and available to everyone.

3. Built upon the foundation of Matplotlib, SciPy, and NumPy.

4. BSD licence; open source; useable in commerce.

2) Digital Image processing means processing the image digitally with the help of a computer. Using image processing we can perform operations like enhancing the image, blurring the image, extracting text from images, and many more operations. There are various ways to process images digitally. Here we will discuss the Pillow module of Python. Python Pillow is built on the top of PIL (Python Image Library) and is considered as the fork for the same as PIL has been discontinued from 2011. Pillow supports many image file formats including BMP, PNG, JPEG, and TIFF. The library encourages adding support for newer formats in the library by creating new file decoders. The Python Imaging Library supports a wide variety of raster file formats. Over 30 different file formats can be identified and read by the library. Write support is less extensive, but most common interchange and presentation formats are supported.

Important features of pillow

1. Pillow builds on this, adding more features and support for Python 3. 2. It supports a range of image file formats such as PNG, JPEG, PPM, GIF, TIFF, and BMP 3. perform various operations on images such as cropping, resizing, adding text to images,rotating, greyscaling, etc., using this library.

VII. Conclusions

1. There's more than one module in Python to deal with images and perform image processing. If you want to deal with images directly by manipulating their pixels, then you can use NumPy and SciPy. Other popular libraries for image processing are OpenCV, scikit-image, and Mahotas. Some of these libraries are faster and more powerful than Pillow. 2. I have been using Image for opening and getting pixel info, and have read things like "PIL is the future and methods..", but I have seen that skimage is extensively used. 3. scikit-image package does the PNG conversion automatically, while pillow returns the raw data and leaves it to you to convert the image to RGB. 4. I'm opening an 8-bit image with both Pillow and Scikit-image. Scikit-image gives three bytes per pixel, but Pillow gives one byte per pixel. 5. Choose Skimage if you're reading an image for alteration by other science kit-based techniques, such machine learning.

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The Process Of Video Broadcasting On Internet

Asst. Prof. Swapnali Kadge[1] , Harshada Fagare[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. Society's Science And Commerce College, Kalamboli, Navi Mumbai

Abstract:

My paper topic on video broadcasting because it's allow you to engage with your audience in real life, and also boost your social profile and increase your business, Because it's the 21 century. In this paper I mentioned, the data about video streaming and history about streaming, how its work, some benefits, and some popular streaming services and last the process of streaming. Educational tools for delivering accoutrements to learners have bettered since the generality of the Internet and World Wide Web (WWW or Web). The growth and popularity of the Internet in the mid -1990's motivated video communication over best-effort packet networks and the demand of people for multimedia communications in daily life is growing, more and more users are getting multimedia communication services through different networks and different terminals. Keywords: Video Streaming, Streaming Protocol, User Behavior, Video Streaming services.

Introduction:

About video streaming Streaming refers to any media content – live or recorded – delivered to computers and mobile devices via the internet and played back in real time. The technology of transmitting audio and video files in a continuous flow over a wired or wireless internet connection. Video increases the chances of a prospective customer's purchase by 40% and 96% of people watch a video to understand a product or service. Streaming is an alternative to file downloading, a process in which the end-user obtains the entire file for the content before watching or listening to it. Video streams are usually sent from a pre-recorded video file, but they can also be distributed as part of a live broadcast feed. The media is sent in a continuous stream of data and is played as it arrives.

The video server divides the video into streams. The video stream is then transmitted to the client via TCP. There are "clients" that connect to the Internet. Client connections have different bandwidth limits. The challenge is to achieve efficient video streaming with minimal loss and

latency. Video streaming working Video streams typically begin with a pre-recorded media file hosted on a remote server. Once the server receives a customer request, the data in the videotape train is compressed and transferred to the requesting device in pieces. Audio and videotape lines are broken into data packets, where each packet contains a small piece of data. A transmission protocol, much of the time either Transmission Control Protocol (TCP) or User Datagram Protocol (UDP), is used to change data over a network. Once the requesting client receives the data packets, a video player on the user end will decompress the data and interpret video and audio. The video tape lines are automatically deleted formerly played. Users can stream from their desktop computers, smartphones, tablets and smart TVs, or through other devices such as Chromecast or Apple TV. Different operations can be used to stream videotape same as YouTube, Netflix, Amazon Prime Video, Disney+ or Twitch. Services such as YouTube stream videos for free and announcement supported, while a stoner subscription model supports services similar as Netflix. Video tape streaming also requires a high enough speed for the stylish performance. Lower data is demanded to stream lower video quality, but advance video quality, same as 1080p – which features a progressive scan display -- or 4K needs faster data speeds to play easily. Although a small portion of television shows broadcast up to 1080i -- which uses an interlaced display -- most programs are broadcast over the air with the primary description set at a standard of 720p, a resolution that YouTube no longer considers high description. By comparison, streaming services same as Netflix and YouTube offer video resolutions of over to 2160p, which is 4K

Benefits of video streaming:

1) With streaming solutions, you can easily keep in touch with anyone interested in your brand, wherever they are. 2) Live events are a great way to make new connections and generate new leads for your business. 3) Customers want to feel personally connected to the brands they follow and trust you and your company. 4) You can reach a global audience without extensive travel, saving you and your customers time and money 5) You can keep viewer attention for longer, therefor packing in a lot of rich information. 6) It maker a company or business reachable and show its personality. 7) In video streaming, there are no restriction and the possibilities are endless. 8) You can post your recorded videos on social medium platforms as more content.so; it becomes a video on demand.

History of video streaming:

It was not until the late 1980s that consumer computers were powerful enough to display streaming media. Previously, methods other than streaming such as CD- ROM were used. Streaming" was applied in the early 1990s as a better description of video on demand and later live video over IP. 1988: The basis of the first practical video coding format, the transformation algorithm discrete cosine developed for image and video compression 1990: The first commercial Ethernet switch is developed by Kalpana, later acquired by Cisco Systems. This change made it possible to create the first video streaming software. 1992: Launch of the first commercial video streaming product, Star Works. It was developed for enterprise Ethernet and can stream MPEG-1 video. 1993: The Trojan Room coffee maker becomes the first live content with a webcam; This live photo of the coffee maker was originally posted on the internet in 1991 so that others at the University of Cambridge Computer Lab in the UK would know when the coffee machine was empty. He started live-streaming virtual events.

Real Networks launches Real Video, one of the first commercial live video broadcasts.

1999: Apple launches a streaming format called QuickTime. That same year, President Bill Clinton participated in a presidential webcast at George Washington University.

2005: Steve Chen, Chad Hurley and Jawed Karim founded YouTube. It initially used a Flash-based player, but later moved to HTML5. 2008: YouTube hosted its first live event, called YouTube Live. Today, creators who have more than 1,000 subscribers on their channel can livestream on mobile devices.

2015: Twitter acquired the livestreaming app Periscope. Facebook and Instagram also began acquiring and launching their own livestreaming services. The Twitter livestreaming service Periscope shut down on March 31, 2021.

2021: According to business-to-business software search firm Findstack, the livestreaming industry is predicted to reach $70 billion this year and grow to $223.98 billion by 2028.

Popular video streaming services today include:

☐ Amazon Prime Video

◻ Apple TV+

◻ Facebook

◻ Disney+

◻ Zoom

◻ Netflix

◻ Instagram

◻ Twitch

◻ YouTube

The world's second-largest search engine, with up to 3 billion searches per month. As a search engine, YouTube is second only to Google. So, there's always something new to watch! And you'll find all kinds of videos on YouTube—adorable cats, quirky cooking demos, funny science lessons, quick fashion tips, and a whole lot more.

Process of video streaming:

1. Raw video is captured by the camera 2. Video is then converted from raw formats to compressed digital formats so that it can be easily transmitted over the Internet. 3. The footage is uploaded to an internet video site. 4. A content delivery network transports the video from the online video platform to the video player. 5. Video is uncompressed into playable formats. This step may not be needed if the file was delivered using a compatible form. 6. Music, video, and other forms of media assets are pre-arranged and sent in consecutive data packets so that they may be streamed instantly. 7. The viewer can then view the video from an application or web player (e.g., HTML5 Player).

Protocols for video streaming:

Video streaming protocols are the rules and methods that are used to break video files into small pieces so that they can be delivered to your viewers. HTTP: This is simplest and cheapest way to stream video from a website. Real-Time Messaging Protocol (RTMP) : RMTP is a TCP based protocal designed to maintain persistent and smooth streaming experience. Real Time Streaming

Protocol (RTSP): It used in entertainment and communication system to control streaming media servers. Secure Reliable Transport(SRT) : The main goal of continuing to improve and achieve lower latency internet video transport. Web(RTC) : The vision to make any browser able to handle real time voice and video communication without additional download. Conclusions: Now, that you know all the information and benefits of a streaming videos, you can create best video and upload it on your social media account and give the all information about your business or give the tips to your client or customer around the world. And with the help of video streaming you can grow your business firstly.

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Criminal Offence, Digital Evidence, Cyber Forensics

Asst. Prof. Rajashree Salokhe[1], Payal Dhembare[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

Digital Evidence refers to any data stored, processed, or transmitted in digital form, such as emails, text messages, social media posts, and others. This type of evidence can play a crucial role in criminal investigations as it can provide concrete proof of a crime being committed. Cyber Forensics, also known as computer forensics, is the process of collecting, analyzing, and preserving digital evidence in order to use it as evidence in a criminal case. This involves using specialized tools and techniques to extract and preserve digital evidence from a wide range of digital devices, such as computers, smartphones, and other types of digital storage media.

Introduction:

Criminal Offence:

A criminal offence is an act or omission prohibited by criminal law, which can result in a penalty such as imprisonment, fine, or community service. Criminal offences are considered harmful to society and are punished to maintain social order and ensure public safety. Some examples of criminal offences include theft, assault, fraud, and drug trafficking.

Digital Evidence:

Digital evidence refers to any type of data stored electronically, including emails, text messages, social media posts, and other digital records. In a criminal investigation, digital evidence can be used to establish the fact of a crime, to identify a suspect, or to provide a motive for a crime. Digital evidence can be crucial in solving crimes, especially those that are committed using technology, such as cybercrime.

Cyber Forensics:

Cyber forensics, also known as computer forensics, is the process of collecting, analyzing, and preserving digital evidence in order to be used as evidence in a court of law. The goal of cyber forensics is to maintain the integrity of digital evidence, so that it can be used to investigate and prosecute crimes committed using technology. This involves techniques such as data recovery, digital evidence analysis, and the examination of digital devices. Cyber forensics plays a critical role in the investigation of cybercrime, including hacking, identity theft, and online fraud.

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                        Computer Forensics
       ┌──────────────────────┼──────────────────────┐
   Military            Law Enforcement          Private Sector
                              │
                         Standards &
                          Guidelines
       ┌──────────────────────┼──────────────────────┐
  Investigation          Rules of Evidence          Presentation
       │                      │                          │
  Acquisition      Criminal FRYE    Civil Federal Rules    Expert Witness
  Analysis         FRE 702          of Civil Sedona        Friend of the Court
  Examination      Daubert/ Kumho   Rowe                   Technical Expert
  Report
```
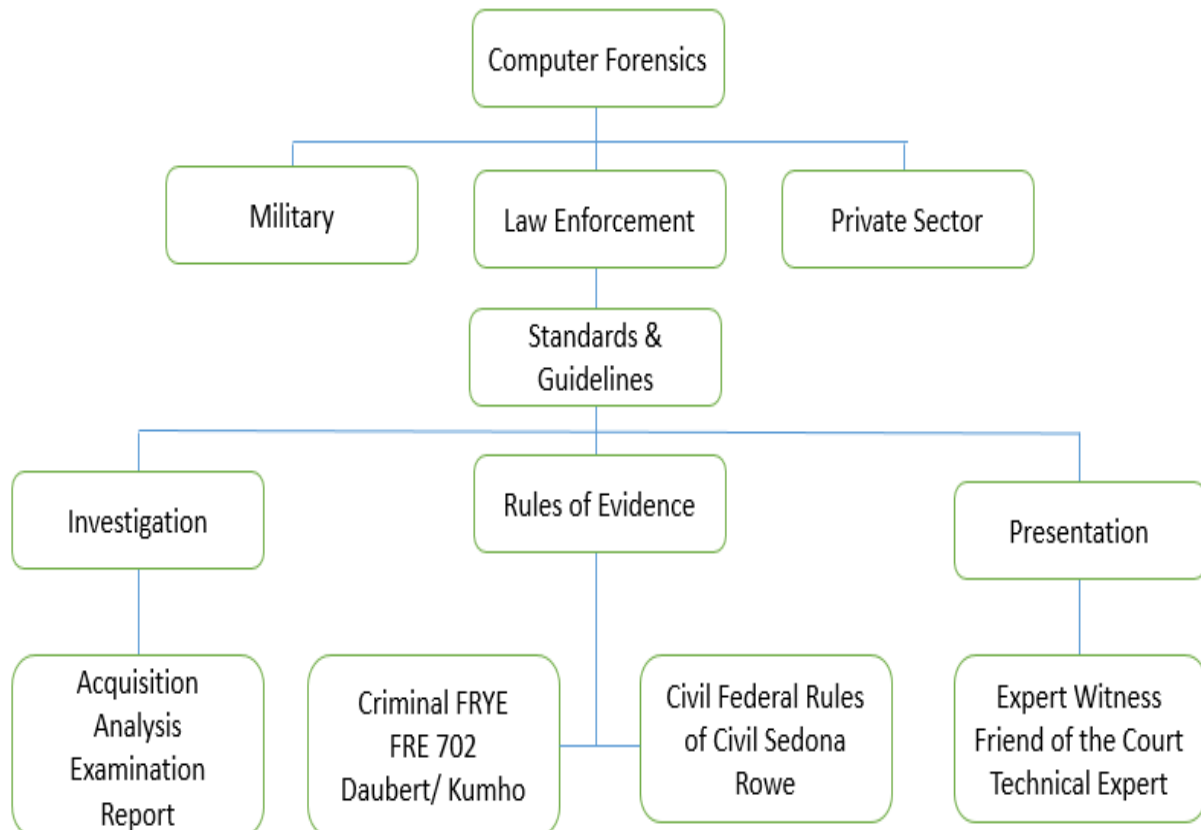
Literature Review:

Criminal Offences, Digital Evidence, and Cyber Forensics have been widely studied in the literature, and many studies have focused on various aspects of these concepts.

In terms of Criminal Offences, research has focused on the types of abstract crimes that are committed using digital technology, such as computer hacking, identity theft, cyberstalking, and others. These studies have analyzed the extent and impact of these crimes, as well as the difficulties associated with investigating and prosecuting them.

Methodology:

The methodology for studying Criminal Offences, Digital Evidence, and Cyber Forensics varies depending on the specific research questions and goals of the study. However, some common methods used in this field include:-

Surveys and Interviews: Surveys and interviews can be used to gather data on the extent and impact of criminal offenses committed using digital technology.

Case Studies: Case studies can be used to examine the process of investigating and prosecuting specific criminal offenses that involve digital technology.

Laboratory Testing: Laboratory testing can be used to test the effectiveness of various tools and techniques used in cyber forensics.

Legal Analysis: Legal analysis can be used to examine the laws and regulations surrounding criminal offenses and digital evidence. This may involve an examination of the legal framework for investigating and prosecuting these crimes, as well as the laws governing the use of digital evidence in court.

Result:

The results of studies on Criminal Offences, Digital Evidence, and Cyber Forensics vary depending on the specific research questions and goals of the study. However, some common findings include:

Prevalence of Abstract Criminal Offences: Studies have found that abstract criminal offenses committed using digital technology are becoming increasingly common.

Challenges in Investigating and Prosecuting Abstract Criminal Offences: Research has shown that investigating and prosecuting abstract criminal offenses can be challenging due to the ephemeral nature of digital data, the need for specialized tools and techniques, and the difficulty in determining the identity of the perpetrators.

Importance of Digital Evidence: Studies have emphasized the importance of collecting, analyzing, and preserving digital evidence in the investigation of criminal offenses.

Effectiveness of Cyber Forensics Tools and Techniques: Studies have evaluated the effectiveness of various tools and techniques used in cyber forensics, with a focus on their ability to recover deleted data and their accuracy in detecting and analyzing digital evidence.

Conclusions:

In conclusion, Criminal Offences, Digital Evidence, and Cyber Forensics are interrelated fields that are crucial in understanding and combating crime in the digital age. Research in these fields has shown that abstract criminal offenses committed using digital technology are becoming increasingly common, and that they pose significant challenges to law enforcement agencies and the legal system.

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Foot Printing Security In Cyber Security

Asst. Prof. Kuldeep Prabhu[1], Vivek Suresh Kumar[2]

[1]Assistant Professor, [2] F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

The process of foot printing is the first step in gathering information for hackers. To perform a successful attack, one needs to gather information. The process of uncovering these issues and vulnerabilities is known as foot printing.

Footprints are regarded as the first stage of a system compromise conducted by individuals wishing to escalate key system privileges with a view to exploiting known system vulnerabilities. The paper also states that foot printing is an activity that is often overlooked by administrators when hardening their systems and security profile.

The paper concludes by highlighting the need for individuals in various roles within an organization to be able to clearly identify and stem information leakage from their web facing systems in order to minimize the impact on systems' security and vulnerability.

Foot printing is a necessary evil .what does that mean? Successful hackers are building their information database about your company's weaknesses. Wouldn't be nice to know about company's weaknesses in advanced to take any proper action.

Introduction:

What is foot printing?

It is one of the best methods of finding vulnerabilities. It's the technique used to gather information about computer system. A hacker might use various tools and technologies. This information is very useful to a hacker who is trying to crack a whole system.

It is one of the best methods of finding vulnerabilities.

Steps for gathering information

Gathering information prior the attack is blatantly a major and yet time- consuming task that all ethical hackers like you must be able to accomplish Information about the target can be enormous or minimal, depends on how the target choose to deal with "public" and "private" information.

Reconnaissance

The information-gathering stage of ethical hacking. The practice of covertly discovering and collecting information about a system. There are two main types of reconnaissance.

   a. Passive Reconnaissance

An attempt to gain information about targeted computers and networks without actively engaging with the systems.

b.   Active Reconnaissance

The attacker engages with the target system, typically conducting a port scan to find any open ports**.**
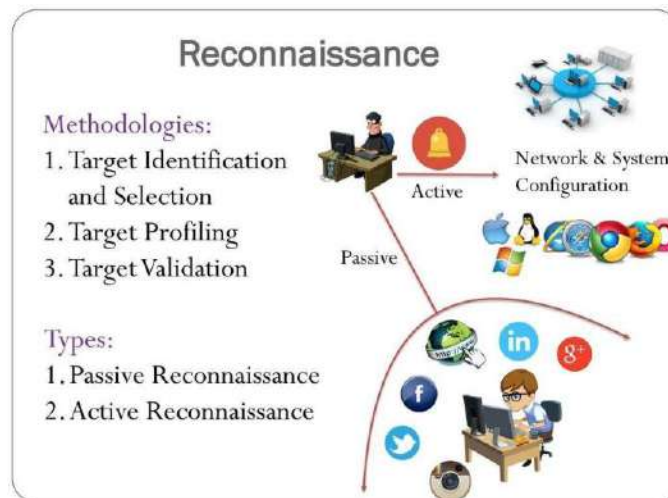
Important of foot printing tools Some of the common tools used for foot printing and information gathering are as follows:-

1. Whois
2. NS Lookup
3. Sam Spade
4. Super Scan
5. Nmap
6. TcpView

1. Whois:-

 Every connected computer on the internet is assigned a unique address, or also known as an IP (Internet Protocol) address, allowing computer to locate and communicate with one another easily. The Internet Protocol address space, autonomous system (AS) numbers and other internet numbering resources and distributed, allocated and managed by four Regional Internet Register (RIRs) in the world.

2. NS lookup

 The name of a program that lets an Internet server administrator or any computer user enter a host name (for example, "whatis.com") and find out the corresponding IP address or domain name system (DNS) record. The user can also enter a command for it to do a reverse DNS lookup and find the host name for an IP address that is specified

Uses of nslookup

Nslookup is used to troubleshoot server connections or for security reasons. Such reasons include guard against phishing attacks, in which a domain name is altered

For example, by substituting the numeral 1 for a lowercase to make an unfriendly site look friendly and familiar.

Sam Spade

According to the introduction of Sam Spade in the help file, Sam Spade is a "general purpose internet utility package, with some extra features to help in tracing the source of spam and other forms of internet harassment."

Hacking tools, they are like double-edged swords, which can be used to or harm to protect you.

Open Source Information

Foot printing is the process of using various tools and technologies to understand and learn the best way to attack a target. Attackers find out as much as possible without actually giving themselves away. They find public information or appear as normal users. They might stroll through your DNS table using nslookup , dig or other utilities to do domen transfers to find the names of machines.

Conclusion:

Foot printing and reconnaissance is a significant aspect of any hacking activity. Any data that a programmer can find out about the target can help in recognizable proof of potential assault vectors and focusing on endeavors to possible weaknesses. Answering the question what is meant by footprint was the center point of this article.

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ETHICAL HACKING

Kuleep prabhu[1] , Sakshi Desai[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT:

 The explosive growth and advancement of the Internet has brought many good things and services: Electronic commerce, easy access to vast stores of reference material and information, collaborative computing, e-mail, and new avenues for advertising and information distribution, online gaming, socializing sites to name a few. As with most technological advances, there is also a dark (Negative) side also: criminal hackers and Hacking. Governments, companies, and private citizens around the world are anxious to be a part of this revolution for the purpose of evolution and development, but they are afraid that some hacker will break(creep) into their Web server and replace their logo with harmful or some undesired stuff and all, read their e-mail, steal their credit card number from an on-line shopping and money transferring site, or implant software that will secretly transmit their organization's secrets to the open Internet (spyware etc). Information security is the fastest growing area in the Information Technology sector. Security would be an easy process if all that had to be done is to install a fire wall and antivirus software, but the reality is that securing information requires a multi-layered approach. Obtaining this requires adopting measures to prevent the unauthorized use, misuse, modification or denial of use of knowledge, facts, data, or capabilities and it requires taking a proactive approach to manage the risk. This is where ethical hackers come into real play. Ethical hacking is an "art" in the sense that the "artist" must possess the skills and knowledge of a potential attacker (to imitate an attack) and the resources with which they mitigate the vulnerabilities used by attackers.

KEYWORKS:

Vulnerabilities, Hacker, Computer security, System security, Taxonomy, Ethical hacking.

INTRODUCTION:

Information <u>security</u> is the fastest growing area in the Information Technology sector. Security would be an easy process if all that had to be done is to install a fire wall and antivirus software, but the reality is that securing information <u>requires</u> a multi-layered approach. Obtaining this requires adopting measures to prevent the unauthorized use, misuse, modification or denial of use of knowledge, facts, data, or capabilities and it requires taking a proactive approach to manage the risk. This is where <u>ethical</u> hackers come into real play.

Attacks on a company or organization's computer systems take many different forms, such as spoofing, sniffing, and other types of Denial of Service (DoS) attacks. These attacks are designed to harm or interrupt the use of your operational systems. Identifying vulnerabilities in networks, applications and systems before they can be exploited is a critical step in preventing exposure of sensitive data, which can severely damage a corporation's reputation. Smart IT organizations manage risk by conducting ethical hacks on a regular basis in order to identify vulnerabilities that need remediation, thus improving their security posture.

LITERATURE REVIEW:

Ethical hackers use their knowledge to secure and enhance the technology of organizations. They provide an essential service to the organizations by looking for vulnerabilities that can lead to a security threat. The detected vulnerabilities are reported to the organization by an ethical hacker. Additionally, they provide remediation advice. In many cases, with the organization's permission, the ethical hacker re-tests to assure the vulnerabilities are completely fixed. Malicious hackers want unlawful access to a resource (the more sensitive, the (more preferable) for monetary benefit or personal recognition. Some hostile hackers deface websites or wreck backend systems for amusement, reputational harm, or monetary loss. The methods used and vulnerabilities determined continue to be unreported. They aren't concerned with enhancing the organizations security posture.

METHODOLOGY:

We conducted a survey where we asked few questions to the people about how much they are aware of Ethical Hacking. The results are shown below:

Are you aware of hacking ?

8 responses
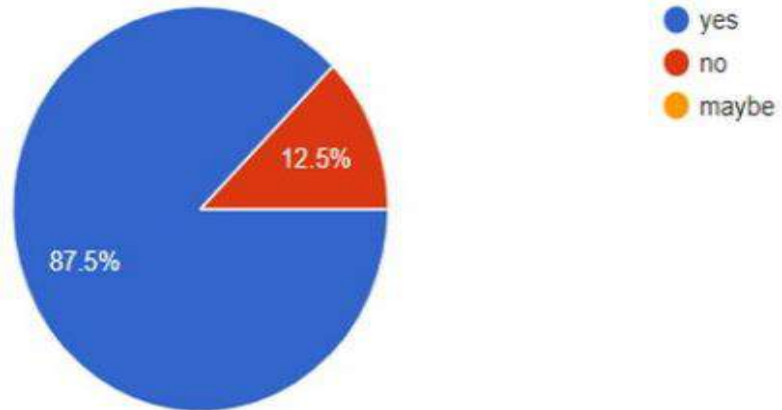
Figure 1

This shows people are aware of the term of hacking.

Do you think hacking is a major or minor problem

8 responses
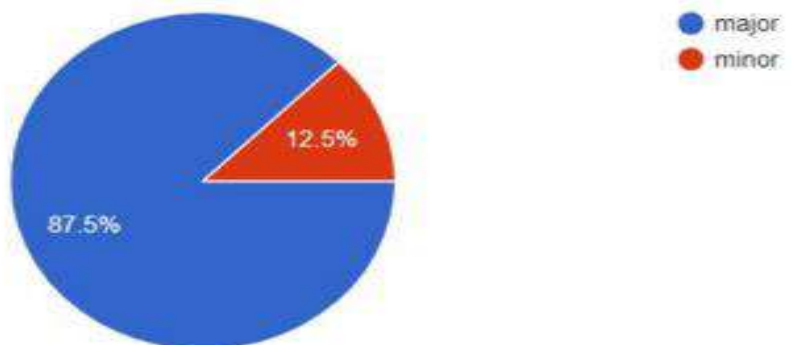
Figure 2

What type of hacking you know ?

8 responses

Figure 3

.

Both the above figure shows that people are having rough knowledge of hacking. But more awareness or knowledge should be spread in order to how to deal with it

RESULTS:

Assess the results to see what you uncovered, assuming that the vulnerabilities haven't been made obvious before now. This is where knowledge counts. Evaluating the results and correlating the specific vulnerabilities discovered is a skill that gets better with experience. You'll end up knowing your systems much better than anyone else. This makes the evaluation process much simpler moving forward. Submit a formal report to upper management or to the client, outlining the results and any recommendations wish to share.

CONCLUSION:

Network testing is the most important type of ethical hack for keeping information assets secure. The top three benefits of ethical hacks, in order of importance, are improving overall security posture, protecting against theft of intellectual property and fulfilling regulatory/legislative

mandates. A majority of IT organizations conduct ethical hacks on wireline and wireless networks, applications and operating systems either annually or more frequently. There is no single set of methodology that can be adopted for ethical hacking. The terms of reference used for various phases in the anatomy of a hack may differ, but the essence is the same. Hacking is not for everyone (there is not half-way). It takes an objective mind, a lot of free time, and dedication to keep up with things. Never use the knowledge for offensive purposes. Lack of experienced staff is most often cited as a significant barrier to conducting ethical hacks internally or improving ethical hacking capabilities. Cost is by far the most common barrier to using an ethical hacking vendor, though most respondents have used this service in the past.

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Artificial Intelligence In Mental Health Care

Asst. Prof. Swapnali Kadge[1], Rupesh Ramchandra Kadage[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract: Purpose of Review Artificial intelligence (AI) technology holds both great promise to transform mental healthcare and potential pitfalls. This article provides an overview of AI and current applications in healthcare, a review of recent original research on AI specific to mental health, and a discussion of how AI can supplement clinical practice while considering its current limitations, areas needing additional research, and ethical implications regarding AI technology. Recent Findings We reviewed 28 studies of AI and mental health that used electronic health records (EHRs), mood rating scales, brain imaging data, novel monitoring systems (e.g., smartphone, video), and social media platforms to predict, classify, or subgroup mental health illnesses including depression, schizophrenia or other psychiatric illnesses, and suicide ideation and attempts. Collectively, these studies revealed high accuracies and provided excellent examples of AI's potential in mental healthcare, but most should be considered early proof-of-concept works demonstrating the potential of using machine learning (ML) algorithms to address mental health questions, and which types of algorithms yield the best performance. Summary As AI techniques continue to be refined and improved, it will be possible to help mental health practitioners re-define mental illnesses more objectively than currently done in the DSM-5, identify these illnesses at an earlier or prodromal stage when interventions may be more effective, and personalize treatments based on an individual's unique characteristics. However, caution is necessary in order to avoid over-interpreting preliminary results, and more work is required to bridge the gap.

Keywords: Technology .Machine learning .Natural language processing .Deep learning .Schizophrenia between AI in mental health research and clinical care. Depression .Suicide . Bioethics. Research ethics.

Introduction:

Benefits from mental health early interventions may not be sustained over time, and longer-term intervention programs may be required to maintain early clinical gains. However, due to the high intensity of face-to-face early intervention treatments, this may not be feasible. Adjunctive internet-based interventions specifically designed for youth may provide a cost-effective and engaging alternative to prevent loss of intervention benefits. However, until now online interventions have relied on human moderators to deliver therapeutic content. More sophisticated models responsive to user data are critical to inform tailored online therapy. Thus, integration of user experience with a sophisticated and cutting-edge technology to deliver content is necessary to redefine online interventions in youth mental health. This paper discusses the development of the moderated online social therapy (MOST) web application, which provides an interactive social media-based platform for recovery in mental health. We provide an overview of the system's main features and discus our current work regarding the incorporation of advanced computational and artificial intelligence methods to enhance user engagement and improve the discovery and delivery of therapy content. Increasing demand for mental health services and the expanding capabilities of artificial intelligence (AI) in recent years has driven the development of digital mental health interventions (DMHIs). To date, AI-based chatbots have been integrated into DMHIs to support diagnostics and screening, symptom management and behavior change, and content delivery.

Methodology:

The proposed methodology, described in Figure 1 and in the following 5 phases, includes objective assessment of intensity of HCWs' stressor exposure during the COVID-19 pandemic described in Phase 1, subjective assessment of stress experienced by HCWs during the COVID-19 pandemic based on the specific psychological questionnaire described in Phase 2, distinctive stimulation paradigms designed and developed within Phase 3, computed neuro-physiological features based on stimulation responses in Phase 4, as well as statistical and ML data analysis described in Phase 5

Results:

Our primary analysis of mental health terminology in GloVe and Word2Vec embeddings demonstrated significant biases with respect to religion, race, gender, nationality, sexuality and age. Our literature review returned 52 papers, of which none addressed all the areas of possible bias that we identify in model development. In addition, only one article existed on more than one research database, demonstrating the isolation of research within disciplinary silos and inhibiting cross-disciplinary collaboration or communication.

Discussion:

The presence of bias at any stage of model development risks creating tools that disadvantage certain patient groups. As a result data scientists need to widen their definition of success from focusing on model accuracy and result reproduction. The integration of medicine and data science must acknowledge the medical and social biases that underlie these models and work to unpack existing dogma before building new tools for the future.

Conclusion:

Our findings are relevant to professionals who wish to minimize the health inequalities that may arise as a result of AI and data-driven algorithms. We offer primary research identifying biases within these technologies and provide recommendations for avoiding these harms in the future.

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Use Of Internet Of Things In Agriculture

Asst. Prof. Swapnali Kadge[1] Mandakini Chaurasiya[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

Technological is the most popular sector nowadays. There are many scopes are available in technical sector. Nowadays, unemployment is increasing but the technical sector in agriculture fields provide different types of works at various level. We can use smart tools in agriculture sector to increase the productivity of crops. The proper use of smart tools will lead to a modern technology. There are various problems that a farmer faced during cultivation. All the problems can be solved by using the technology. There are many technologies are available than can be used in agriculture sector. such as sensors, digital farming, data mining and analytics etc. Since there are so much technology are available it will help to increase the productivity of the crops. Many methods can be used to increase the production of crops. There are also remedies to every problem. Some major problems are mention with their remedies. The adaptation of new technology is very important in this generation. There are also some room for the improvement of this technology. Technology is never going to stop as well as the chance to improve in every sector.

Keywords: Internet of Things (IoT), smart tools, problems

Introduction:

Food is the most basic need for all living beings. We get all our basic need completed through agriculture. Agriculture is the practice to increase the cultivation and growth of plants. Agriculture is the important component to increase the human civilization. Around 38 percent of land is used for agriculture from 100 percent. Since world is going towards modern technology, the land which are used for agriculture is decreasing. To maintain the proper productivity of crops we need to manage the both technical and agricultural field equally. This can be obtained

by mixing the technology with agriculture. By using the smart tools, the productivity of crops will increase.

We can use smart tools for rapid growth and to solve the various problems which occurred in agriculture. Farmers can adapt to technology and work in modern world with new technology. Also, they can create new scope for future generation. Technology is a very unique sector because it is required in every field and it can also merge with any sector. Having a smart tool that will increase the production of crops it will be very great help for farmers. As we know all counties are going toward developing the cultivation area is becoming low. Farmers have to utilize the place for larger production. Technology will help them to achieve their target and to utilize the land properly.

Problems:

There are various problems that a farmer faced during agriculture. Sometimes the climate is the reason. But the most problematic is the having less people work in farms. The major problems are:

1. **Lack of Water supply:**

     Many crops get dry due to insufficient of water. Crops didn't get the proper amount of water to prepare their own food. Farmer's try their well to get sufficient amount of water but due to scarcity they are also helpless.

2. **Transportation:**

     Many farmers have large fragmentation of land to cultivate. But after cultivation that farmer face the problem of transportation. Due to large quantity farmer is unable to transport from one place to another. The farmers having less fragmentation of land face problem in selling their good also they can only cultivate for themselves.

3. **Fertilizing the crop:**

     When a farmer has a large fragmentation, they can't fertilize their fields properly. Also mostly old people's are engage in farming they don't have enough energy to put the fertilizer on their own in all field. They have to carry a container on their back and after that they put fertilizer in fields.

4. **Illiteracy about technology:**

People are unaware about the technology which are used in farming. Mostly old people are engaged in agriculture so they don't know anything about new technology, why we are using it? What will happen if we use these technologies? They don't know that it will be useful for them.

5. **Animal harming the crops:**

Farmers cannot pay attention all the time to their field. Sometimes in night some street animals come in field and damage their crops. Some animals eat their crops. In Some situation like this, farmers totally feel helpless and can do nothing about their loss.

Solution:

Farmers faced all the problems mention above. All these problems can be solved by using the proper means of technologies. Very few people are aware about technologies like digital farming, smart farming, supply chain strategies, data mining and analytics etc.

For above problems solutions:

1. **Lack of water:**

This problem can be solved by using drip irrigation technology. Yes, drip irrigation can provide water from underground which will be already connected to a water pipe line. It will save the water and also use less effort during watering the fields. It will be very helpful for farmers they should use these methods.

2. **Transportation:**

Farmers suffer during selling the goods in market because of transport. So, they can use heavy vehicle and other machinery to transport their good from one place to another. People's who have less fragmentation they can make a group to use a particular machinery. These will be cheap for them.

3. **Fertilizing the crops:**

Farmers can use a robotic device to fertilize the crop. Drones is one of the best options to use for fertilizing the crop. It can also be used for monetarizing the crops time to time. Farmers does not need to come to their field again and again to check the crop.

It is able to capture the image. It would be great if drones use in agriculture field. It is also very easy to use.

4. **Illiteracy about technology:**

There are many technologies available outside the world which can be used for agriculture and increase the growth of crops in high quantity. It is just a matter of time that people are not aware about these technologies. We can do some survey in rural area and teach them how to use these technologies. Little by little people will be aware about modern technologies and they will adapt it easily without any extra hard work.

5. **Animal harming the crops:**

   Well when wild animal come and damage the crop people do not know. For this type of situation, we should always be ready. In day time we can pay attention to crop but what about night? Very few people pay attention and it is also hard for them so we can use mobile technology and camera. It will give us a message that there is something wrong in field. We can also use an alarm so if any animal enter in field area it will start to ring. Animal will be alert and it will run away. So farmer should not have to do much struggle.

There are still many technologies which will be very helpful for the farmers. Many types of sensors are used in agriculture.

They are discusses as follows:

1. **Soil moisture sensor:**

   It is use to measure the water present in the soil so a farmer can guess what will be better to do?

2. **Rain drop sensor:**

   It is use to measure the moisture through analog output pins and give the digital output. We can also use the solar system to save the energy which is required on the field.

Result:

If we start to use the following techniques from a small rural area it will give a great impact on agriculture sector. People will be aware about technologies. There will be a great scope to work in agriculture fields. It will also help to reduce the unemployment. It will increase the production of crops. It will provide large production using less efforts. If the production increase farmer will also get good amount for their crops and it will also help to farmer to stop committing suicide. Farmers face many problems but by using these solution It will also give some great impact on

farmers life. They need to aware about various technologies. If they get aware about technology proper utilization of land will be achieved as well as target.

Conclusion:

Technology is the best way to solve the problems which are neither minor nor major. But in some expect we need to do something for the hand wo feed us. For the farmer who work for everyone. They need to be aware about technology. Through this we can say that we are one step more forward towards modern era. Farmers problems will be solved. They will live their life a little bit less stressful. This technology will also help the country to increase the GDP. We need to make sure that farmers are easily adapted to technology. We can provide some tutorials for them. We can provide all the information for farmer in a specific way so they learn new technology with interest and having fun. There life will be more blissful. Every county will get benefit. If technology is adapted and there is increase in cultivation each county can help each other during crucial moment as we all know food is the most basic essential.

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Deadlock Handling In Distributed Database

Asst. Prof. Sayma Natekar[1], Manurani Balwan[2]

[1]Assistant Professor, [2] F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT :

Deadlock is one of the most problematic situations in distributed database systems and deadlock detection has gone through extensive study. A deadlock is a process which generally occurs when a resource is holding a process and waiting for the other process which is being held by another resource. There has to be a way of handling deadlock when they occur or certain transactions will be permanently blocked from processing into completion. So far various techniques have evolved which are used to prevent, detect and solve the deadlock. There are three bascially approaches for deadlock handling, namely − Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and removal.

KEYWORDS :

Deadlock Handling, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and removal.

INTRODUCTION :

To learn more about deadlock in distributed databases, we need to understand what a distributed database is. So a Distributed database is nothing but a database that is not limited to a system. It is a database consisting two or more files at different sites either at same or different network. Now further moving to deadlock, we can say that a Deadlock is a situation where a set of processes are blocked because each process is holding a resource and waiting for another resource occupied by some other process. This situation is known as Deadlock. Deadlock is a very crucial issue in distributed database.

1. <u>Mutual exclusion</u>: Only one person at a time can use the resources.
2. <u>Hold and wait</u>: Requesting process hold already, resources while waiting for required resources.

3. No Preemption: Resource cannot be pre-empted.

DEADLOCK PREVENTION:

Deadlock prevention is a technique which ensures that the system will never go under the deadlock state. Deadlock can be prevented by preventing one of the Coffman's Conditions. They can be prevented by:-

- *Removing mutual exclusion* means no process will have exclusive access to a resource. But it is practically not possible to eliminate mutual exclusion as we cannot force a resource to be used by more than one process at the same time.
- *Eliminating hold and wait* can be done in two ways:
    - By eliminating wait: The process must request and gets all its resource before the beginning of its execution.
    - By eliminating hold: The process has to release all resources it is currently holding before making a new request.
- The *no preemption* condition may also be difficult or impossible to avoid as a process has to be able to have a resource for a certain amount of time, or the processing outcome may be inconsistent.
- To eliminate *circular wait*, we assign a priority to each resource. A process can only request resources in adding order of precedence.

DEADLOCK AVOIDANCE :

Deadlock avoidance is similar to deadlock prevention which ensures that the deadlock doesn't occur in the system. It analyses the Transaction and the locks to determine waiting or not waiting leads to a deadlock. Accordingly, the algorithm decides whether the transaction can wait or one of the transactions should be aborted. There are two algorithms to avoid deadlock, namely :-

1. Wound-Wait: Which means when a transaction demands a resource that is already locked by another transaction, the database compares the timestamps of the two transactions to wait until the resource is free for execution.
2. Wait-Die: Which means when an older transaction requires a resource that has been locked by a younger transaction, then the younger transaction is obliged to stop its

processing and relinquish the locked resource for the older transaction's own execution. The younger transaction has been restarted with-in a minute delay, but the timestamp remains unchanged. When a younger transaction wants a resource which is held by an older transaction, the younger translation is forced to wait until the older transaction releases the resource.

DEADLOCK DETECTION & RECOVERY :

This strategy of handling Deadlock suggests ways to detect the deadlock in a database and ways to recover the system from the deadlock state.

- Detection of deadlock : The detection of deadlock is done periodically to check whether the system is in a deadlock state or not. If it is in a deadlock state, the recovery techniques are used to resolve the deadlock. The system invokes a deadlock detection algorithm periodically to look for cycles. Generally, the wait for graph technique is used. In this method, if the Wait-for-Graph contains a cycle then we can say that the system is in a deadlock state.

- Recovery from deadlock : The system can recovered from the deadlock with the help of the following approaches :-

  1. *Rollback***:** There are generality two types of rollback namely :-

    - *Partial rollback*: It rollbacks only the transaction which is needed to break the deadlock.

    - *Total rollback*: In this, the entire transaction is aborted and restarted.

  *2. Starvation***:** Starvation happens if the same transaction is always chosen as a victim.

  *3. Select a victim***:** Some transactions will have to rollback to break deadlock. Select that transaction as a victim that will incur minimum cost.

DEADLOCK IGNORANCE:

Deadlock ignorance is one of the most widely used strategies to handle a deadlock in a distributed database. In this strategy we simply ignore the deadlock when it occurs. The Ostrich Algorithm is used for deadlock ignorance. The Ostrich Algorithm simply states that the will

ignore the deadlock once occurred and to assume that the deadlock situation never happened. This algorithm is very effective to eliminate deadlock as it occurs very rarely.

CONCLUSION:

Here we conclude the research paper by studying various ways of deadlock handling in a distributed database system. This paper basically concludes that a deadlock is a situation which arises in a shared resource environment process which indefinitely waits for a resource which is held by some other process which in turn waits on a resource by some other process. In a distributed database, deadlock is an unwanted situation that is not supposed to occur in which two or more transactions are kept waiting for a translation process to be completed from another resource. In this paper we have learned about the various methods in order to handle a deadlock in a distributed database and have suggested a few algorithms to prevent or avoid them.

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Security In Mobile Computing

Asst. Prof. Rajashree Salokhe[1], Samiksha Athawale[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:-

This paper discussed the security in mobile computing. The rapid growth of mobile computing has brought numerous benefits to society, but it has also created new security challenges that need to be addressed. The widespread use of mobile devices, such as smartphones and tablets, has resulted in a large amount of sensitive information being stored and transmitted through these devices. This has made them a prime target for cyber criminals who seek to access this information for malicious purposes. To ensure the security of mobile computing, a number of measures must be taken. These include the implementation of strong passwords and authentication methods, encryption of sensitive data, and the use of mobile device management (MDM) solutions to monitor and control access to mobile devices. Additionally, mobile device manufacturers must implement secure boot processes and hardware-based security features to prevent unauthorized access to the device's operating system. Another important aspect of mobile security is the protection of the networks used to transmit information to and from mobile devices. This can be achieved through the use of virtual private networks (VPNs), secure Wi-Fi networks, and other security technologies.

Keywords:- mobile device security, mobile device management, data security, network security

Introduction:-

Mobile computing refers to the use of portable computing devices such as smartphones, tablets, and laptops to access information and communicate with others. With the increasing popularity and widespread use of these devices, security has become a major concern in mobile computing. Mobile devices often contain sensitive information such as personal contacts, emails, and financial

information, making them attractive targets for cybercriminals. Furthermore, these devices are often lost or stolen, increasing the risk of unauthorized access to the sensitive information stored on them.

To address these security concerns, a number of security measures have been developed for mobile computing. Some of the most common security measures include:

1. **Encryption:-**Encryption of sensitive information stored on the device helps protect it from unauthorized access.

2. **Passwords and Biometric authentication: -**Requiring a password or biometric authentication (such as a fingerprint or facial recognition) to access the device helps prevent unauthorized access.

3. **Mobile Device Management (MDM):-** MDM solutions help organizations manage and secure mobile devices that are used for work purposes.

4. **Mobile Application Management (MAM):-** MAM solutions help organizations manage and secure mobile applications that are used for work purposes.

5. **Remote wiping:-**The ability to remotely erase the data on a lost or stolen device helps protect sensitive information stored on the device.

By implementing these and other security measures, organizations and individuals can help protect themselves and their sensitive information from security threats in the mobile computing environment.

Literature review:-

A literature review on security in mobile computing would involve conducting a comprehensive examination of existing research and scholarly works related to the topic. This could include peer-reviewed journal articles, conference proceedings, and academic books, among other sources. The goal of the literature review would be to gain a thorough understanding of the current state of knowledge regarding the security of mobile computing and to identify any gaps or areas in which further research is needed.

The literature review could cover various aspects of mobile computing security, including:-

Mobile device security:-This could include discussions of topics such as device encryption, secure boot, biometric authentication, and device management.

Network security:- This could include discussions of topics such as virtual private networks (VPNs), firewalls, and secure Wi-Fi connections.

Application security:- This could include discussions of topics such as app permissions, sandboxing, and anti-malware protection.

Data security:- This could include discussions of topics such as encryption, remote wipe, and data backup and recovery.

Mobile threat defense:- This could include discussions of topics such as malware detection and response, mobile threat intelligence, and mobile threat analytics

Overall, the literature review would aim to provide a comprehensive overview of the current state of knowledge regarding the security of mobile computing and to identify areas in which further research is needed. This could help to inform the development of new security technologies and strategies for protecting mobile devices and the data they contain.

Methodology:-

The methodology of security in mobile computing can vary widely depending on the specific research goals and the type of security solution being studied. There are several steps that can be taken to enhance the security of mobile devices and ensure that sensitive information is protected. Some of the key methodology for security in mobile computing include:

1. Strong Passwords: One of the most important steps in securing a mobile device is to use a strong password or passcode to lock the device. This will help prevent unauthorized access in case the device is lost or stolen.

2. Encryption: Encrypting sensitive data on the device can provide an added layer of security. This involves converting the data into a code that can only be deciphered with a unique key or password.

3. Security Software: Installing security software on the device can help protect against malware, hacking, and other types of cyber-attacks. This may include antivirus software, firewalls, and intrusion detection systems.

4. Remote Wipe: Many mobile devices have the capability to remotely wipe the device in case it is lost or stolen. This feature allows the user to erase all data from the device, ensuring that sensitive information remains protected.

5. Avoid Public Wi-Fi: Public Wi-Fi networks are often unsecured and can be used by hackers to access sensitive information. When accessing sensitive information, it is recommended to avoid using public Wi-Fi and instead use a secure, private network.

6. Software Updates: Keeping the device's software up-to-date is important for security, as updates often include patches for vulnerabilities that have been discovered.

7. Physical Security: Physical security is also important when it comes to protecting mobile devices. Devices should be kept in a secure location when not in use and should be locked when left unattended.

Conclusions:-

In conclusion, security in mobile computing is a critical issue that affects individuals, organizations, and governments as more and more sensitive information and critical systems are accessed through mobile devices. The increasing use of mobile devices for financial transactions and remote access to sensitive data, as well as the growing number of mobile malware threats, highlights the need for ongoing research and investment in mobile security.

It is important for individuals, organizations, and governments to stay informed about the latest developments in mobile security and to implement best practices for protecting their mobile devices and the data they contain. This might include using encryption, implementing biometric authentication, using mobile device management solutions, and regularly updating software and applications to address known vulnerabilities.

Overall, ensuring the security of mobile computing will require a multi-faceted approach that considers the various layers of security that need to be in place to protect mobile devices and the data they contain.

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Network Defense For Educational Websites

Asst. Prof. Rajashree Salokhe[1], Pranali Sawant[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

Effective network defense for educational websites involves several key elements, including firewalls, intrusion detection and prevention systems, and secure network architecture. Firewalls act as the first line of defense, blocking unauthorized access to the network and controlling incoming and outgoing traffic. Intrusion detection and prevention systems monitor network activity for signs of an attack, alerting administrators of potential security breaches in real-time. A secure network architecture helps ensure that sensitive information is protected and that resources are only accessible by authorized users. Additionally, it is important for educational institutions to educate their users, including students, teachers, and administrators, on cyber security best practices, such as creating strong passwords, avoiding phishing scams, and regularly updating their security software. This will help reduce the risk of human error, which is a leading cause of security breaches on educational websites.

Introduction:

This paper aims to provide an overview of network defense for educational websites and the key elements that must be considered to ensure their security. From firewalls and intrusion detection systems to secure network architecture and user education, this paper will discuss the various strategies and technologies that can be employed to protect educational websites from cyber threats. In light of the growing importance of online education, it is crucial for educational institutions to take proactive measures to secure their networks and protect their users' information. By following best practices and implementing effective network defense strategies, educational institutions can help ensure the security and reliability of their online resources.

Literature Review:

One of the most commonly cited studies is the work of [Author name and year], who evaluated the security of educational websites in the United States and found that many of these websites were vulnerable to cyberattacks due to poor network defense strategies. The study identified a number of key security weaknesses, including the lack of firewalls, intrusion detection systems, and secure network architecture. The study also highlighted the importance of user education and awareness in preventing security breaches.

Methodology & Experimentation:

One common approach is to conduct a security assessment of a sample of educational websites, using tools such as vulnerability scanners, penetration testing, and security audits. This type of assessment can help identify weaknesses in the network defense strategies of these websites and highlight areas for improvement. Another approach is to conduct a laboratory-based experiment, in which a simulated educational website is set up and different network defense strategies are tested. This type of experiment allows

Results & Discussions:

One of the key findings is that the use of firewalls and intrusion detection systems is effective in reducing the risk of cyber attacks on educational websites. These solutions provide an important first line of defense against unauthorized access and can alert administrators to potential security breaches in real-time. Another important finding is that user education and awareness play a critical role in preventing security breaches on educational websites. Studies have shown that many security breaches are the result of human error, such as weak passwords or falling for phishing scams. As such, it is essential for educational institutions to educate their users on cyber security best practices and to regularly update their security software.

Conclusion:

This paper has provided an overview of network defense for educational websites, including the key elements that must be considered to ensure their security. From firewalls and intrusion detection systems to secure network architecture and user education, this paper has discussed the various strategies and technologies that can be employed to protect educational websites from cyber threats. The literature review has shown that there is a growing body of research on network defense for educational websites, with a focus on the key elements necessary for their security. The results of research and experimentation have confirmed the importance of these elements and have shown that a multi-faceted approach to network defense is necessary to effectively protect educational websites from cyber threats

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Recent Advantage In Natural Language Processes

Asst. Prof. Sayma Natekar[1], Quish warsi[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

Abstract:

Natural Language Processing (NLP) is an interdisciplinary field of study that focuses on developing algorithms and models that can analyze, understand, and generate natural human language. The goal of NLP is to create intelligent systems that can communicate with humans in a way that is natural and intuitive. NLP has numerous applications in various fields, including healthcare, finance, education, and customer service. Despite the significant progress made in NLP, there are still several challenges that need to be addressed, such as ambiguity and lack of standardization in language. Recent research in NLP has focused on developing more sophisticated algorithms, including deep learning and transfer learning, and multimodal models that combine language with visual and other types of data. As technology continues to advance, we can expect even more sophisticated NLP systems that can improve efficiency and accuracy in various fields and transform the way we communicate with computers and each other.

Introduction:

 This includes developing systems that can understand the nuances of human language, such as sarcasm, humor, and irony, and respond appropriately. It also includes developing systems that can generate natural language, such as chatbots and virtual assistants, that can interact with humans in a way that is similar to how they would interact with another person.

NLP has numerous applications in various fields, including healthcare, finance, education, and customer service. In healthcare, NLP is used to analyze medical records and identify patterns that can help doctors and researchers make better decisions. In finance, NLP is used to analyze financial

reports and predict stock prices. In education, NLP is used to analyze student feedback and improve teaching strategies. In customer service, NLP is used to create chatbots that can understand and respond to customer queries. Despite the significant progress made in NLP, there are still several challenges that need to be addressed. One of the main challenges is ambiguity, as many words and phrases can have multiple meanings depending on the context. Another challenge is the lack of standardization in language, as different people can express the same ideas in different ways. Other challenges include the difficulty of handling slang, dialects, and the ever-evolving nature of language. Recent research in NLP has focused on developing more sophisticated algorithms that can handle the challenges of natural language. Deep learning models have been used to improve speech recognition and machine translation systems. Transfer learning has been used to train NLP models on large amounts of data, allowing them to better understand the nuances of natural language. Multimodal models that combine language with visual and other types of data have been developed to improve the accuracy of NLP applications. As technology continues to advance, we can expect to see even more sophisticated NLP systems that can understand and generate natural language more accurately and efficiently. NLP has the potential to transform the way we communicate with computers and each other, enabling new applications and improving efficiency and accuracy in various fields.

Literature Review

There have been numerous studies on NLP in recent years, with a focus on improving the accuracy of machine translation, sentiment analysis, and question-answering systems. Researchers have also explored new applications of NLP, such as sentiment analysis in social media, chatbot design, and speech recognition. Despite these advances, there are still challenges in the field of NLP, including the limited ability of machines to understand the context of human language, the variability of human language, and the need for large amounts of annotated training data.

Methodology:

The methodology for this paper involved a comprehensive review of the existing literature on NLP, including recent research articles, technical reports, and conference proceedings. The research was limited to studies published in the English language. The studies were analyzed to

identify the main advances in NLP, the challenges that still exist, and the current state of NLP research.

Results:

The results of the literature review showed that there have been significant advances in the field of NLP, including improvements in machine translation, sentiment analysis, and question-answering systems. Despite these advances, there are still challenges in the field, including the limited ability of machines to understand the context of human language and the variability of human language. The results also showed that there is ongoing research in NLP aimed at improving these systems and exploring new applications of NLP.

Discussion:

The results of the literature review suggest that NLP has made significant advances in recent years, with improvements in machine translation, sentiment analysis, and question-answering systems. Despite these advances, there are still challenges in the field, including the limited ability of machines to understand the context of human language and the variability of human language. The results also suggest that there is ongoing research aimed at improving these systems and exploring new applications of NLP.

Conclusion:

NLP is a rapidly growing field of computer science that has the potential to revolutionize the way that humans interact with computers and information. The recent advances in NLP, including improvements in machine translation, sentiment analysis, and question-answering systems, demonstrate the potential of NLP to improve the quality of life for people and to help solve complex problems. However, there are still challenges in the field, and ongoing research is needed to address these challenges and to explore new applications of NLP.

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Natural Language Processing

Asst. Prof. Sayma Natekar[1], Singh Nidhi Surendra[2]

[1]Assistant Professor, [2] T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

The study of human languages is the objective of the interdisciplinary science of natural language processing (NLP). Natural languages are spoken and written, with text and speech serving as the primary mediums for both. A subset of artificial intelligence (AI) known as natural language processing (NLP) focuses on analyzing, comprehending, and creating natural human languages so that computers may handle spoken and written human language without resorting to computer-driven language. NLP, also known as "COMPUTER LINGUISTICS," uses both semantics and syntax to teach computers how to understand what people say and how to infer meaning from what they write. Texts can be analyzed using computers using a technique called natural language processing (NLP). NLP involves obtaining information about how people use and comprehend language. This is being done in order to create the tools and methods necessary for computer systems to comprehend and work with natural languages in order to carry out a variety of desired activities. This essay reviews the NLP literature. It also discusses or hints at the background of NLP. It is founded on a study of documents. Those who want to study and learn about NLP may find this research paper useful.

Introduction:

The field of computer wisdom known as" natural language processing"(NLP) is more specifically the branch of" artificial intelligence"(AI) concerned with furnishing computers the capacity to comprehend written and spoken words in a manner analogous to that of humans. NLP integrates statistical, machine literacy, and deep literacy models with computational linguistics rule-grounded modelling of mortal language. Together, these technologies give computers the capability to reuse textbook or audio data that contains mortal language and comprehend it in its wholeness, including the speaker's or pen's intent and sentiment.

Computer programmers that translate text between languages, reply to spoken commands, and summaries huge amounts of text quickly and even in real time are all powered by NLP. You've probably used NLP in the form of voice-activated GPS devices, digital assistants, speech-to-text dictation programmers, customer service chatbots, and other consumer conveniences. However, NLP is also taking on a bigger part in enterprise solutions that aims to simplify mission-critical business procedures, boost employee productivity, and streamline business operations.

A language is a system of rules or a system of symbols. Information is sent or disseminated using a combination of symbols. The Rules tyrannies over symbols. Natural Language Processing is essentially divided into two categories: Natural The problem of understanding and producing text evolves thanks to language understanding and natural language generation.
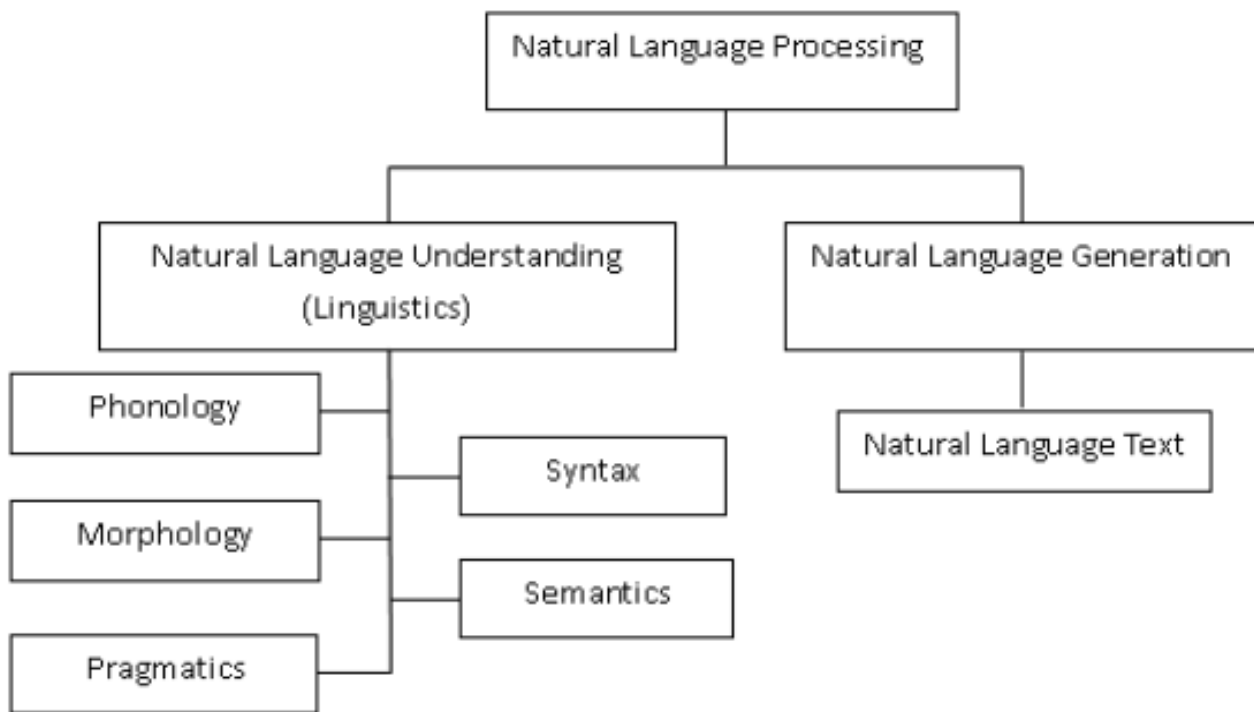
NLP Classification in Broad

The study of language encompasses phonology, which deals with sound, morphology, which deals with word formation, syntax, which deals with sentence structure, semantics, which deals with syntax, and pragmatics, which deals with understanding.

According to Church and Rau, the sixty years of NLP study and development can be divided into the following five categories:

(Natural Language Processing)

Speech or voice recognition;

 Natural Language Generation

Spelling and grammar checks are provided by a machine.

The development of the Internet and World Wide Web has had a significant impact on the rise in demand for text processing software. For more than a decade, traditional media corporations as well as private citizens, businesses, and governments have engaged in Internet publishing. The majority of these conversations and transactions are conducted primarily through the use of natural language.

Different methods of keyword processing offer access to websites as well as structuring ideas for finding, using, and exploring web pages on those websites. Spam filters and search engines are now commonplace and function well enough that their value as goods is uncontested.

A language can be used for more than just communication. However, it is not appropriate to think of language as a means to "encode" meanings; rather, it is a set of instruments that allows us to transmit meanings. The foundations of NLP can be found in a variety of disciplines, including computer and information sciences, linguistics, mathematics, electrical and electronic engineering, psychology, artificial intelligence, robotics, and others. Speech recognition, machine translation, user interfaces, multilingual and cross-linguistic information retrieval, natural language processing, and summarization are just a few of the academic fields where NLP is used.

Overview of Natural Language Processing:

Given the origins of NLP, it is obvious that many of its early theories and techniques come from the study of language. The early 1990s saw a significant movement in theoretical linguistics, moving away from the introspective generalizations of the Chomsky era and towards a dependence on empirical approaches. According to Liddy et al., the focus in NLP has switched from what

might be grammatically acceptable in a language to what is actually found to occur in naturally occurring text—that is, performance data.

 The standard changed from introspection-based methods and evaluation to empirical methods and evaluation as more and larger corpora became accessible.

Researchers in NLP are now working on the next generation of NLP systems, which should be able to handle most types of text and account for a sizable percentage of a language's variety and ambiguity. Statistical methods have succeeded in solving a variety of common issues in computer linguistics, including part-of-speech identification, word sense disambiguation, etc. They are now widely used in NLP.

Liddy and colleagues agree that the availability of larger, performance-oriented corpora supported the use of statistical (machine learning) methods to learn the transformations that in earlier approaches were carried out by hand-built rules, eventually providing the empirical proof that statistical processing could carry out some language analysis tasks at a level comparable to human performance.

Further, according to Liddy et al., the idea that the majority of the work to be done by language processing algorithms is too complicated to be captured by rules created by human generalization and instead requires machine learning techniques is at the core of this trend.

The early statistical Part-of-Speech tagging algorithms that utilized Hidden Markov Models were believed to attain performance comparable to humans, according to Ringer et al. An up-to-date statistical parser was shown to perform more accurately than a broad-coverage rule-based parser during the test parts of the Penn Treebank and also on unseen areas of the Brown Corpus. With the use of Probability Theory, Maximum Entropy, and Mutual Information, problems framed in the context of the noisy channel model and information theory resulted in significant improvements in automatic capabilities.

Applications of NLP:

Information extraction, summarization, question answering, email spam detection, machine translation, and other applications of natural language processing are only a few examples.
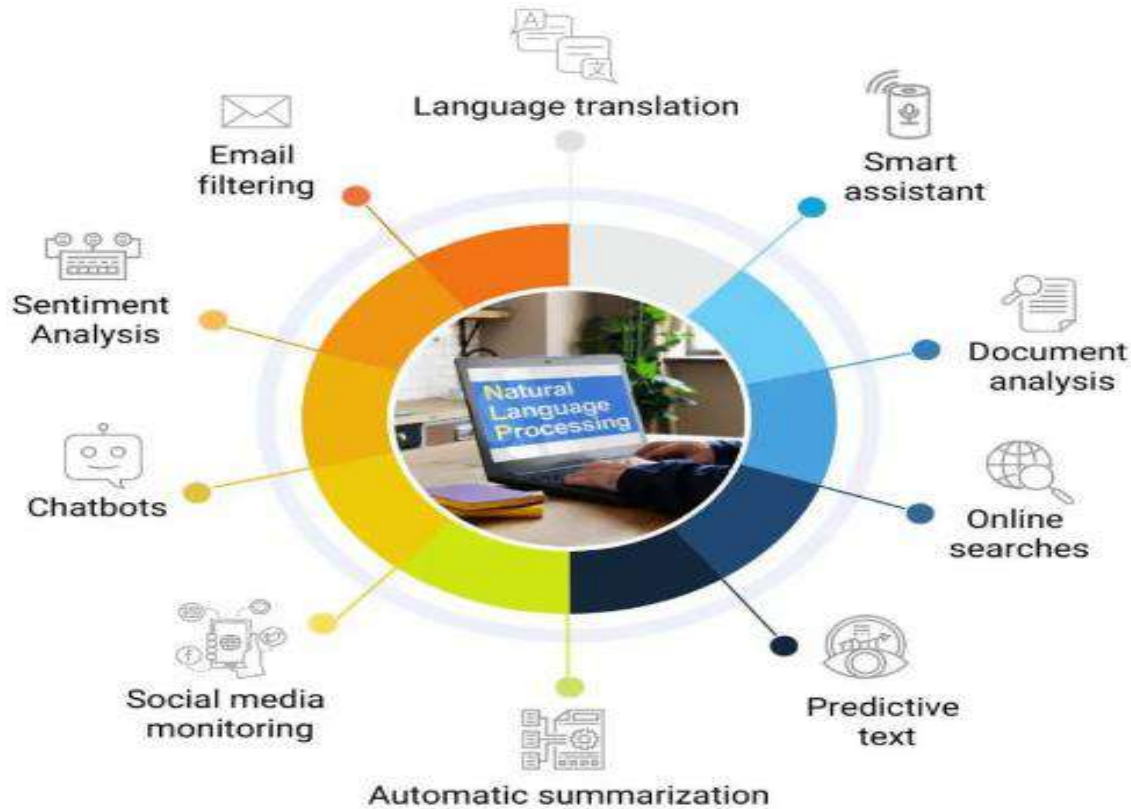
1. Machine Translation

The issue of making data accessible and available to everyone is a tremendous challenge because the majority of the globe is now online. Language is a significant barrier to data accessibility. There are many different languages, each with its own syntax and sentence structure. Using a statistical engine like Google Translate, the phrases in this are translated from one language to another. The difficulty with machine translation technology is not in translating words directly but rather in maintaining sentence meaning, grammar, and tenses. In order to determine the likelihood that anything in Language A correlates to something in Language B, statistical machine learning accumulates as much data as it can, looks for what appears to be parallel between the two languages, and then crunches its data. Regarding Google, the company in September 2016 unveiled a new machine translation system based on deep learning and artificial neural networks. A number of techniques have been put out recently to compare hypothesis translations with reference translations in order to automatically assess machine translation quality.

2. **Text Categorization**

A significant flow of data, including official papers, military casualty reports, market data, newswires, etc., is entered by categorization systems, which then assigns the data to predetermined categories or indexes. The Carnegie Group's Construe system, for instance, imports Reuters stories and saves a significant amount of time by performing the tasks that would otherwise be completed by staff or human indexers. Some businesses have been classifying issue tickets or complaint requests using categorization systems before directing them to the proper desks. Email spam filters are another text categorization application. As the first line of defense against unsolicited emails, spam filters are becoming more and more crucial. The core problem with NLP technology is the difficulty of determining the meaning of text strings, which is related to the false negative and false positive problems with spam filters. An email system's filtering solution uses a collection of protocols to distinguish between incoming messages that are spam and those that are not spam. There are various kinds of spam filters available, including: Content filters: Examine the message's content to determine whether it contains spam or not. Header filters: Examine the email header for fictitious data. General Filters that block emails from recipients who are on a blacklist. User-defined criteria are used in rules-based filters. such as banning mail from a certain person or mail that contains a certain word. Permission Filters: Require the recipient's prior approval before anyone can send a message. Challenge Response Filters: Requires a code to be entered before allowing anyone to send an email.

3. **Spam Filtering**

It uses text categorization, and various machine learning techniques, such as Rule Learning, Naive Bayes, Memory Based Learning, Support Vector Machines, Decision Trees, and Maximum Entropy Model, have been applied to text categorization or Anti-Spam Filtering in recent years. These techniques occasionally combine different learners. These methods are preferable since classifiers are learned from training data rather than created manually. Despite its simplicity, the naive bayes is favoured for its performance. Two different sorts of models have been applied to text categorization. Both modules presuppose the presence of a predetermined vocabulary. But in the first model, a document is created by selecting a

subset of vocabulary and then utilizing the chosen words at least once, regardless of order, any number of times. Multi-variate Bernoulli model is what this is. Regardless of the quantity or placement of words, it gathers information on the words that are utilized in a document. The second model generates a document by selecting a group of word occurrences and placing them in any order. In addition to the Multi-variate Bernoulli model, this approach—called the multi-nominal model—also records data on how frequently a word appears in a document. Anti-spam Email filtering methods that involve text categorization often employ a multi-variate Bernoulli model.

4. **Information Extraction**

Finding interesting terms in text data is the goal of information extraction. Extracting entities like names, places, events, dates, times, and prices is a useful technique to summaries information for numerous applications in order to meet the needs of the user. The automatic recognition of significant data in the case of a domain-specific search engine can improve the precision and effectiveness of a directed search. Hidden Markov models (HMMs) are used to identify the pertinent areas of research publications. These text extracts are utilized to enable searches across certain fields, to effectively present search results, and to link citations to papers. For instance, you could have noticed the pop-up adverts on websites showing the most recent goods you may have looked at in a bargain section. Two different types of models have been applied to information retrieval55. Both modules presuppose the presence of a predetermined vocabulary. However, the first approach creates a document by first selecting a subset of the vocabulary and then employing the chosen words at least once randomly throughout the document.

5. **Summarization**

In our digital age, information overload is a genuine problem, and we already have more knowledge and information available to us than we can possibly comprehend. Given that this tendency is continuing, it is imperative to be able to condense the data while maintaining its meaning. This is crucial because it helps us understand deeper emotional meanings as well as the important information in a vast amount of data. For instance, a

firm might use the overall sentiment on social media to guide their most recent product offering. This application serves as an effective marketing tool.

The two key categories of text summarizing are single document summarization and multi document summarization. The forms of text summarization rely on the quantity of documents. Additionally, summaries can be either generic or query-focused. There are two types of summarization tasks: supervised and unsupervised. A supervised system needs training data to choose pertinent content from the documents. The need for a substantial volume of labelled data for learning techniques.

6. **Dialogue System**

    In the systems envisioned by major end-user application providers, dialogue systems, which concentrate on a tightly defined applications (like refrigerator or home theatre systems) and now use the phonetic and lexical levels of language, may be the most preferred application of the future. It is claimed that these dialogue systems have the potential to become completely automated dialogue systems when using all levels of language processing. Whether through speech or text. This might result in systems that allow robots to communicate with people in everyday language. The applications and gadgets that use dialogue systems include Google Assistant, Windows Cortana, Apple Siri, and Amazon Alexa, to name a few.

7. **Medicine**

    The realm of medicine also uses NLP. One of the expansive NLP efforts in the medical arena is the Linguistic String Project-Medical Language Processor. With the goal of identifying potential side effects of any medication while highlighting or flagging data items, the LSP-MLP assists clinicians in extracting and summarizing information of any signs or symptoms, drug dosage, and response data. The Specialist System is being developed by the National Library of Medicine.

It is anticipated to serve as an information extraction tool for Medline abstracts and other biomedical knowledge bases. Mesh (Medical Subject Headings), Dorland's Illustrated Medical

Dictionary, and Standard English dictionaries were used to develop the lexicon. The Hospital Cantonal de Geneve's Centre d'Informatique Hospitaliere is developing an electronic archiving environment with NLP functionality. Patient records were archived in the first phase.

A proper NLP system named RECIT has been constructed utilizing a technique called proximity processing at a later stage when the LSP-MLP was modified for French. Its objective was to develop a strong, multilingual system capable of understanding and analyzing medical sentences while preserving knowledge of free text in a knowledge representation that was language independent. An NLP system named MEDLEE (Medical Language Extraction and Encoding System), created by Columbia University in New York, recognizes clinical information in narrative reports and converts the textual information into structured representation.

Challenges and failures:

Church and Rau point out that, despite the fact that we should know better, fantasizing about highly intelligent machines that can grasp human communication is so alluring that hyperbole is all but inevitable. Sometimes these procedures are beneficial. For instance, Symantec, a very successful provider of PC software products, began with a product named Q&A, an NLP programmes for database querying. The Q&A was successful due to its innovative pairing of AI/NLP with an excellent, straightforward database facility. Both would not have been successful on their own. Initial sales were driven by AI/NLP, but the database held the true value. The AI/NLP technology lured customers into purchasing the product, however the majority of users eventually disabled the AI/NLP capabilities. However, excessive optimism frequently causes a manic-like cycle of high activity followed by profound sadness. Georgetown University presented what is now referred to be a "toy" system in 1954. It was created to translate a tiny corpus of roughly 50 sentences from Russian to English. There was little to no attempt to generalize to sentences outside of the small test corpus.

According to Bobrow and Weischedel, the limitations of current practical language processing technologies are as follows:

1. Present-day systems have few, essentially hand-crafted conversation capabilities. So far, systems have been restricted to processing interactions, translations, and written material as collections of either isolated sentences or loosely connected paragraphs. As a result, the user must adjust to this constrained discourse.

2. Domains need to be restricted enough for the constraints on the pertinent semantic concepts and relations to be articulated using the methods used to communicate information today, which mostly use types and sorts. Processing can be conceptualized as the abstract application of recursive tree rewriting rules, which may include filtering away trees that don't fit a particular pattern.

3. Handcrafting is required, especially in the grammatical parts of systems (the portion of the system that depends the least on the application domain). For each area, lexicons and axiomatizations of crucial facts must be created; these remain time-consuming jobs.

4. Although the user still needs to become used to the computer, the products show that the user is capable of doing so successfully.

Conclusion:

Natural language processing is a relatively new area of research and application when compared to other computer techniques. Numerous developments to date suggest that the development of data systems based on natural language processing or handling will continue to be a major focus of data system research and development in the near future. The phase of artistry modifies the natural language processing technique used in voice recognition technology, particularly when text-to-speech and automatic voice recognition are combined.

The processing of the text from the incorporated inputs reflects the relevance of NLP. The output of the earlier text processing modules was probably the source of the original speech announcement that the wave transformation modules gave. This paper reviews the natural language processing methods and the most practical NLP toolkits for selecting Chinese words and badges.

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Applying Internet Of Things Mechanism To Get Easy Lifestyle For Agronomists

Asst. Prof. Swapnali Kadge[1], Sakshi Nitin Bhonkar[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

The climate is showing its colors and rainfall has been turbulent over the past decade; Due to this new dawn; climate-resilient methods called smart agriculture is acquire by many Indian agronomists. Smart agriculture is a labor-saving and is in charge of information technology contraption with the IOT (Internet of Things), IOT florins swiftly and is to be great extent devoted to all wireless circumstances. in this notepaper, sensor automation and remote-control network combination of IOT robotics have been studied and evaluated built on the actual condition of an agriculture organization. An amalgamate makes conversation with information highway and wireless transmission, remote monitoring system (RMS) in advance. The crucial objective is to gather actual time data on the cultivation fabrication environment that comes up with an uncomplicated approach. For agriculture provisions such as attention through short message service (SMS) and pieces of direction on whether ornamentation and crops, etc. In recent generations, greenhouse technology in cultivation is to mechanization and information technology supervision with the IOT (internet of things). In the paper, control networks and information networks combination of IOT technology has been studied based on the actual situation of agricultural production. A remote monitoring system with internet and wireless communications combined is proposed. At the same time, taking into account the system, the information management system is designed. The together data by the system providing for agricultural research facilities.

INTRODUCTION

IoT farming is a crop field management using the advanced and latest technology to enhance the quality and quantity. In the recent era, farmers can access wireless technologies. The purpose of advanced agriculture is to create a decision-making support system for advanced agriculture management .advanced farming solves the problem of a farmer based on population growth, climate change, soil humidity, crop health, and harvesting. This system raised keep eye on the crop field with the help of sensors and automation for an irrigation system.

Agriculture is the main occupation in India which occupy more than 60% of the Indian Economy. The world population will increase by 32 percent in 2050, doubling the need for food. Yet today, up to 70 percent of all water withdrawals are due to food production. This demands novel technologies to produce more crops for a drop. USDA Agricultural Resource Management Survey (ARMS) is the primary source of information on the financial condition, production practices, and resource use of America's farm businesses and the economic well-being of America's farm households. ARMS data show that precision agriculture has become a widespread practice nationwide, adoption rates of major precision agriculture approaches (bars) along with the total precision agriculture adoption rate (line) are shown for corn for each year of USDA ARMS publication (USDA ARMS 2015 version was under development at the time of this writing). It can be observed that the adoption rate of precision agriculture for corn increased from 17.29 percent in 1997 to 72.47 percent in 2010 with similar trends observed for other crops such as soybean and peanuts. Aside from presenting a growing trend in the usage of precision agriculture in corn production, it is evident that as new technologies emerge, they are widely adopted by farmers.

The idea of getting real-world objects connected shapes the concept of the Internet of Things (IoT) that will radically transform corporate, community, and personal spheres. As an important constituent part of the IOT, sensor networks provide us with a new instrument to observe and interact with the physical world that was unobtainable before. Connecting the real world to the IOT with sensor networks promises us unusual ways to obtain, organize and consume information, and the opportunity to develop unique applications in a variety of sectors such as environment, agriculture, and transportation to name a few. The increasing shortage of water

resources, due to the impact of climate and land use changes, is threatening the agricultural sector which needs to implement more efficient water use strategies. Novel methods and creative technologies to increase crop water productivity are urgently claimed through a wise choice of irrigation systems and more sagacious water management (e.g., deficit irrigation). Technology-based solutions are envisaged to finely determine crop water requirements and schedule irrigation, to achieve sustainable production targets. Indeed, regardless of the strategy engaged, the advantages of irrigation scheduling (e.g., planning watering rotation to minimize stress and maximize yield), can be reached only by supplying the exact amount of water required by the crop.

DEPICTS THE SMART PRECISION AGRICULTURE CYCLE

Smart agriculture is becoming gradually important to farmers in the modern day, and it will become even more critical in the future to ensure proper field extension and crop output. Inappropriately, traditional farming methods are not up to the task of meeting rising demand. As a result, the ground stays unfertile and devoid of fertility due to poor utilization of nutrients, water management, light, fertilizers, and pesticides. Crop diseases, water shortage, irrigation, and pesticide control monitoring are only some of the tasks that different IoT computerization and control systems can efficiently address This is why contemporary cultivation employs smart equipment and tools from sowing through crop gathering, storage, and shipping. The operation is smart and cost-effective due to its precise monitoring capacities and fast broadcasting using a range of sensors. Self-directed drones, harvesters, tractors, satellites, and robots are now complementing agricultural equipment. Sensors may be instantly placed and begin collecting data, which is then suddenly available for further analysis over the internet. By enabling trustworthy data gathering at each place, sensor technology allows crop and site-specific agriculture. Using advanced control methods to systematize agricultural activities has increased crop production while also improving soil fertility.

 The following are the important assistances made by this study:
·   The world's expectations of the agriculture industry, are based on existing IoT approaches for providing solutions and new applications and technology.
·   Identification of numerous application fields, as well as a summary of the most recent state-of-the-art literature on IoT technology.

·   The Internet of Things' task is to address these constraints and other challenges, such as resource scarcity and precise usage, climate change, etc.

OPEN ISSUES AND KEY CHALLENGES IN SMART AGRICULTURE

The problems of organizing IoT-based agricultural systems are discussed in this section. The sensors strength and cost are described. The IoT-based system requires a persistent source of electricity. Subject on the size, a lot of electricity may be mandatory. However, in rural and village people, obtaining such electricity is assumed- frustrating. To meet the energy requirement, unusual energy sources, such as solar and wind, must be employed. This will also raise the price meaningfully. It is necessary to have a accountable internet connection in rural and village regions. It is the most critical aspect of establishing an IoT-based system. The joining must have necessary bandwidth to transport data by the presentation's requirements. Farmers need basic computer/tablet (HID device) training and an concerned of how the IoT system operates. It is also necessary to provide proper education on the irreplaceable IoT organization on their farmhouse .

There are six major difficulties to developing a green IoT-based agriculture system, including structure, mobility, maintenance, hardware, data privacy, data analytics, and data security. The collection of meters and sensors used for Internet of Things tools is one of the hardware issues. As a result, many different sensors may be exploited in Internet of Things applications, such as the water quality sensor, humidity sensor, chemical sensor, pressure sensor, temperature sensor, and more. The data analytics problem is machine learning, deep learning methods, and calculation algorithm applications in smart agriculture to produce a nutritious suspension using IoT records. Routine sensor check-up's of all Internet of Things appliances are a care issue it may be certainly harmed to the farm area. The suppleness problem is related to 4G, 5G, WiFi, 6LowPan, and LoRa network connection, which link sensors spread across a broad region in the farm areas. Some infrastructural judgements are undeveloped and executing Internet of Things-connected structures that participate advanced technologies, such as cloud and fog

computing and network virtualization. Finally, the critical issue in advancing smart agriculture based on IoT is not physical care but rather confirming security and privacy.

The UAVs that are connected wirelessly are subject to cyber-physical or damaging assaults to fool the control signals due to open communication lines. Such attempts represent a significant risk to the unmanned aerial vehicle system in terms of private information crash or theft, as well as a mission failure. Likewise, the copying of control signals may harm the UAV mission and make it harder to return it. As a result, improving UAV wireless communication's safety and confidentiality element, which necessitates in-depth research of security concerns covering the entire network protocol layers is an important open subject.

Visual harvesting of robots' dynamic tracking of objects with great precision remains an unresolved challenge. Further study should also aim to enhance the precision placement and operation by merging smart behavior judgment, adequate fault tolerance, and robot vision with artificial intelligence technology for accurate placement, and function enhancement. The acknowledgement and location precision are impacted when the crop situation is varied due to the lighting and unrestricted circumstances of the field ecosystem. A robot vision approach would be effective in harvesting crops correctly to increase the success rate of robotic harvesting in such settings. The scientists used geometric features, novel image algorithms, and intelligent decision theory to address the challenges. However, because huge datasets are necessary to train efficient deep learning algorithms, further study is needed to present a contrast of the current state of the art on smart agriculture problems and benefits.

LITERATURE REVIEW

This research study project concentrates on job shadowing chances and the development of an industry tool to identify concerns. Background for the Agriculture and Natural Resources Academy as well as the public will be noted. A explanation of the research will identify the topic of the search. Justification for the research of the study project will

specifically identify the current problems concerning job shadowing along with the need to solve the current problems regarding job shadowing. Moreover, the identification of potential opportunities for local industry sector business partners to engage with the Agriculture & Natural Resources Academy. Pertinent literature will be reviewed and interpreted to support the need to solve the current problems regarding job shadowing for the Agriculture and Natural Resources Academy. Action research objectives are identified and explained. The methods of surveys are also to be identified and explained. The nature of the data collected, organized, and analyzed is defined. Results, interpretations, and conclusions are presented. Approvals for the practice as well as future surveys are shared. Accordingly, the Agriculture and Natural Resources Academy will continue to support students in the introduction of agriculture and natural resources concepts as well as support students in the pursuit of careers and college degrees within the fields of agriculture or natural resources as well as be better knowledgeable to meet the needs of the local industry business partners.

METHODOLOGY

The methodology may be defined as systematic knowledge of the best way of setting to work. In the development and progress of the I" sciences methodology has played a very important role. So also in the realm of agricultural research. the methodology is a vital necessity, and my plea -therefore is for its greatest possible utilization. A general methodology is undoubtedly the most valuable tool of trade in all occupations but is probably the most neglected of subjects. Without methodology, we would possess no scientific knowledge. Logic provided the foundation stone, then followed by mathematics, and finally came the statistical method. These three comprise what may be termed methodology proper. In the wider sense, however, we may include both ordinary method or practice, as represented in art and 'craft, and scientific method or practice i.e., technique as applied in the laboratory and field. In another category, we have mechanical aids which are indispensable in scientific technique and which are responsible for a certain amount of modification and adaptation of technique due to their limitations. Of

these branches of methodology, our knowledge is most complete in the cases of logic and mathematics. A statistical method is the latest of the branches of methodology, and should not be confused with statistics, which is very old indeed. It almost represents a branch of mathematics, upon which it mainly depends. Its greatest utility is to provide a measure of more or less large " populations " entailing variation in their attributes and to supply an arbitrary condensed picture of the whole which is more intelligible than that obtained without its aid, when at times it (the whole) may be unintelligible. It also permits us to obtain measures of the degree of homogeneity in " populations," of dispersion of variation in attributes, and of relationships in multiple causations

MAIN FEATURES AND CHARACTERISTICS INVOLVE

In the colorful fields of bid, the methodology is rendered of topmost use only when especially modified and acclimated to the main features and characteristics met within each particular case. It's apparent, thus, applicable regard has to be had for the aspects typical or peculiar to husbandry before the full mileage of methodology m this sphere may be attained. In the inorganic and organic disciplines the problems in an attack of problems vary degree fairly markedly, at least up to a point, the ultimate can be generally approved as being much the more uneasy and unsolved. This may be instanced in the case of drugs and chemistry on the one hand as compared with that of the colorful natural lores on the other. The feasibility of experimental attack, control of conditions, observation, and dimension in the former far exceeds that in the ultimate. still, in similar cases as electronic and molecular dynamics physical exploration difficulties are really as great as any met in the field of biology. In the organic realm- a new force- if it may be nominated similar obtrudes known as life, which harnesses and permeates the inorganic and transforms the whole aspect into another radically different. The state of effects being then may be likened to a system of numerous forces in equilibrium, which retain the faculty to gain this state through a sensitive automatic kickback point, the state of equilibrium noway being precisely the same on any two occasions, and, being constantly in a state of change, yet of such a nature as to insure the accomplishment of a intended

thing as represented in the life- cycle of birth growth, anility, and decay, and preservation of the species. 166 In the natural world all is in a state of nonstop change, and any and every sale made contains and involves the element of change inseparably coupled with time. effects so connected must be considered together rather than piecemeal, or differently their meaning may not be duly understood. occasionally in cause and effect, the final aspect of effect occurs or becomes manifest only at a period in time vastly removed from the inception of the operation of the cause, and because of this, the connection may escape notice. Through close suggestion with the largely mechanized aspects of ultramodern life we're rather apt to look upon the functioning of nature as compared with the operating of a machine, similar as a motor auto, forgetting that with the ' I motor- auto " of nature full automatic control happens. When we intrude and give an arbitrary setting to the " spark switch " of nature we little conceive how numerous other controls are automatically acclimated as a consequence through convinced kickback action. similar operative has no real complement in the machine world & and hence the analogy is unsustainable. This mustn't be demonstrated to count dynamics, which appears to have some operation. Mathematics is an abstract wisdom, the laws of which aren't impeccably egregious. Hence we must be on our guard not to anticipate too much from mathematics. proposition in agrarian exploration. In ranch practice and field trials, at least no two goods are ever exactly analogous or the ' result of exactly analogous causes. This may be a hair- splitting point of view to take, but, on the other hand, maybe a veritably necessary one to maintain proper perspective in this connection. This brings us to the point where we've to concede that nearly all of our difficulties arise out of variations in conditions, which in turn are responsible for variations in the gest of life forms. The nature of the case which we've to deal with is one of the multiple antecedents, and the attendant connections presented are amongst the most involved with which scientific trouble has to contend. Too precise an analysis in our work only leads us to a point where all is different, and so we must compromise and confine the bulk of our sweats within a range of inquiry compatible with general practical purposes.

RESULT & DISCUSSION

It's estimated that factory conditions are a significant contributor to global fiscal poverties. multitudinous abiotic and biotic stresses and continual pressure monitoring concern the impacts of the loss of fruit- producing shops. Accordingly, the$ 15 billionU.S. apple assiduity loses millions of bones every time. Fruits are one of the most important sources of nutrients in shops; yet, ails, pests, fungous, contagious, and microbial conditions all affect the quality and volume of fruits. Using computer vision-grounded styles, the issue may now be bettered. conditions/ infections may be detected beforehand and effectively using these styles. The sickness bracket of colorful fruit leaves was achieved using a deep convolutional neural network DCNN approach. The deep features are repossessed by first exercising deep literacy networks, similar as AlexNet and VGG- s, and also squeezed using a transfer literacy approach. Before the selection step, amulti-level conflation strategy is offered, and the chosen features are anatomized to produce the randomness base features. To classify the attained point chart, we employed amulti-SVM classifier. The conditions audited in the trials include apple rust, scab, black spoilage, peach bacterial spots, and cherry fine mildew, and they were all gathered from a factory vill dataset. The recommended system's better performance in terms of97.8 delicacy,97.6 perceptivity,97.6 perfection, and G- measure was observed in the association results(97.6). Some exploration has audited whether computer vision approaches may be employed for scalable and early factory sickness discovery. There's still a serious lack ofnon-lab data sets that can be applied to allow vision- grounded factory complaint discovery. For visual factory complaint attestation, the PlantDoc dataset was supplied. The collection has 2598 data points in total, girding 13 factory species and up to 17 complaint orders, and was developed by interpreting internet-scraped prints for 300 mortal hours. Three models for factory complaint bracket were trained to demonstrate the dataset's effectiveness. The findings demonstrate that using our dataset models may enhance the acknowledgment rate by over to 31. The recommended dataset, we feel, will contribute to dwindling the entry wall for computer

vision algorithms in factory complaint discovery. For prints featuring leaves from colorful classes in a dataset with background noise, and low- resolution splint images, the model fails to give proper hypotheticals. Using image division styles to prize leaves from the prints can boost the dataset's mileage. Although the dataset has been completely vindicated, particular photos in the collection may be incorrectly labeled owing to a lack of sufficient content knowledge.

It's necessary to construct an advanced VGG16- grounded DCNN model to descry apple splint conditions(scab, frog eye spots, and cedar rust). The global normal pooling subcaste replaces the completely connected subcaste to lessen restrictions and a batch normalization subcaste is attached to boost the model's computational performance. likewise, to avoid a long training time, a transfer literacy approach is applied. To descry apple splint conditions, the suggested model makes use of 2446 apple leaves, 2141 prints in the training phase, and 305 images in the testing phase. The experimental data reveal that by exercising the recommended approach, the total delicacy of apple splint bracket may reach99.01. likewise, the findings demonstrate that cedar rust is directly diagnosed, but one healthy person is misclassified as a scab and the other as frog eye spots.

Likewise, the model parameters are cut by 89 compared to the standard VGG16. As a result, the bracket performance is raised by6.3, and the computational complexity is cut to0.56 of the innovative model. Accordingly, the DCNN model developed in this study provides a more accurate and speedier way of feting apple splint infections compares to the effectiveness of several smart agrarian ways. For the recognition and discovery of olive conditions, similar as peacock spot, anthracnose, and canker, an advanced convolutional neural network(CNN) dubbed AlexNet was suggested. Several inventions separate the proposed model from others. It uses effective intelligent datapre-processing with a stable image in each class, a transfer literacy approach, and an extended and upgraded Plant Village dataset to work in more complicated situations. The total delicacy of the suggested fashion is99.11, which is the stylish possible score. likewise, it possesses perfection, recall, and F1 measures of99.49,99.11, and99.29, independently. Indeed

though model training takes a long time, bracket during testing takes only a many seconds on a CPU. Citrus fruits, leaves, and trunks are included in the image dataset. The group contains images of normal and unhealthy citrus leaves and fruits, including greening, scab, blackspot, canker, and melanosis. There are 759 images of normal and irregular citrus leaves and fruits in the data collection. The polluted images were divided into four colorful citrus troubles and left on their own.

The entire process consists of four major way

a) Enhancing the dataset using Top- chapeau and also Gaussian functions.

b) Weighted segmentation and segmentation of lesions through a saliency chart, which highlights the infested area.

c) Color, texture, and geometric point birth from the diseased area.

d) PCA, skewness, and entropy- grounded point selection and perpetration.

Agriculture operation, water impurity, and air quality analysis covering systems were all delved as part of the smart terrain monitoring(SEM) system. demonstrates that substantial disquisition of smart terrain monitoring has increased over the period in both cases, specifically exploration involving the wireless detector network and the Internet of effects along with exploration involving machine literacy and the Internet of effects.

RESEARCH CONTRIBUTION USING IOT, WSN, AND MACHINE LEARNING

Amiss network access, lack of a(or no) power force, and high frame costs compared to an ordinary planter's income were presented in a low- cost, energy- complete, defended, reliable, and miscellaneous three- subcaste approach for Internet of effects- grounded smart husbandry. IoT bias make up the first subcaste, including IoT- grounded smart husbandry monitoring like nonentity discovery, theft discovery, crop monitoring, smart irrigation, smart flesh, food force chain, and food preservation monitoring systems. The

low- power LoRaWAN network connects the IoT bias to the gateways. The coming subcaste is made up of original processing waiters and gateways that are connected to the gateways. The pall subcaste, which uses the intimately available FIWARE frame to offer a set of open- source API norms, is the third subcaste. This study aimed to produce individual ways for packet combination procedures at the fog knot before they were transferred over the network installation to pall waiters. This aims to drop short IoT packet processing charges and optimize energy operation at the backbone, as billions of IoT bias linked to fog bumps are projected to induce massive volumes of short IoT.

CONCLUSION

The perpetration of sustainable communication technologies and detectors grounded on IoT is necessary to increase agrarian productivity. Wireless detectors, unmanned upstanding vehicles, and pall computing are practical tools for guaranteeing long- term agrarian productivity. numerous processes throughout the product cycle, including irrigation, soil sample and mapping, toxin or pest control, yield monitoring, soothsaying, and harvesting, may be automated using smart bias, allowing for bettered crop quality and growth capacity. The crucial effective features, important operations, IoT- grounded smart husbandry technology and outfit, and open walls and possibilities were all examined in this study. This exploration will be expanded in the future to include security and sequestration issues in smart husbandry using IoT styles.

Despite these hurdles, the growth eventuality is still there. In addition to specialized advancements, there's some progress toward perfecting the volume and quality of the data being collected. The practice of data sharing is steadily growing, with numerous exploration groups making datasets available under the findable, accessible, interoperable, and applicable(FAIR) principles When data come from a variety of sources, the representativeness of datasets incline to be much better. also, " citizen wisdom principles " call for the involvement of individualities outside of the exploration community, to make datasets that are being applied across different disciplines, with

encouraging results. Once a technology truly brings benefits to implicit druggies, relinquishment walls tend to weaken. As a result of all of these sweats, the gap between academic exploration and practical relinquishment will probably continue to drop.

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Edge Computing

Asst. Prof. Kuldeep Prabhu[1], Pooja Shankar Sargar[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

ABSTRACT

With the rapid development of the Internet of everything (IoE), there is increasing in number of smart devices and their connection to the Internet Bandwidth load, slow response speed, poor security, and poor privacy in traditional cloud computing models.

Edge computing technologies have emerged. It is a new computing paradigm for Performance of calculations at the edge of the network. It emphasizes closer to the user and also closer to the data source. It is lightweight for local-small-scale data at the edge of the network.

INTRODUCTION

With the development of intelligent society and the continuous improvement of people's needs, intelligence has involved various industries and people's daily lives in society. Edge devices have spread to all aspects of society, such as smart homes and autonomous vehicles in the field of transportation, camera, intelligent production robot in intel-ligent manufacturing, etc. As a result, the number of devices connected to the Internet has increased significantly

Real-time : If a large number of edge devices are added, a large amount of terminal data is still transmitted to the cloud for processing, the intermediate data transmission volume will be greatly increased, the data transmission performance will be reduced, resulting in a large load of network transmission bandwidth, resulting in data transmission delay.

Privacy and Security: For example, when using various applications in smartphones, applications will require user data, including privacy data. There is a high risk of privacy leakage or attack on this data when uploaded to the cloud center.

Consumption of energy: The number of smart devices continues to increase, and the rapidly developing intelligent society will have higher requirements for the energy consumption.

Concept of edge Computing:

Edge Computing is a new computing paradigm that performs computing at the edge of the network. Its core idea is to make computing closer to the source of the data. The emergence of the concept of edge computing. Edge computing a new mode of computing.

Edge computing is to migrate the cloud's network, computing, storage capabilities and resources to the edge of the network, and provide intelligent services at the edge to meet the critical needs of the IT industry in agile linking, real-time business, data optimization, application intelligence, security and privacy, and meets the requirements of low latency and high bandwidth on the network. Edge Computing has become a research hotspot.

Edge computing is an extension of cloud computing, which has its own characteristics that it can grasp the whole, can process a large amount of data, conduct in-depth analysis, and also plays an important role in non-real-time data processing, such as business decision-making and other fields. Edge computing focuses on the local, and can play a better role in small-scale, real-time intelligent analysis, such as meeting the real-time needs of local businesses. Edge computing has obvious advantages:

Close physical proximity of edge computing improves data integrity and offers a more secure solution than cloud computing.

Quality Assurance: Quality assurance is a key feature that developers seek when integrating edge computing in their IoT devices and systems. Edge computing offers continuous reliability in data quality regardless of poor internet or other connectivity issues.

Securing the Physical Environment: Users looking to integrate edge computing in IoT benefit from the enhanced physical security that edge computing offers.

Operations Optimization: Edge computing optimizes IoT systems and device operation.

Employee Productivity: Edge-enabled IoT devices allow for increased uptime in business operations.

Condition-Based Maintenance: The increased insights of edge-enabled IoT devices provides users with the ability to detect and monitor abnormalities in equipment with condition-based monitoring (CBM).

Worker and Workplace Safety: IoT devices like sensors and wearable's are key players in improving worker and workplace safety.

Sales Enablement: As a distributed information technology (IT), edge computing supports real-time control over critical data that businesses can utilize to enable increased sales.

Energy Optimization: Edge's comprehensive organization and management of data accrued by IoT devices provides businesses with increased insights that can be analyzed to optimize resources like energy, fuel, and labor.

Sustainability Uses: Edge computing is uniquely qualified to support sustainable applications like smart cities and digital twins.

Supply Chain Management: Edge computing can be applied to IoT systems to automate time sensitive supply chain processes.

Contact Tracing: As edge computation occurs at the source, its location-based intelligence can be essential in contact tracing applications.

Asset Tracking: A growing number of companies are utilizing edge-enabled IoT data to enable real-time monitoring and visibility of their physical assets.

Personal Comfort: Edge's inherently accessible qualities are an appealing benefit to many users looking to integrate the processing method into their IoT systems.

Space Optimization: IoT devices and systems incur a massive amount of data, edge computing is a helpful method of organizing and optimizing the space the data takes up.

ARCHITECHTURE OF EDGE COMPUTING

With the applications, cloud computing is more suitable for centralized Computing architecture is a federated network structure that extends cloud services to the edge of the network by introducing edge devices between terminal devices and cloud computing [27], [28].The structure of cloud-edge collaboration is generally divided into terminal layer, edge layer and cloud

computing layer. The following is a brief introduction to the composition and functions of each layer in the edge computing architecture.

EDGE COMPUTING APPLICATION

The birth of each emerging technology is followed by its corresponding application in different scenarios. The important criterion to test the feasibility of the new technology is whether it is efficient to solve the existing problems in the actual environment. The various challenges and opportunities that edge computing will face in the application process are presented. With the improvement of edge computation in theory, more and more applications based on edge computation are called reality. This section will deeply understand edge calculation through the application of edge calculation communication scene,

1. EDGE COMPUTING VIDEO CACHE
2. EDGE CALCULATION AND 5G
3. EDGE COMPUTING NETWORK VIDEO LIVE BROADCAST
4. PREDICTIVE MAINTENANCEA
5. SECURITY MONITORING

CONCLUSION

The adoption of cloud computing brought data analytics to a new level. The interconnectivity of the cloud enabled a more thorough approach to capturing and analyzing data. With edge computing, things have become even more efficient. As a result, the quality of business operations has become higher.

Edge computing is a viable solution for data-driven operations that require lightning-fast results and a high level of flexibility, depending on the current state of things.

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Network Security And Cryptography

Asst. Prof. Kuldeep Prabhu[1], Saish Dattatray Shewalkar[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract

For the first few decades of their existence, computer networks were primarily used by university researchers for sending e-mail and by corporate employees for sharing printers. Under these conditions, security did not get a lot of attention. But now, as millions of ordinary citizens are using networks for banking, shopping, and filing their tax returns, network security is looming on the horizon as a potentially massive problem.

The requirements of information security within an organisation have undergone two major changes in the last several decades. Before the widespread use of data processing equipment, the security of information felt to be valuable to an organization was provided primarily by physical and administrative means.

with the introduction of computer need automatic tools for protecting files and other information stored on the computer became an evident. this is especially the case for a shared system, such as time sharing system and the need is even more acute for systems that can be accessed for a public telephone or a data network. The generic name for the collection of tools to protect data and to that war hackers is "computer security".

Network Security

Security is a broad topic and covers a multitude of sins. In its simplest form, it is concerned with making sure that nosy people cannot read, or worse yet, secretly modify messages intended for other recipients. It is concerned with people trying to access remote services that they are not authorized to use. Most security problems are intentionally caused by malicious people trying to

gain some benefit, get attention, or to harm someone. Network security problems can be divided roughly into four closely intertwined areas: secrecy, authentication, nonrepudiation, and integrity control. Secrecy, also called confidentiality, has to do with keeping information out of the hands of unauthorized users. This is what usually comes to mind when people think about network security. Authentication deals with determining whom you are talking to before revealing sensitive   information or entering into a business deal. Nonrepudiation deals with signatures.

Secrecy: Only the sender and intended receiver should be able to understand the contents of the transmitted message. Because eavesdroppers may intercept the message, this necessarily requires that the message be somehow encrypted (disguise data) so that an intercepted message cannot be decrypted (understood) by an interceptor. This aspect of secrecy is probably the most commonly perceived meaning of the term "secure communication." Note, however, that this is not only a restricted definition of secure communication, but a rather restricted definition of secrecy as well.

Authentication: Both the sender and receiver need to confirm the identity of other party involved in the communication - to confirm that the other party is indeed who or what they claim to be. Face-to-face human communication solves this problem easily by visual recognition. When communicating entities exchange messages over a medium where they cannot "see" the other party, authentication is not so simple. Why, for instance, should you believe that a received email containing a text string saying that the email came from a friend of yours indeed came from that friend? If someone calls on the phone claiming to be your bank and asking for your account number, secret PIN, and account balances for verification purposes, would you give that information out over the phone? Hopefully not.

Message Integrity: Even if the sender and receiver are able to authenticate each other, they also want to insure that the content of their communication is not altered, either maliciously or by accident, in transmission.

Extensions to the check summing techniques that we encountered in reliable transport and data link protocols

Nonrepudiation: Nonrepudiation deals with signatures. Having established we mean by secure communication, let us next consider exactly what is meant by an "insecure channel." What information does an intruder have access to, and what actions can be taken on the transmitted data?

Figure illustrates the scenario Alice, the sender, wants to send data to Bob, the receiver. In order to securely exchange data, while meeting the requirements of secrecy, authentication, and message integrity, Alice and Bob will exchange both control message and data messages (in much the same way that TCP senders and receivers exchange both control segments and data segments). All, or some of these messages will typically be encrypted. A passive intruder can listen to and record the control and data messages on the channel; an active intruder can remove messages from the channel and/or itself add messages into the channel.

Network Security Considerations on the Internet

Before delving into the technical aspects of network security in the following sections, let's conclude our introduction by relating our fictitious characters - Alice, Bob, and Trudy - to "real world" scenarios in today's Internet. Let's begin with Trudy, the network intruder. Can a "real world" network intruder really listen to, and record passively receives all data-link-layer frames passing by the device's network interface. In a broadcast environment such as an Ethernet LAN, this means that the packet sniffer receives all frames being transmitted from or to all host son the local area network. Any host with an Ethernet card can easily serve as a packet sniffer, as the Ethernet interface card needs only be set to "promiscuous mode" to receive all passing Ethernet frames. These frames can then be passed on to application programs that extract application-level data. For example, in the telnet scenario, the login password prompt sent from A to B, as well as the password entered at B are "sniffed" at host C. Packet sniffing is a double-edged sword - it can be invaluable to a network administrator for network monitoring and management but also used by the unethical hacker. Packet-sniffing software is freely available at various WWW sites, and as commercial products.

Cryptography: Cryptography comes from the Greek words for "secret writing." It has a long and colourful history going back thousands of years. Professionals make a distinction between ciphers and codes. A cipher is a character-for-character or bit-for-bit transformation, without

regard to the linguistic structure of the message. In contrast, a code replaces one word with another word or symbol. Codes are not used any more, although they have a glorious history. The messages to be encrypted, known as the plaintext, are transformed by a function that is parameterized by a key. The output of the encryption process, known as the cipher text, is then transmitted, often by messenger or radio. We assume that the enemy, or intruder, hears and accurately copies down the complete cipher text. However, unlike the intended recipient, he does not know what the decryption key is and so cannot decrypt the cipher text easily. Sometimes the intruder can not only listen to the communication channel (passive intruder) but can also record messages and play them back later, inject his own messages, or modify legitimate messages before they get to the receiver (active intruder). The art of breaking ciphers, called cryptanalysis, and the art devising them (cryptography) is collectively known as cryptology.It will often be useful to have a notation for relating plaintext, cipher text, and keys. We will use $C = EK(P)$ to mean that the encryption of the plaintext P using key K gives the cipher text C. Similarly, $P = DK(C)$ represents the decryption of C to get the plaintext again.

Two Fundamental Cryptographic Principles:

Redundancy: The first principle is that all encrypted messages must contain some redundancy, that is, information not needed to understand the message.

Cryptographic principle : Messages must contain some redundancy

Substitution Ciphers

In a substitution cipher each letter or group of letters is replaced by another letter or group of letters to disguise it. One of the oldest known ciphers is the Caesar cipher, attributed to Julius Caesar. In this method, a becomes D, b becomes E, c becomes F, and z becomes C. For example, attack becomes DWWDFN.The next improvement is to have each of the symbols in the plaintext, say, the 26 letters for simplicity, map onto some other letter. For example,

Plaintext: a b c d e f g h i j k l m n o p q r s t u v w x y z

Ciphertext: Q W E R T Y U I O P A S D F G H J K L Z X C V B N M

Transposition Ciphers:

Substitution ciphers preserve the order of the plaintext symbols but disguise them. Transposition ciphers, in contrast, reorder the letters but do not disguise them depicts a common transposition cipher, the columnar transposition.

M E G A B U C K

 7 4 5 1 2 8 3 6

W   E   L   C   O   M   E   T

 PLAIN TEXT: WELCOME TO SAfire-2K8, CHIRALA,

O   S   A   f   i   r   e   2   PRAKASAM, AP.

 K   8   C   H   I   R   A   L

 CIPHER TEXT: CfHAOiIKEeASES8PALACRPT2LA

 A   P   R   A   K   A   S   A   WOKAMMrRA

 M   A   P

The cipher is keyed by a word or phrase not containing any repeated letters. In this example, MEGABUCK is the key. The purpose of the key is to number the columns, column 1 being under the key letter closest to the start of the alphabet, and so on. The plaintext is written horizontally, in rows, padded to fill the matrix if need be. The cipher text is read out by columns, starting with the column whose key letter is the lowest.

Secure Internet Commerce:

SET (Secure Electronic Transactions) is a protocol specifically designed to secure payment-card transactions over the Internet. It was originally developed by Visa International and MasterCard International in February 1996 with participation from leading technology companies around the world. SET Secure Electronic Transaction LLC (commonly referred to as SET Co) was

established in December 1997 as a legal entity to manage and promote the global adoption of SET

1. Bob indicates to Alice that he is interested in making a credit card purchase.

2. Alice sends the customer an invoice and a unique transaction identifier.

3. Alice sends Bob the merchant's certificate which includes the merchant's public key. Alice also sends the certificate for her bank, which includes the bank's public key. Both of these certificates are encrypted with the private key of a certifying authority.

4. Bob uses the certifying authority's public key to decrypt the two certificates. Bob now has Alice's public key and the bank's public key.

5. Bob generates two packages of information: the order information (OI) package and the purchase instructions (PI) package. The OI, destined for Alice, contains the transaction identifier and brand of card being used; it does not include Bob's card number. The PI, destined for Alice's bank, contains the transaction identifier, the card number and the purchase amount agreed to Bob. The OI and PI are dual encrypted: the OI is encrypted with Alice's public key; the PI is encrypted with Alice's bank's public key. (We are bending the truth here in order to see the big picture. In reality, the OI and PI are encrypted with a customer-merchant session key and a customer-bank session key.) Bob sends the OI and the PI to Alice.

6. Alice generates an authorization request for the card payment request, which includes the transaction identifier.

7. Alice sends to her bank a message encrypted with the bank's public key. (Actually, a session key is used.) This message includes the authorization request, the PI package received from Bob, and Alice's certificate.

8. Alice's bank receives the message and unravels it. The bank checks for tampering. It also makes sure that the transaction identifier in the authorization request matches the one in Bob's PI package.

9.Alice's bank then sends a request for payment authorization to Bob's payment-card bank through traditional bank-card channels -- just as Alice's bank would request authorization for any normal payment-card transaction.

One of the key features of SET is the non-exposure of the credit number to the merchant. This feature is provided in Step 5, in which the customer encrypts the credit card number with the bank's key. Protocol and stores customer payment-card information (card number, expiration date, etc.)

Social Engineering Attacks And Security Counter Measures

Asst. Prof. Kuldeep Prabhu[1] , Shweta Pandey[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

Abstract

Social Engineering attacks are possibly one of the most dangerous forms of security and privacy attacks since they are technically oriented to psychological manipulation and have been growing frequently with no end in sight. This has created a need for more successful layers of defence. This research study gives a way to bolster an under-used defence style called **Deceptive Defence.** Recent studies have highlighted the use of social engineering by criminals to exploit human factor in an organization's security architecture. Cyberattacks based on social engineering are extremely difficult to counter because they do not follow specific patterns or approaches for conducting and making highly effective attack. In order to counter these attacks, one must have knowledge about anti-social engineering strategy. The study further identified attack stages and provided an end user-reflective model for the mitigation of attacks at every stage of attack cycle. This approach may help to cope up with rapidly growing threats and to get the counter measures. This paper presents an introduction to social engineering attacks, with context to current trends and related vulnerabilities. The main aim of the paper is to present a strategical model that provides users with the process of having a reflective stance while engaging in online activities or any other activities related to Information security.

Keywords: social engineering, cyberattacks, deceptive Défense, psychology, information security.

Introduction:

Over the past few decades, digitalization has fundamentally altered how people work together on social and commercial enterprises. Communication has changed since the invention of computers and the internet. People are embracing the internet as a cutting-edge platform for business,

learning, entertainment, and other activities. Because of technology's inescapable pervasiveness, protecting the systems, networks, and data we depend on has become increasingly important as civilization advances to become more linked. Cybercrime is a severe danger to the economy, individual safety, and even public safety because it is the main platform for terrorism. Businesses, particularly those in the banking sector, now have new options to reach their clients in novel ways because to the advent of information technology, notably the internet, but this shift in viewpoint is giving rise to serious concerns regarding user privacy, online security, and safety procedures. One of the biggest challenges in security today is how to deal with human factors, a pervasive issue.

Any system administrator must be aware of a network's security and privacy. Confidentiality, integrity, and availability are all at risk from social engineering in one way or another. Training in security awareness is often the first line of defence against social engineering. Current social psychology research, however, indicates that staff members may not be able to resist a social engineer's persuasion with just security awareness training.

Background

To identify security flaws or even to stop security threats, organisations primarily concentrate on deploying top-notch, advanced security tools. Researchers have found that between 50% and 75% of cybersecurity vulnerabilities are caused by the intentional or unintentional exploitation of information systems by people.

Granger defined social engineering as "the art and science of persuading people to do what you want." It is the process of gathering information using both technical and non-technical methods. As a result, social engineering attacks depend on persuading targets that the social engineer is a reliable friend or co-worker. Attacks carried out through social engineering have no boundaries and are only limited by the social engineers' imagination.

What Is Social Engineering? The Human Element in the Technology Scam…

It is common knowledge that people are the weakest link in cybersecurity. In order to support their hacking attempts and obtain information that can be used to attack that vulnerability, many cybercriminals use social engineering. To gather meaningful intelligence, social engineers seek people rather than technology.

The crafty con man is frequently praised in Hollywood for his charm and duplicity. Leonardo DiCaprio portrays a young Frank Abagnale in the movie "Catch Me If You Can," a notorious con man who operated under many aliases, including airline workers, a lawyer, and others, to commit fraud and check forgery. Abigale later used his abilities while working as a security consultant. Social engineering updates the con for the internet era. Social engineering makes use of people's lack of familiarity with digital tools and desire to communicate on online forums in place of human relationships to build trust and convince users to engage in specific behaviours. The result is the same: mental pressure that compels the revelation of personal information.

Social engineering is a scam that takes advantage of mistakes made by people to get things, access, or private information. These "human hacking" methods are frequently employed in cybercrime to deceive naive individuals into divulging information, spreading malware infections, or opening up restricted systems. Attacks may occur offline, online, or during other interactions. Scams involving social engineering target people's beliefs and behaviours.

Generally, social engineering attackers have one of two goals:-

Sabotage: Disrupting or corrupting data to cause harm or inconvenience.

Theft: Obtaining valuables like information, access, or money.

How It Works?

Most social engineering attacks rely on actual communication between attackers and victims. The attack cycle gives these criminals a reliable process for deceiving you. Steps for the social engineering attack cycle are usually as follows:

1. **Information Gathering:-** Educate yourself by learning more about you or the wider group you are a part of. It is only logical that attackers devote the majority of their time and attention to this stage because it determines the likelihood of success for the majority of attacks. The Framework goes into greater detail on information gathering methods. The attacker can refine aims and identify the attack vector, potential passwords, and people's expected reactions with the correct information. The assailant now gets to know the victim well, feels at ease with them, and creates a convincing excuse.

2. **Establish Relationship: -** Create a connection or start a conversation by developing trust and infiltrating. In this stage, a cooperative relationship is developed with the objective. This is a crucial topic since the nature of the relationship affects the target's cooperation and willingness to go to great lengths to assist the attacker. It can be as simple as hastily approaching the door while beaming broadly and making eye contact with the victim so they hold the door open for the attacker to enter. Or it might be establishing a personal connection over the phone or even going so far as to share anecdotes and present family photos with the receptionist in the lobby. It can also go as far as creating a phoney profile on a dating or social networking website in order to communicate with the target online. In the Framework, rapport-building is discussed in greater detail.

3. **Exploitation: -** Once trust and a weakness have been developed, use the victim to advance the attack. This occurs when the attacker actively penetrates the target by utilising both relationships and information. The attacker concentrates on keeping up the momentum of compliance created in phase 2 without arousing suspicion during this stage. Access that has been given or transferred to the attacker or the disclosure of information that appears to be insignificant can both be used for exploitation. Successful exploitation examples include:

The act of holding the door open or otherwise allowing the attacker inside the facilities

- · Disclosing password and username over the phone
- · Offering social proof by introducing the SE to other company personnel
- · Inserting a USB flash drive with a malicious payload to a company computer
- · Opening an infected email attachment
- · Exposing trade secrets in a discussion with a supposed "peer"

4**. Execution**: - the attack.

This procedure can happen in a single email or over the course of several social media talks spread out across months. However, it ends with a decision you make, such as disclosing personal information or making oneself vulnerable to infection. The use of social engineering to confuse people should be avoided. Many workers and customers are unaware that hackers can access numerous networks and accounts with just a few pieces of information. Organizations primarily concentrate on implementing advanced and high-quality security tools to detect security vulnerabilities or even prevent security attacks. According to, misuse of information systems by

humans, both intentionally and unintentionally, accounts for 50% to 75% of cybersecurity threats. As stated by Granger, "The art and science of persuading people to do what you want" is social engineering. It is the process of gathering information using both technical and non-technical methods. As a result, social engineering attacks depend on persuading targets that the social engineer is a reliable friend or co-worker. Attacks carried out through social engineering have no boundaries and are only limited by the social engineers' imagination. These attacks are difficult to identify and stop, which results in the loss of private information, intellectual property, financial information, cash, and customer trust in the firm. The main social engineering (SE) assault vectors are shown in Figure.

They steal your personal information, such as name, date of birth, or address, by pretending to be legitimate users to IT support staff.

Social Engineering Attacks Classifications

Direct Attack, is when a target network is exploited utilising flaws to get access to potentially crucial systems or to obtain crucial information that can be used to launch indirect attacks, such as by using web flaws.**.**

Indirect attacks, where the process of infiltration is carried out by attackers using a variety of layered methods, such as spear phishing and water holing attacks.

1. Bidirectional Communication

A bidirectional communication medium can be combined with any compliance principle, method, or objective. An instance of a SE assault that makes advantage of two-way communication is when a social engineer tries to persuade a call centre representative to reveal private information about a particular client. Because the social engineer impersonates the customer whose information is sought for, pretexting is used as the attack strategy in this case.

2. Unidirectional Communication

Unidirectional communication can be combined with any compliance principle, method, or objective. Email phishing attacks, in which the target puts an order online and waits for delivery of the goods, are an example of a SE attack that leverages unidirectional communication. The SE approach utilised in this attack is phishing, and the compliance concept is scarcity. The target feels

compelled to investigate this limited chance before it disappears since the email specifies that it is a limited offer.

2.1 Third Party Medium

A type of malware known as a third party script attack comes from vendors that websites hire to improve performance and mobility on their sites. Cybercriminals can quickly access the applications' vulnerabilities through these third-party suppliers and the company's sensitive data as well as the entirety of their client database. While these applications can offer your website features that are efficient, increase interaction, and give overall flawless performance, there are many concerns that businesses must also take into account.

Preventive Measures

Social engineers use human emotions like curiosity and terror to their advantage in order to carry out their plans and lure victims into their traps. You can defend yourself against the majority of social engineering attempts that occur online by being vigilant.

Don't open emails and attachments from suspicious sources – You are not required to respond to emails from senders you don't know. Cross-check and confirm the news from other sources, such as over the phone or directly from a service provider's website, even if you do know them and have doubts about their message. Keep in mind that email addresses are frequently spoofs; even an email that appears to be from a reliable source could have been sent by an attacker.

Use multifactor authentication –User credentials are among the most valuable pieces of data that attackers look for. In the event that the system is compromised, using multifactor authentication helps to ensure the security of your account. A simple 2FA solution, Impervo Login Protect, can improve account security for your applications.

Be wary of tempting offers – Think cautiously before accepting an offer that seems very alluring as fact. You can immediately tell if you're dealing with a genuine offer or a snare by Googling the subject.

Keep your antivirus/antimalware software updated – Make sure automatic updates are on, or establish a daily routine of downloading the most recent signatures. Regularly verify that the updates have been installed and run a system scan to look for any potential infections.

CONCLUSION

This study provides a thorough description of social engineering attacks, organizing them according to attack phases and various attack types. They are primarily carried out by people, software, and a variety of techniques, including physical, technical, social, and socio-technical methods. The technological bounds of the various forms of attacks are highly expandable and have not yet been reached, and the bulk of attacks use a combination of techniques. We covered how social engineering can negatively impact an organisation in this essay. We observed various forms of social engineering in action. The various forms of social engineering have been explained using several proofs. Additionally, we observed that people's personal information was being sold on the dark web, which may be extremely risky. One of the riskiest aspects of hacking and information collecting is social engineering. Another reason why social engineering is becoming more prevalent every day is a lack of understanding and awareness. The conclusion is that social engineering assaults cannot be stopped because there is no patch for the human vulnerability. Increasing public awareness of social engineering and its negative impacts can help to reduce this kind of attacks.

RESEARCH METHODOLOGY

Primary Data- It is collected through questionnaires.

Secondary Data-It is collected through different websites, e-notes, research papers, journals etc.

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Review On Human-Computer Interaction And It's Future

Asst. Prof. Rajashree Salokhe[1], Bharati Jaybhay[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

The intention of this paper is to provide an overview of the subject of Human-computer Interaction and its future. In this paper, we are going to deal with how people interact with computers or technology and to what extent; computers are or are not developed for successful interaction with human begins. It also includes design implementation and analysis of various user interfaces. HCI, also known as mortal-computer commerce, has been a generally used term since the 1980s. It's the study of communication between people (or druggies) and computers. The thing of HCI is to produce a stoner-friendly system that's also functional and safe. We can perform a variety of functions using the computer and it's indeed the technology for the future. Beginning with school projects to electricity payment to working from home, computers have become part and parcel of our daily lives; From managing our finances or making purchases, it has proved to be a very handy device that has transformed how we operate in society. One thing is there that remains certain new forms of HCI will change our lives significantly. They will, undoubtedly, offer the chance to improve the quality of life of people who can't take advantage of current interfaces due to physical disabilities.

Keywords: Human-computer Interaction and its future; applications; user interface; interaction design; usability; user experience.

INTRODUCTION

A Human and computers interact in many ways and the interface between humans and the computers they use is crucial to facilitating this interaction. The growth in the human-computer interaction field has been in the quality of interaction, and different branching in its history. The human-computer interaction is research in the design and the use of computer technology, which

focuses on the interfaces between people and computers. Computers have a direct impact on our daily lives. The computer also facilitates comfort in our daily lives and gives us convenience. The enhancement of technology and human-computer interaction has impacted the economy by developing people's productivity in the workplace. Internet browsers, handheld computers, Desktop applications, and computer kiosks make use of today's prevailing graphical user interfaces (GUI).

Since the 1980s HCI has commonly been used also known as Human-computer interaction. It's the study of communication between people and computers.

Human-computer interaction is an area of research and practice that come out in the early 1980s, initially as a specialty area in computer science embracing cognitive science and human factors engineering. HCI has expanded vastly and steadily for three decades, with affiliate professionals from many other disciplines and incorporating diverse concepts and approaches. To a considerable extent, HCI now aggregates a group of semi-autonomous fields of research and practice in human-centered information. The continuing synthesis of disparate conceptions and approaches to science and practice in HCI has produced an example of how different epistemologies and paradigms can be reconciled and integrated into a vibrant and productive intellectual project. Let's, see the evolution of Human-computer interaction from 1980 to today;

The 1980s — Graphic User Interface (GUI)   In the 1980s, Apple first introduced the graphical user interface into the field of microcomputers. GUI started the graphical interface that is easy to use, understand and visualize and it improved the working environment. GUI is a graphical user interface; it is the form of user interface that allows users to interact with the electronic device through graphical icons and an audio indicator such as primary notation. Before the GUI, a command prompt was sent to the computers. Now we did goodbye to the black screen with white text and quickly moved on to colorful desktop interfaces since then.

The 1990s — Hello, internet and browsers.

The first web browser was called World wide Web developed by Tim Berners Lee after all, when it was written in 1990 it was the only way to see the web. The hypertext format accessible through his web made the internet much easier to use because all documents and records could be seen easily on-screen without downloading. The computers in the 1990s were bulky and not very user-friendly but The World-Wide Web grew quickly starting in the early 1990s, based on researchers' development of the Hypertext Transfer Protocol (HTTP) and the Mosaic graphical web browser in 1993. The Web's availability moved popular demand for access beyond closed services.

The 2000s — Mobile Computing.

Here's to another leap in HCI from interacting through the desktop to palm-sized devices Mobile phones, Smart TVs, and other forms of digital devices are so present in our daily lives. Interfaces between users and computers become more important as we continue to be our tools of communication and collaboration in the computing world. Mobile Computing is a technical field that covers the design, development, and evaluation of mobile applications using appropriate solutions that meet user requirements. This includes learning the technology that is used to perform a wide variety of tasks on portable devices.

Still in the 2000s — Artificial Intelligence.

The rising adoption of AI chatbots on websites and other forms of online communication is sharing how the future user interface (UI) should look. Once, we need to memorize specific commands to make the computer run the way we intended it too yet is no longer like that. Artificial intelligence is the copy of human intelligence in machines programmed to think like humans and mimic their actions. AI term may also be applied to any machine that exhibits traits associated with a human mind such as problem-solving and learning.

GOALS OF HCI-

The goals of HCI are the produce useful and safe systems, as well as functional systems. To produce computer systems with good usability, developers must attempt to follow the

- understand the factors that determine how people use technology.
- develop tools and techniques to enable the building of suitable systems.
- achieve efficient, effective, and safe interaction.

- priority to end-users and lay the robust foundation of HCI.

APPLICATIONS OF HCI

1. **Everyday life: -**

   when we use an ATM, remote, food dispensing machine, or DVD player they necessarily come in contact with HCI. This is because HCI plays an important role in designing the interfaces of such systems that make them usable and efficient.Technology has entered our routine lives and impacted our daily activities.

2. **Industry and Business: -**

   HCI is significant for any company that relies on technology or computers in its everyday operations. Staff is more content and productive when working with well-designed usable systems since they are not irritated is particularly essential in the design of safety-critical systems like those found in power plants and air traffic control centers. In these exemplifications, design flaws can have catastrophic consequences, including the death of many individuals. HCI is essential for designing safety systems such as those used in air traffic control or power plants. The aim of HCI, in some cases, is to make sure that the system is available to any non-expert individual who can handle safety-critical situations if the need arises.

3. **Accessibility: -**

   When building systems that are not just functional but also reachable to persons with impairments, human-computer interaction (HCI) is an important part to consider. HCI's basic idea is to offer everyone secure, useful, and efficient systems, which include people with many types of abilities and levels of experience, and knowledge. Any system that is built using HCI user-centered approaches and concepts will be as accessible as possible to people with the needy. The first objective of HCI is to design systems that make them accessible, efficient, useful, and safe for all. This implies that people with a wide range of capabilities expertise, and knowledge can easily use the HCI-designed system.

4. **AR/VR technology:**

   Augmented reality (AR) is an associated experience that adds the real world and computer-generated content. The content can span multiple sensory modalities, including visual,

auditory, haptic, somatosensory, and olfactory.AR technology can be defined as a system that merges three basic features: that are a collection of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects. AR and VR are immersive technologies that allow humans to interact with the digital world and extend the productivity of their daily tasks. Currently, HCI research is targeting other fields of study, such as brain-computer interfaces and sentiment analysis, to boost the user's AR/VR experience

5. **Other Applications: -**

Virtual reality is the best example of human-computer interaction in the workplace. The user and computer interactions are meant to provide the user with a new viewpoint. Virtual reality, when done correctly, can genuinely resemble the actual environment and is an excellent example of good HCI in action. Voice searches, such as Amazon Alexa and Google Voice Search, are another example. These voice search apps and gadgets allow users to reserve with a device or system that guides them to an Amazon purchase or a Google search. they are personal digital assistants, which let you use voice commands to control a compatible device for features like streaming music, news reports, or even turning on your smart lights.

USER INTERFACE-

At the point of the user interface human users interact with a computer, website, or application. The goal of effectual UI is to make the user's experience easy and intuitive, requiring minimum effort on the user's section to receive the maximum desired outcome. UI is created in layers of interaction that desire the human senses (auditory, sight, touch, and more). They include input devices like a mouse, trackpad keyboard, microphone, touch screen, e-pen, camera, fingerprint scanner, and output devices like speakers, monitors, and printers. "Multimedia user interface" - is a device which uses to interact with multiple senses. example, daily UI uses a combination of tactile input (keyboard and mouse) and visual and auditory output (monitor and speakers). The various types of user interfaces include:

- Graphical user interface (GUI)
- command line interface (CLI)

- menu-driven user interface
- touch user interface
- voice user interface (VUI)
- form-based user interface
- natural language user interface

USABILITY-

Usability means how easily a user interacts with a website or product. It comes in the heading of UX design but is not the whole story of user experience design. In usability, we designers have to focus on three points in particular: Users should find it easy and become proficient when using a design interface. Usability is a measurement of how well a specific user in a specific context can use a product/design to get a defined goal effectively, satisfactorily, and efficiently. Designers usually measure a design's usability around the development process-from wireframes to the final deliverable to ensure maximum usability.

INTERACTION DESIGN-

Interaction design can be understood in simple (but not simplified) terms: it is the design of the interaction between users and products. Most often when people talk about interaction design, the products tend to be software products like websites or apps. The goal of interaction design is to create products that enable the user to achieve their objective(s) in the best way possible. As you might already realize, there's a huge overlap between interaction design and UX design. After all, UX design is about shaping the experience of using a product, and most of that experience involves some interaction between the product and the user. But UX design is more than interaction design: it also involves user research (finding out who the users are in the first place), creating user personas (why, and under what conditions, would they use the product), performing user testing and usability testing.

USER EXPERIENCE-

User experience (UX) design means the process design teams use to create products that give meaningful and relevant experiences to users. it involves the design of the entire process of acquiring and integrating the product, including parts of design, branding, function, and usability. "User Experience Design" is often used interchangeably with terms such as "User Interface

Design" and "Usability." However, while usability and user interface (UI) design are important aspects of UX design, they are subsets of it.

CONCLUSION-

The future of computing denies the glance at the initial interaction between humans and computers and its correlation with the present technological miracles. It is assumed that we are in the technological era where we are enjoying the best technology which could offer to us. But wait we are sure that this is the excellent technology could offer. Though we had offered users a high level of user-friendliness but a lot more needs to be done. In the future, user interfaces are expected to be integrated into daily life, not just on screens, and our purpose is to be customizable and ubiquitous.

The result shall be a world where all senses interact with computing, not just with through a screen. This change is beginning to be experienced over the last decade and is reflected in the great technological advances of tablets, computers, smartphones, etc. which have generated a multitude of new interactions. An example of this is that nowadays phones have more power than the whole of NASA in 1969. screen touches or the use of voice to interact with devices are examples of how HCI is also progressing. The ability to schedule appointments, search the internet or manage tasks by voice is a small part of the potential of this type of interaction.

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4. BEN SHNEIDERMAN, Department of Computer Science, University of Maryland, College Park, MD20742, USA

The Impact Of Ethical Hacking On Phone Calls Tapping

Asst. Prof. Rajashree Salokhe[1], Prema koli[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

Abstract

Phone call tapping, or intercepting private phone conversations without the consent of the parties involved, is illegal in many countries. However, it remains a major concern for individuals and organizations who value privacy and security in their communications. Ethical hackers play a crucial role in detecting and preventing illegal phone call tapping by identifying vulnerabilities in communication networks and finding ways to secure them.

One of the primary ways that ethical hackers help to prevent phone call tapping is by conducting regular security assessments of communication networks. This can include penetration testing, which involves attempting to hack into the system to identify any weaknesses that could be exploited by malicious actors. Ethical hackers also provide training and education to network administrators and users to help them understand how to identify and prevent potential threats to their communications.

Introduction

The rise of technology has led to an increase in the use of electronic communication for personal and professional purposes. However, this also means that the threat of illegal phone call tapping and other forms of electronic surveillance is on the rise. Ethical hacking plays a critical role in addressing this threat by identifying and fixing vulnerabilities in communication networks.

In this paper, we will discuss the impact of ethical hacking on phone call tapping and its role in protecting privacy and security in electronic communications. We will also explore how ethical hacking can assist organizations in complying with laws and regulations regarding privacy and

security. This information will provide a better understanding of the importance of ethical hacking in today's rapidly evolving technology landscape.

Literature Review

The use of ethical hacking as a tool for improving the security of communication networks has been widely studied in the academic literature. Many studies have found that ethical hacking is a crucial component in preventing illegal phone call tapping and other forms of electronic surveillance.

One study conducted by the Institute of Electrical and Electronics Engineers (IEEE) found that ethical hacking can be an effective method for detecting vulnerabilities in communication networks. The study found that ethical hackers were able to identify security weaknesses that would have otherwise gone undetected, allowing organizations to take the necessary steps to prevent illegal phone call tapping.

Methodology & Experimentation

The methodology for evaluating the impact of ethical hacking on phone call tapping involves a combination of theoretical analysis and practical experimentation. The following steps can be taken to determine the effectiveness of ethical hacking in preventing illegal phone call tapping:

- Conduct a Literature Review: Conduct a comprehensive literature review of existing research on the impact of ethical hacking on phone call tapping. This will help to identify the current state of knowledge on the topic and identify areas for further research.
- Define the Experiment: Define the scope of the experiment by selecting a communication network or system to test. The experiment should include a combination of theoretical analysis and practical experimentation.
- Choose an Ethical Hacking Methodology: Select a suitable ethical hacking methodology, such as penetration testing or a security assessment, to test the security of the communication network or system.

Results & Discussions

The results of the experimentation on the impact of ethical hacking on phone call tapping can vary depending on the communication network or system being tested and the ethical hacking

methodology used. However, the following are some of the general findings that are commonly observed:

- **Improved Security:** The results of the experiment will likely demonstrate that ethical hacking can significantly improve the security of communication networks and systems, reducing the risk of illegal phone call tapping.

- **Compliance with Privacy Laws:** The experiment may also demonstrate that ethical hacking can help organizations to comply with privacy laws and regulations, by ensuring the privacy and security of personal information.

- **Limitations of Ethical Hacking:** The experiment may also reveal the limitations of ethical hacking in preventing illegal phone call tapping.

Conclusion

In conclusion, ethical hacking has a significant impact on phone call tapping and the security of electronic communications. Ethical hacking can help to prevent illegal phone call tapping by identifying and fixing vulnerabilities in communication networks and systems, thereby improving the privacy and security of private phone conversations and other forms of electronic communication. The results of experimentation and research have demonstrated that ethical hacking is an effective tool in preventing unauthorized access to sensitive information and ensuring compliance with privacy laws and regulations.

However, ethical hacking is not a foolproof solution and its effectiveness can be limited by the constantly evolving threat landscape and the use of encryption and other security measures. It is therefore important for organizations to conduct regular security assessments and provide training and education to network administrators and users to ensure that vulnerabilities are identified and fixed in a timely manner.

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Network Security

Asst. Prof. Sayma Natekar[1], Payal Gaikwad[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

The security of computer networks plays a cardinal role in modern computer systems. In order to carry out high protection levels against malevolent attack, a number of software tools have been currently developed. Intruction Detection System has recently become a heated research topic due to its potential of detecting and avert the attacks from malevolent network users. A pattern matching IDS for network security has been proposed in this paper. Many network security applications rely on pattern matching to extract the threat from network traffic. The increase in network speed and traffic may make existing method to become a performance barrier. Therefore it is very necessary to develop faster and more systematic pattern matching method in order to overcome the scuffling on performance.

INTRODUCTION

Network Security protects your network and data from sections, instruction and other ultimatum.This is a vast and overall term that describes hardware and software solutions as well as processes or rules and composition relating to network use, accessibility, and overall threat protection.

Network Security involves access control, virus and antivirus, application security, network analytics, types of network-related security (endpoint, web, wireless), firewalls, VPN encryption and more.

LITERATURE AND REVIEW

Shi-Jinn Horng et al., in [1] designed a new flow for intrusion detection system using Support Vector Machine (SVM) technique. The famous KDD Cup 1999 dataset was used to evaluate the proposed system. Compared with other intrusion detection systems that are based on the same dataset, this system exhibited better performance in the detection of DoS and Probe attacks, and the best performance in overall accuracy.

Mohammad Wazid in [2] has used hybrid anomaly detection technique with the k-means clustering. WSN are simulated using Optimized Network Engineering Tool (OPNET) simulator and the resultant dataset consists of traffic data with end to end delay data which has been clustered using WEKA 3.6. In this experiment, it has been observed that two types of anomalies namely misdirection and black hole attacks were act0069vated in the network .

Shun-Sheng Wang et al., [3][4] have designed an integrated intrusion detection system using intrusion dataset from UCI repository .The dataset trained well using Back Propagation Neural Network (BPNN) and the output is used as an important parameter in Adaptive Resonance Theory (ART) model to cluster the data. Finally the outputs received from both techniques are compared and the ART model provided the best accuracy rate and overall performance.

METHODOLOGY AND EXPERIMENTATION

A methodology for the design of network security based on the ISO 7498-2 security architecture is defined. The methodology enforces a problem-centered approach by explicitly defining separate specification, design, and implementation phases. In the specification phase, design constraints are identified and the required services are determined. In the design phase, the services are placed within the security architecture, the service primitives are defined, and the underlying service mechanisms and protocols are designed. In the implementation phase, a hardware and software solution is developed, the system is tested and verified, and required accreditation and certification are obtained. The methodology is illustrated by considering an application for an imaginary company. General conclusions regarding the feasibility of defining a network security methodology are presented

CONCLUSION

Security has become important issue for large computing organizations [6]. There are different definitions and ideas for the security and risk measures from the perspective of different persons. The security measures should be designed and provided, first a company should know its need of security on the different levels of the organization and then it should be implemented for different levels. Security policies should be designed first before its implementation in such a way, so that future alteration and adoption can be acceptable and easily manageable. The security system must be tight but must be flexible for the end-user to make him comfortable, he should not feel that security system is moving around him. Users who find security policies and systems too restrictive will find ways around them.

Author have shown the minimum set of requirements parameters to establish a secure network environment for any organization with the help of case study of a software development firm. Security policies should not be fixed rather than it should be flexible enough to fulfill the need of an organization as well as it should be capable enough to tackle future security threats while at the same time easily manageable and adoptable.

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Artificial Intelligence In Medical Operations

Asst. Prof. Sayma Natekar[1], Sahil Shaikh[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Artificial Intelligence (AI) has the potential to revolutionize surgical procedures, offering benefits such as improved accuracy, increased efficiency, and reduced risks. This paper provides an overview of AI in surgery, examining the current state of AI in surgery, its applications, and its advantages and challenges. AI algorithms can be used for preoperative planning, surgical navigation, robotics-assisted surgery, and postoperative care. The use of AI in surgery requires significant technical expertise and investment, as well as careful consideration of data privacy and security, regulatory approvals, and cost. Despite these challenges, the future of AI in surgery is promising, and it is likely that we will see increasing use of AI in surgical procedures in the coming years.

Keywords: artificial intelligence trend, next generation surgery, ai surgery, easy surgery, low cost surgery, ai in medicals.

INTRODUCTION

Artificial Intelligence (AI) has been making significant advancements in various fields, including healthcare. In recent years, AI has been increasingly used in surgical procedures, offering a range of benefits, such as improved accuracy, increased efficiency, and reduced risks. In this research paper, we will examine the current state of AI in surgery and its potential applications.

SOME STUDY ABOUT AI SURGERY

What is Artificial Intelligence in Surgery?

Artificial Intelligence in surgery refers to the use of AI algorithms, machine learning, and robotics in surgical procedures. AI algorithms can be used to analyze large amounts of data, such as medical images, patient data, and surgical outcomes, to provide real-time information and support to surgeons during surgeries. Additionally, AI can be used to develop and control robotic surgical systems, offering improved accuracy, dexterity, and efficiency in surgical procedures.

Applications of Artificial Intelligence in Surgery:

Preoperative Planning: AI algorithms can be used to analyze medical images and patient data to create accurate surgical plans, reducing the risks of surgical complications.

Surgical Navigation: AI algorithms can be used to provide real-time information and support to surgeons during procedures, helping to improve surgical accuracy and outcomes.

Robotics-Assisted Surgery: AI can be used to develop and control surgical robots, offering improved accuracy and dexterity in procedures, as well as reducing surgical fatigue and errors.

Postoperative Care: AI algorithms can be used to analyze patient data and monitor patients post-surgery, helping to identify and mitigate potential complications and improve recovery outcomes.

Advantages of Artificial Intelligence in Surgery:

Improved Accuracy: AI algorithms can analyze large amounts of data, helping to provide accurate and up-to-date information to surgeons during procedures.

Increased Efficiency: AI algorithms can help to reduce the time required for preoperative planning and postoperative care, improving overall surgical efficiency.

Reduced Risks: AI algorithms can help to reduce surgical risks by providing real-time information and support to surgeons during procedures, and by monitoring patients post-surgery.

Increased Access to Surgical Care: By reducing the risks and costs of surgical procedures, AI can help to increase access to surgical care for patients, particularly in underserved and rural communities.

Challenges of Artificial Intelligence in Surgery:

- **Technical Challenges**: The development and deployment of AI algorithms for surgical procedures requires significant technical expertise, including the development of robust and reliable algorithms.

- **Data Privacy and Security:** The use of AI in surgical procedures involves the collection, storage, and analysis of large amounts of patient data, which must be securely stored and protected to maintain patient privacy and confidentiality.

- **Regulatory Approvals:** The use of AI in surgical procedures is subject to regulatory approvals, which can be a time-consuming and complex process.

- **Cost:** The development and deployment of AI algorithms for surgical procedures can be costly, requiring significant investment in hardware, software, and personnel.

METHODOLOGY

The methodology of using artificial intelligence (AI) in medical operations can vary depending on the specific application and type of AI being used. However, there are some common steps that are involved in the process.

- **Data collection:** One of the first steps in using AI in medical operations is to gather large amounts of data, including medical images, lab results, and patient records. This data is used to train the AI algorithms and improve their accuracy.

- **Data preprocessing:** Before the data can be used to train AI algorithms, it needs to be preprocessed and prepared for analysis. This may involve cleaning and organizing the data, as well as removing any irrelevant or redundant information.

- **Algorithm development:** Once the data has been prepared, the next step is to develop and train AI algorithms. This involves using machine learning techniques to train the algorithms to recognize patterns and make predictions based on the data.

- **Evaluation and validation:** Before AI algorithms can be used in medical operations, they need to be evaluated and validated to ensure that they are accurate and reliable. This may involve testing the algorithms on a sample of data and comparing the results to ground truth.

- **Implementation:** If the AI algorithms have been shown to be accurate and reliable, they can be integrated into medical operations and used to assist with diagnosis, treatment planning, and surgical procedures.

- **Monitoring and maintenance:** Ongoing monitoring and maintenance of AI algorithms is important to ensure that they continue to be accurate and reliable. This may involve updating the algorithms as new data becomes available or adjusting their parameters as needed.

In conclusion, the methodology of using AI in medical operations involves several steps, including data collection, data preprocessing, algorithm development, evaluation and validation, implementation, and monitoring and maintenance. By following these steps, healthcare providers can ensure that AI is being used in a responsible and effective manner in medical operations.

RESULTS

The results of the use of artificial intelligence (AI) in medical operations can vary and depend on a number of factors, including the specific application of AI and the quality of the algorithms being used.

In general, the use of AI in medical operations has the potential to greatly improve patient outcomes and the efficiency of medical procedures. For example, AI can assist with diagnosis, providing more accurate and precise results, and can also assist with treatment planning and surgical procedures, reducing human error and improving precision.

However, the results of AI in medical operations can also vary depending on the quality of the algorithms being used and the amount of data available to the AI system. AI algorithms may be affected by biases and may not always provide accurate results, leading to potential harm to patients.

In addition, the results of AI in medical operations can also be impacted by the availability and quality of data being used by the AI system. AI in medical operations relies on access to large amounts of sensitive medical data, and the accuracy of the results can be impacted by the quality and quantity of data available to the AI system.

In conclusion, the results of the use of AI in medical operations can vary, but there is potential for it to greatly improve patient outcomes and the efficiency of medical procedures. However, it is important to thoroughly evaluate the potential benefits and risks of AI in medical operations and to ensure that these technologies are being used responsibly and effectively

DISCUSSION

The use of artificial intelligence (AI) in medical operations has the potential to revolutionize the healthcare industry. AI can assist with diagnosis, treatment planning, and surgical procedures, helping to improve patient outcomes and reduce human error. However, there are also concerns about the reliability and potential for errors associated with AI in medical operations, as well as ethical and safety concerns related to data privacy and security.

One of the main benefits of AI in medical operations is its ability to improve diagnostic accuracy. AI can analyze large amounts of medical data, including images and lab results, to provide more accurate and precise diagnoses. This can help to improve patient outcomes and reduce the need for multiple procedures.

In addition, AI can assist with treatment planning and surgical procedures by providing real-time data analysis and decision support. AI can help to reduce human error and improve the precision of surgeries, leading to better patient outcomes.

However, there are also concerns about the reliability and potential for errors associated with AI in medical operations. AI algorithms can be affected by biases and may not always provide accurate results, leading to potential harm to patients. It is important for healthcare providers to thoroughly evaluate the potential benefits and risks of AI in medical operations before implementing these technologies.

Another concern is the issue of data privacy and security. AI in medical operations relies on access to large amounts of sensitive medical data, which could be at risk of being hacked or misused. There is a need for strong data protection measures to ensure that patient data is protected and kept confidential.

In conclusion, the use of AI in medical operations has the potential to greatly improve patient outcomes and the efficiency of medical procedures. However, it is important to thoroughly evaluate the potential benefits and risks of AI in medical operations, as well as the ethical and safety concerns associated with these technologies. Ongoing research and development is needed to further understand the full potential of AI in medical operations and ensure that it is used in a safe and effective manner.

LITERATURE REVIEW

A literature review on the use of artificial intelligence (AI) in medical operations would examine existing research and studies on the topic. The review would analyze the current state of AI in medical operations, its benefits and limitations, and its impact on patient outcomes. It would also discuss the ethical and safety concerns associated with the use of AI in medical procedures.

Studies on AI in medical operations would include those that examine its use in diagnosis, treatment planning, and surgical procedures. The literature review would analyze these studies to determine the potential benefits and limitations of AI in medical operations. This could include an evaluation of its accuracy, reliability, and potential impact on patient outcomes.

In addition, the review would discuss the ethical and safety concerns associated with the use of AI in medical operations. This could include issues related to data privacy and security, potential for errors and biases, and the need for human oversight and accountability.

The review would also examine the current state of AI in medical operations and its potential for future development. This could include an evaluation of ongoing research and development in the field and the potential for further advancements in AI technology.

In conclusion, a literature review on AI in medical operations would provide an overview of the existing research and studies on the topic. It would analyze the current state of AI in medical

operations, its benefits and limitations, and its impact on patient outcomes. The review would also discuss the ethical and safety concerns associated with the use of AI in medical procedures and provide insight into its potential for future development.

CONCLUSION

Artificial Intelligence (AI) has the potential to revolutionize the medical field, including surgical operations. AI can help to improve patient outcomes and provide more efficient and precise surgeries. The use of AI in surgery can help to reduce human error, improve diagnostic accuracy, and provide real-time data analysis during procedures. AI can also assist with planning and preparation for surgeries, reducing the need for multiple procedures and improving patient outcomes.

However, the use of AI in surgery is still in its early stages and there are concerns about its reliability and potential for errors. It is important for healthcare providers to thoroughly evaluate the potential benefits and risks of AI in surgery before implementing these technologies in the operating room. Ongoing research and development is needed to further understand the full potential of AI in surgery and ensure that it is used in a safe and effective manner.

In conclusion, AI has the potential to transform the field of surgery, but its impact will depend on the responsible and ethical integration of these technologies into the medical field.

RESEARCH METHODOLOGY

Primary Data- It is collected through questionnaires.

Secondary Data- It is collected through different websites, e-notes, research papers, journals etc.

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Collision Of Social Platform On Human Psychology Concern

Asst. Prof. Rajashree Salokhe[1], Pranjal Valvi [2]

[1]Assistant Professor, [2] T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

Studies have shown that excessive use of social media can lead to feelings of loneliness, anxiety, and depression. It can also contribute to low self-esteem and body image issues, as users compare themselves to others online. Additionally, social media algorithms are designed to keep users engaged for as long as possible, leading to a constant stream of information and stimulation that can be overwhelming.

Furthermore, social media platforms can create a distorted view of reality, as people tend to present an idealized version of their lives online. This can lead to feelings of inadequacy and FOMO (fear of missing out), as users compare their own experiences to the curated images and experiences of others online.

Introduction:

While social media offers many benefits, such as providing a platform for self-expression and connecting people with others who share similar interests, it also has the potential to cause harm. Excessive use of social media can lead to feelings of loneliness, anxiety, and depression, as well as contribute to low self-esteem and body image issues. Additionally, the curated images and experiences presented on social media can create a distorted view of reality, leading to feelings of inadequacy and FOMO (fear of missing out).

In light of these concerns, it is important to consider the collision of social media platforms with human psychology, and to take steps to mitigate the potential negative impacts. This may involve

limiting screen time, seeking out balance in our digital lives, and engaging in self-care practices that promote mental health and wellbeing. In this way, we can continue to reap the benefits of social media while minimizing the harm it may cause.

Literature Review:

One study published in the journal "Computers in Human Behavior" found that excessive use of social media was associated with increased symptoms of anxiety and depression. Participants who reported high levels of social media use were more likely to experience feelings of loneliness, and reported lower levels of life satisfaction and self-esteem.

Another study, published in "Cyber psychology, Behavior, and Social Networking," found that social comparison on social media was linked to increased feelings of anxiety and depression. Participants who frequently compared themselves to others on social media were more likely to experience negative feelings about their own lives and bodies.

Methodology:

Quantitative methods involve collecting and analyzing numerical data to test specific hypotheses or explore relationships between variables. For example, a survey could be used to assess the relationship between social media use and symptoms of anxiety and depression. The survey could include questions about the amount of time spent on social media, the frequency of social comparison, and the presence of symptoms such as insomnia, fatigue, and feelings of loneliness. The data collected from the survey could then be analyzed using statistical techniques to explore relationships between variables.

Qualitative methods, on the other hand, involve collecting and analyzing non-numerical data to gain a deeper understanding of experiences and perspectives. For example, interviews or focus groups could be used to gather detailed information about how individuals experience the effects of social media on their mental health and wellbeing. These data could be analyzed using qualitative coding and categorization techniques to identify common themes and patterns.

Result:

One study found that social media use was associated with increased symptoms of anxiety and depression, with participants who reported high levels of social media use more likely to experience feelings of loneliness and lower levels of life satisfaction and self-esteem.

Another study found that social comparison on social media was linked to increased feelings of anxiety and depression, with participants who frequently compared themselves to others on social media more likely to experience negative feelings about their own lives and bodies.

Conclusions:

In conclusion, the collision of social media platforms and human psychology is a growing area of concern, as the widespread use of these platforms continues to increase. The results of numerous studies have consistently shown that excessive use of social media can have negative effects on mental health and wellbeing, contributing to symptoms of anxiety and depression, decreased self-esteem and life satisfaction, and disrupted sleep patterns.

Overall, the collision of social media platforms and human psychology highlights the importance of being mindful of the ways in which technology can impact our lives and our mental health. By taking a proactive approach to managing social media use, individuals can help to minimize the negative effects of these platforms and promote a positive and fulfilling experience online.

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Software Testing Metrics – Visibility In Product And Process Quality

Mona Rishi Bharaj

PGT in the Dept of IT MPhil, MSCIT, Diploma in Cyber Law,
The Lexicon International School,Wagholi Email: tlisw_it1@lexicon.edu.in
"What gets "Measured" gets "Focus" and what gets "Focus" gets "Improved" `

Abstract:

As the organizations are growing and striving to improve the quality of enterprises ---Metrics are gaining importance. Test metrics are important indicator of efficiency and effectiveness of Software testing process. There are several test metrics identified as part of the overall testing activity in order to track and measure the entire process. Working on metrics development early in the process is a key, as it will impact the types of metrics needed to examine and ensure performance.There are many metrics proposed by the researchers but either they are used in isolation or their usage is just ignored. To measure a test process the requirement is the competence for an effective software test manager. Effective test process measurement is useful for designing and evaluating a cost effective test strategy.This paper summarizes how a test process measurement can be made more effective in Iterative model of development and also discusses how metrics are improved to provide more immediate, real time feedback to testers on the quality of testing during each test phase and also helps the organizations to have incremental quality and productivity and also address the challenges. Various aspects of metrics program are discussed.

Keywords: Test Metrics, Process Improvement, Defect Metrics, Goal Question Metric.

INTRODUCTION:

Test metrics are an important indicator of the effectiveness of a software testing process. The basic step of test metrics is to identify the key software testing processes that can be objectively measured. Test metrics can be used to improve future work estimates, redefine the focus area andto improve efficiency. It provides support for determining the effectiveness of the processes and the quality of product.

IEEE defines metric as "a quantitative measure of the degree to which a system, component, or process possesses a given attribute."Software metrics help project managers to gain an insight into the efficiency of the software process, product and project. This is possible by collecting quality and productivity data and then analyzing and comparing these data with past averages in order to know whether quality improvements have occurred or not. Metrics when applied in a consistent manner , it helps in project planning and project management activity which increases excellence in the operations as they get the right product in the right hands.

Benefits of using Software Metrics

Test metrics acts as a very powerful risk management tool.It helps you to measure the current performance and helps to learn about the functioning of the organization which in turns reduces the risk of schedule over runs.

- Measuring the size of the software quantitatively.
- Provides a means for control as the reports on the status are provided.
- Specifies when the testing process should be stopped.
- Assessing the strength of the module by measuring coupling.
- It determines the date of release of the software.
- Provides meters to flag actions for faster, more informed decision making.
- Quickly identifies and helps resolve potential problems and identifies areas of improvement.
- Test metrics provide an objective measure of the effectiveness and efficiency of testing.
- Assessing the level of complexity involved.

Well implemented metrics lends itself to benchmarking and controlling release to release improvement of software quality and reliability.
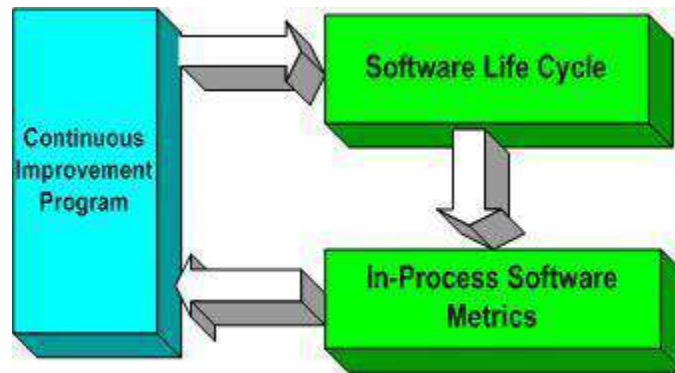
The use of test metrics radically changes business performance and thus creates a better business design.

III. Difference in Measures, Metrics and Indicators

Metrics is often used interchangeably with measure and measurement. But the difference between them is important to note. Measure can be defined as quantitative indication of amount, dimension, capacity or size of product and process attributes. Measurement can be defined as the process of ascertaining the measure and metrics can be defined as quantitative measures that allow software engineers to identify the efficiency and improve the quality of software process, project and product.

IV. Guidelines for Software Metrics

Many software metrics have been proposed over a period of time an ideal software metric is one which is easy to understand, effective and efficient. Whenever we want to develop an ideal metric, software metrics need to be validated and characterized effectively. Thus the project managers must decide the metrics on the basis of their importance to stakeholders rather than ease of collection of data. Metrics that are not interest to the stakeholders should be avoided.

Simple and Computable: Derivation of software metrics should be easy to learn and should involve average amount of time and effort.

Consistent and Objective: Unambiguous results should be delivered by software metrics.

Consistent in the Use of Dimensions: Mathematical computation if the metrics should involve use of dimensions and units in a consistent manner.

Programming Language Independent: Metrics should be developed on the basis of the analysis model, or program's structure.

High Quality: Effective software metrics should lead to a high quality software project.

Easy to Calibrate: Metrics should be easy to adapt according to the project requirements.

Easy to Obtain: Metrics should be developed at a reasonable cost.

Robust: Metrics should be relatively insensitive to small changes in process, project or product.

Value: value of metrics should increase or decrease with the value of the software characteristics they represent. For this, the value of metrics should be within a meaningful range. For example, metrics can be in the range of 0 to 5, where 0 is the minimum value, 5 is the maximum value and 2.5 is the intermediate value.

Validation: Metrics should be validated before being used for making any decisions.

V. Goal Question Metric (GQM)—Results in Operational Excellence

The GQM, developed by Dr. Victor Bassili defines a top-down, goal oriented framework for software metrics. It approaches software measurement using a three level model; conceptual, operational, and quantitative. At the conceptual level, goals are set prior to metrics collection. According to the GQM organizational goals are understood to shape project goals. Organizational goals may be set by upper management or by organization stakeholders. To establish Project goals Brainstorming sessions by the project team may be used. At the operational level, for each goal question(s) are established which when answered will indicate if the goal has been achieved. Finally, at the quantitative level, each question has a set of data associated with it which allow it to be answered in a quantitative way.The GQM is described as a seven step process. (Some authors give a different number of steps, leaving out step 7 or merging two steps into one). The first three steps are crucial and correspond to the main activities at each level in the model as described above.

GQM Steps

Step 1. Develop a set of Goals

Develop goals on corporate, division, or project level. These goals can be established from brainstorming sessions involving project team members, or they may be set by organizational goals or from stakeholder's requirements.

Basili and Rombach provide a template for recording the purpose, perspective and environment that will add structure to the goal.

- Purpose

The [process, metric, product, etc] is [characterised, evaluated, understood, etc] in order to [understand, improve, engineer, etc.] it.

- Perspective

The [cost, defects, changes, etc.] are examined from the point of view of the [customer, manager, developer, etc.] e.g. the changes are examined from the developer's viewpoint.

- Environment

The environment in which measurement takes place is evaluated in terms of people, process, problem factors, tools, and constraints.

Step 2. Develop a set of questions that characterise the goals.

From each goal a set of questions is derived which will determine if each goal is being met.

Step 3. Specify the Metrics needed to answer the questions.

From each question from step two it is determined what needs to be measured to answer each question adequately.

Step 4. Develop Mechanisms for data Collection and Analysis

It must be determined:

- Who will collect the data?
- When will the data be collected?
- How can accuracy and efficiency be ensured?
- Who will be the audience?

Step 5. Collect Validate and Analyse the Data.

The data may be collected manually or automatically. Metrics data can be portrayed graphically to enhance understanding.

Step 6. Analyse in a Post Mortem Fashion

Data gathered is analysed and examined to determine its conformity to the goals. Based on the findings here recommendations are made for future improvements.

Step 7. Provide Feedback to Stakeholders

The last step, providing feedback to the stakeholders is a crucial step in the measurement process. It is essentially the purpose behind the previous six steps. Feedback is often presented in the form of one goal per page with the questions, metrics and graphed results.

VI. Metrics Throughout the Lifecycle

Metrics enable the estimation of work required in each phase, in terms of the budget and schedule. They also allow for the percentage of work completed to be assessed at any point during the phase, and establish criteria for determining the completion of the phase.

The general approach to using metrics, which is applicable to each lifecycle phase, is as follows:

- Select the appropriate metrics to be used to assess activities and outputs in each phase of lifecycle.
- Determine the goals or expected values of the metrics.
- Determine or compute the measures, or actual values.
- Compare the actual values with the expected values or goals.
- Devise a plan to correct any observed deviations from the expected values.

Some complications may be involved when applying this approach to software. First, there will often be many possible causes for deviations from expectations and for each cause there may be several different types of corrective actions. Therefore, it must be determined which of the possible causes is the actual cause before the appropriate corrective action can be taken. In addition, the expected values themselves may be inappropriate, when there are no very accurate models available to estimate them.

In addition to monitoring using expected values derived from other projects, metrics can also identify anomalous components that are unusual with respect to other components values in the same project. In this case, project monitoring is based on internally generated project norms, rather than estimates from other projects.

For successful standardization of processes and for metrics to focus on product, process and product the metric has to pass through the following steps of life cycle:-

- Identify the metric.
- Prioritizing metrics.
- Classifying metrics that may be project specific.
- Identify data required for the metric.
- Communicating to the stakeholders.
- Capturing and verifying the data.
- Analyzing and processing data.
- Reporting.

VII. Key Metrics to improve Testing Performance

- Defect Injection rate (phase wise) = Phase-wise Defects / development Effort in that phase
- Defect Seepage ratio – Number of defects detected at phase J (origin J – 1)/(total # defects injected at phase J-1)
- Review/Test Coverage = Actual Size/(Review/Test Effort)
- Review/Test Detection Efficiency = (Review/Teat Defects)/Total Defects
- Defect Cause Category Analysis – Pareto analysis
- Review/Test Effort as % of development Effort

- Product Quality Index

VIII. Issues In Software Metrics Implementation

Implementing and executing software metrics is a cumbersome task as it is difficult to manage the technical and human aspects of software measurement. There exists many issues which prevent the successful implementation and execution of software metrics:

1. Lack of Management Commitment: It is observed that management is not committed towards using the software metrics due to the following reasons:

- Management opposes measurement.
- Software engineers do not measure and collect data, as management does not realize their importance.
- Management charters a metrics program, but does not assist in deploying the program into practice.

2. Collecting Data That Is Not Used: Data collected during the measurement process should be such that it can be used to enhance the process, project, or product. This is because collecting incorrect data results in wrong decision making, which in turn leads to deviation from the software development plan.

3. Measuring Too Much Too Soon: In a software project, sometimes excess data is collected ahead of time, which is difficult to manage and analyze. This results in unsuccessful implementation of metrics.

4. Measuring the Wrong Things: Establishing metrics is a time-consuming process and only those data provides valuable feedback should be measured in an effective and efficient manner. To know whether data needs to be measured or not, a few questions should be addressed (if answers are no, then metrics should not be established).

- Do data items collected relate to the key success strategies for business?
- Are managers able to obtain the information they need to manage projects and people on time?
- Is it possible to conclude from data obtained that process changes are working?

5. Imprecise Metrics Definitions: vague or ambiguous metrics definition can be misinterpreted. For example, some software engineers may interpret a software feature as an unnecessary, while some may not.

6. Measuring Too Little, Too Late: Measuring too less provides information which is of little or no importance for the software engineers. This, software engineers tend to offer resistance in establishing metrics. Similarly, if data is collected too late, the requested data item may result in unnecessary delay in software project as project managers and software engineers do not get the data they need on time.

7. Misinterpreting Metrics Data: Interpretation of metrics data is important to improve the quality of software. However, software metrics are often misinterpreted. For example, the number of defects in the software increases despite efforts taken to improve the quality, then software engineers might conclude that software improvement efforts are doing more harm than good.

8. Lack of Communication and Training: Inadequate training and lack of communication results in poor understanding of software metrics and measurement of unreliable data. In addition, communicating metrics data in an effective manner results in misinterpretation of data.

CONCLUSION:

A metrics program that is based on the goals of an organization will help communicate, measure progress towards, and eventually attain goals. People will work to accomplish what they believe to be important. Well-designed metrics with documented objectives can help an organization obtain the information it needs to continue to improve its software products, processes, and services while maintaining a focus on what is important. A practical, systematic, start-to-finish method of selecting, designing, and implementing software metrics is a valuable aid.

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High-Tech Bins For Waste Management In Smart Cities Using Internet Of Things

Asst. Prof. Swapnali Kadge[1], Tanu sharma[2]

[1]Assistant Professor, [2] T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

Abstract:

Increasing waste generation has become a crucial ultimatum in developing countries due to exceptional population growth and urbanization. From the literature, many issue have been explored to manifest direct relation with the increase in waste material generation and related difficulties to handle it in a smart megacity. These issue are the consequence of an improper collection and waste disposal mechanism used for waste material. The increase in migration trends of people toward big metropolises and lack of intelligent technology used to support the municipal solid waste management system. As a Result the administration of waste material has become a challenge due to a large quantity of waste littered everywhere. This paper presents internet-based garbage management system for smarter waste disposal. The proposed system will consist of waste bin that are furnished with ultrasonic sensor to detect garbage fullness, Load sensor to measure weight of the garbage, GPS sensor to detect bin location and Gas sensor to measure dangerous gas emission from bin. These sensors are integrated with ESP 8266 Node MCU module which a microcontroller is having cost effective Wi-Fi microchip with complete TCP or IP stack. The ESP 8266 can communicate with Wi-Fi modems present in the smart city which are in turn connected with cloud using information highway. The introduced system can send alert message to municipal authorities whenever the height of garbage in the bin is greater than threshold value and also stores the data in cloud for future measures.

Keywords: IOT, Smart bin, sensor, microcontroller, ESP 8266 Node MCU, Wi-Fi.

Introduction:

 The Garbage has become a significant problem in the world today. According to a report published in *Nature* journal, the problem of garbage or solid waste is assuming awful proportions today. By the end of this century (2100), garbage will be collected at the rate of 11 million tonnes per day globally, more than three times today's rate. It implies that the garbage-generation which amounted to 3.5 million tons per day in 2010 will become 6 million tonnes per day by 2025. At present, people of India produce about 62 million tonnes of solid-waste annually. Out of this, 45 million tonnes of the garbage are left untreated and disposed of by civic agencies in an unscientific manner. According to the report, urban India generates 109,589 tonnes of waste per day. Interestingly, the urban US produces 624,700 tonnes of garbage per day, which is the highest in the world, while the second largest happens to be urban China with 520,548 tonnes per day. India's waste-generation will be more than 376,639 tonnes per day by 2025, especially with the population of urban India expected to increase to 538 million. Various waste management schemes were adopted but in the existing waste disposal technique, cleaners have to empty thee bins every day periodically and manually. Because of the existing technique, most of the time garbage has flooded in the surrounding area and thereby increasing the possibility of spreading virus and bacteria endured diseases. Nowadays many systems are in use to maintain cleanliness in society. People are also contributing in "SWACCH BHARAT ABHIYAAN". In the proposed work an alternative efficient and economical waste disposal strategy is developed. A newer waste bin is designed in the proposed work and is attached with four sensors for effective real-time monitoring of the smart bin conditions. Whenever the garbage level in the smart bin reaches a programmed threshold level, an alert message is sent to the cleaning authority to empty the high-tech bin. Thus, the proposed waste disposal scheme using smart bin can effectively assist as a benchmark for waste disposal scheme used in smart cities.

Design and Implementation:

The comprehensive block diagram of construction of high-tech bin is shown in the fig 1. In the proposed methodology high-tech bin is associated with MQ-136 Sensor, GPS Sensor, load sensor and ultrasonic sensor. The mass of the garbage in the bin is measured with the help of load sensor. The high-tech bin locality is identified with the help of GPS sensor. Hydrogen sulfide which is

produced through bacterial breakdown of organic matter present in the garbage of bin is recognized by MQ 136 gas sensor. All the sensors are integrated with ESP-12E module in which core is ESP8266EX which consist of 32-bit based RISC microprocessor which operate around 80MHz to 160MHz adjustable clock frequency and support real time operating system. This segment is commercial Wi-Fi SoC (System on Chip) with complete TCP or IP stack. In the smart city the ESP 8266 can communicate with Wi-Fi modem. The proposed arrangement can send alter message whenever the height of the waste in the bin is greater than threshold value. In this implementation Temboo is used which is having web-based services related to IOT applications such as instant notification, data logging and control purpose. Temboo is used with ESP 8266 based online IOT project which is then linked with other online platform like Google for sending Email (using Gmail choreos) and data logging (using Spreadsheets choreos). The municipal authority person gets the email alert message sent by Temboo to collect the waste from the bin. The alert message comprise of bin's location, date, time, weight of the garbage and foul smell status. The municipal authority will send the message to the nearby driver to collect the garbage. The implementation will also store various details such as date, time, location of the bin, totality status of the garbage, weight of the garbage, dangerous gas, emission status, alert message sent and action taken by municipal authorities in cloud for additional analysis purpose.
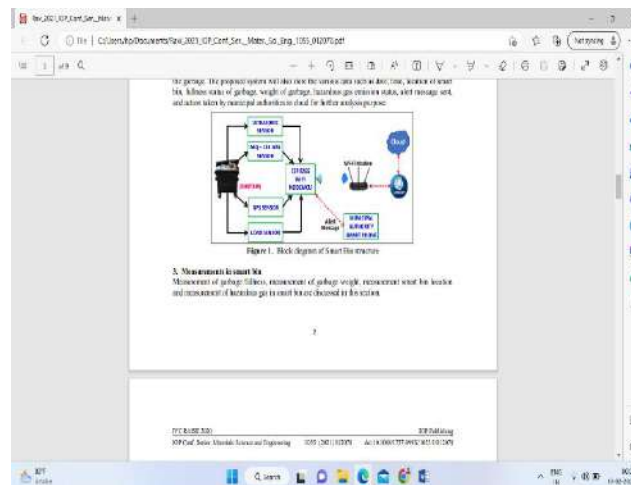
Figure 1. Block diagram of High-tech Bin structure

Computation in High-tech bin:-

 Calculation of garbage fullness, measurement of garbage weight, Recognizing location of the bin and identification of hazardous gas in smart bin are discussed in this section.

Calculation of garbage fullness:-

The HCSR04 is a non-contact type Ultrasonic distance sensor. It includes ultrasonic transmitter, receiver and control circuit which can measure distance range from 2cm to 400cm. The Ultrasonic distance sensor is used to measure whether the bin is full of garbage or not. The ultrasonic distance sensor will be placed on the inner side of the smart bin lid. Both the transmitter and receiver of Ultrasonic distance sensor face the garbage in the smart bin. As garbage increases, the distance between the ultrasonic distance sensor and the garbage decreases.

Figure 2. Interfacing diagram of Ultrasonic distance sensor with ESP8266 12E NodeMCU

The Interfacing diagram of Ultrasonic distance sensor with ESP8266 12E NodeMCU is shown in Fig. 2. The Ultrasonic distance sensor's TRIGGER pin is connected to D1 pin, and the ECHO pin is connected to D2 pin in ESP8266 12E NodeMCU Board. Similarly the Ultrasonic distance sensor's Vcc pin is connected to 3v3 supply pin, and the GND is connected to GND (ground) pin in ESP8266 12E NodeMCU Board. Arduino IDE is used in this paper to program the NodeMCU ESP8266 12E Development board. This live distance data collected by Ultrasonic distance sensor will be sent to ESP8266 12E NodeMCU board. In this paper the threshold value for garbage fullness is 80% of the full capacity. This value can be programmatically changed. Whenever the

Ultrasonic distance sensor senses 80 % garbage fullness, ESP8266 12E NodeMCU Board send the alert message to municipal authority using Temboo.

Measurement of garbage weight:-

The garbage weight is measured by strain gauge type load cell. In this work, 10 kg Load cell is used which is having sturdy aluminum alloy body constructed with 4 strain gauges pre-attached with strain relieved wires is used. Load sensor has four wires with two excitation wires (Red wire – Excitation+ or VCC and Black wire – Excitation- or GND) and two signal wires (White wire – Amplifier+ or Signal+ or Output+ and Green wire – Amplifier- or Signal- or Output-). The load cell is shown in Fig. 3.

Figure 3. Strain Gauge type Load Cell

The HX711 board is having a high precision 24-bit ADC designed specifically for load cell. This board allows to easily interfacing with load cell to measure weight. This board comprises of two numbers of differential input ADC channels. It has on-chip Programmable Gain Amplifier with selectable gain of 32, 64 and 128 with active low noise. In this work gain of 128 is used, The analog power supply connected to this board is used for ADC and the on-chip voltage regulator output is connected to load cell. No programming is required to transmit the digital data from ADC to Arduino board. The interfacing diagram of Load cell with HX711 board is shown in Fig. 4. The connection details of load cell with HX711 board are described below: Red wire of the load cell is connected to Excitation+ (E+) pin, black wire of load cell is connected to Excitation- (E-) pin, white wire of load cell is connected to Amplifier+ (A+) pin and green wire of load cell is connected to Amplifier- (A-) pin of HX711board. The connection details of HX711 board with ESP8266 12E NodeMCU Board are described below: Vcc pin of HX711 board is connected to 3v3 supply pin of ESP8266 12E NodeMCU Board and GND pin of HX711 board is connected to GND

(ground) pin of ESP8266 12E NodeMCU Board. The DT pin of HX711 board is connected to D3 pin of ESP8266 12E NodeMCU Board and SCK pin of HX711 board is connected to D4 pin of ESP8266 12E NodeMCU Board. The Load cell is attached with bottom side of the smart bin. The dead weight can be eliminated by using software calibration technique. The accuracy grade of the load cell is 0.02%. Since load cell is IP65 rated, it is guaranteed protection from water and dust.

Measurement of High-tech bin location:-

U-blox NEO-6M GPS module is a commercially popular, economical, high-efficient GPS module. It is having ceramic patch antenna, backup battery and on-board memory chip. This GPS module can be easily connected with ESP8266 12E NodeMCU Board. The U-blox Neo 6m GPS module is shown in Fig. 5.
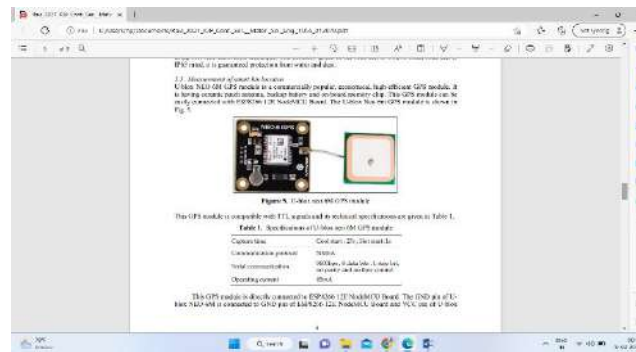
Figure 5. U-blox neo 6M GPS module

This GPS module is compatible with TTL signals and its technical specifications are given in Table 1.

Table 1. Specifications of U-blox neo 6M GPS module

Capture time	Cool start : 27s , Hot start :1s
Communication protocol	NMEA
Serial communication control	9600bps, 8 data bits, 1 stop bit, no parity and no flow
Operating current	45mA

This GPS module is directly connected to ESP8266 12E NodeMCU Board. The GND pin of Ublox NEO-6M is connected to GND pin of ESP8266 12E NodeMCU Board and VCC pin of U-box. NEO-6M is connected to 3v3 supply pin of ESP8266 12E NodeMCU Board. The RXD pin of U-blox NEO-6M is connected to D5 pin of ESP8266 12E NodeMCU Board and TXD pin of U-blox NEO-6M is connected to D6 pin of ESP8266 12E NodeMCU Board. The U-blox NEO-6M GPS board will give real time position data of smart bin continuously. This data will be transmitted at 9600 baud rate in NMEA format. NMEA format contain several strings. When we use this GPS module for tracking smart bin location, we need coordinates of smart bin. We can get coordinates of smart bin in $GPGGA string. The $GPGGA string is a Global Positioning System Fix Data String. The meaning of following example $GPGGA string is described below: $GPGGA,141848.00,2932.63200,N,08125.76516,E,1,02,2.96,1.8,M,-51.3,K,,*64 The above string describes Latitude 2932.63200,N [29(degree) 32(minutes) 63200(sec) North] and Longitude 08125.76516,E [081(degree) 25(minutes) 76516(sec) East] as an coordination about the Smart bin location. In this work we have used U-blox NEO-6M GPS Library in the Arduino IDE that provides few functions to calculate latitude and longitude information about Smart bin.

Measurement of hazardous gas in High-tech bin:

The hazardous gas produced from garbage in smart bin is measured by MQ-136 gas sensor. The MQ136 gas sensor is shown in fig.6. The MQ-136 gas sensor has 4 pins with two pins for excitation (Vcc and GND) and two pins for output (digital output – DOUT and analog output – AOUT).

Figure 6. MQ-136 gas sensor

The connection details of MQ-136 gas sensor with ESP8266 12E NodeMCU Board are described below: The Vcc pin of MQ-136 gas sensor is connected to 3v3 supply pin of ESP8266 12E NodeMCU Board, GND pin of MQ-136 gas sensor is connected to GND pin of ESP8266 12E NodeMCU Board and AOUT pin of MQ-136 gas sensor is connected to A0 pin of ESP8266 12E NodeMCU Board.

Working principle of High-Tech bin:

The flowchart shown in Fig.7 explains the working operation of smart bin. First load sensor, Gas sensor, HX711 board, GPS sensor and Ultra sonic sensor are interfaced with ESP8266 12E NodeMCU Board. Then the sensors and boards are fixed in the inner side of the smart bin cover. 5V rechargeable long life battery is fixed with sensors, HX711 board and ESP8266 12E NodeMCU Board. Then, the required program is deployed into ESP8266 12E NodeMCU Board. In the program, first load sensor is initialized to eliminate dead weight. Then the threshold value for garbage fullness is initialized. The threshold value is taken as 80% (this threshold value can be changed in the program) in this work. The calibration algorithm for load cell will eliminate dead weight present in the smart bin. Then the smart bin location is identified using GPS library available in the Arduino IDE. The Latitude and Longitude coordinates are calculated and stored in the memory. The garbage weight is measured by load cell and its measured value is stored in a memory. The MQ-136 gas sensor is used to measure hydrogen sulphide gas which produced through the bacterial breakdown of organic matter present in the smart bin garbage. The output of the sensor is 0 -5V which corresponds to 0 – 200 ppm. The measured gas ppm value is stored in a memory. Then ultrasonic distance sensor is getting activated. Ultrasonic distance sensor sends out sound wave. After hitting the garbage the sound wave will be reflected back to it. It contains the information regarding the garbage filled level in a smart bin. The percentage of garbage fullness is calculated and it is stored in the memory. Then the percentage of garbage fullness is compared with threshold value. If the measured percentage of garbage fullness is less than the threshold value it will repeatedly measure percentage of garbage fullness after some delay period and the process will be repeated continuously. If the measured percentage of garbage fullness is greater than threshold value, an alert message is sent to municipal authority. The municipal authority in turn send message to nearby driver to collect the garbage. Then the complete information such as

date, time, location of smart bin, fullness of garbage, weight of garbage, hazardous gas emission status, alert message sent, and action taken by municipal authorities in cloud for further analysis purpose. From cloud data, municipal authority can get much information such as density of population of a particular region, duration in which a smart bin gets filled up, particular area bins density etc.

Table 2. Specification of bin

Specification	Value
Nominal value	125 Litres
Dimension of the bin: Length	40 cm
Width	40 cm
Height	120 cm
Net Weight	9 kg
Maximum Load	50 kg
Battery specification	Lithium-ion battery 3.3 V, 10 Ah Battery lasts upto 5 years
Wireless Communication	Wi-Fi

Conclusion:

As there are various reasons contributing for generation of huge amount of solid waste, the two main factor that are causing this immense waste is population and urbanization. This vast amount of solid waste has created various challenges for central authorities. There are numerous schemes adopted by municipal corporation to reduce the solid waste but it does not bring out any change

we can still see garbage littered everywhere in various cities. The proposed system is inadequate to handle a huge amount of waste and is not suitable for large extent but by acquiring new edge cutting technologies it can become highly efficient and will be able to handle the disposal of the waste properly also can make cities more smart. The presented concept can be effortlessly installed as an add-on module in a conventional waste management infrastructure exits in the present cities. This implementation will help to make cities more clean , green and attractive.

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Overview of DevSecOps

Asst. Prof. Kuldeep Prabhu[1], Shreya Jagdale[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT:

DevSecOps (short for development, security, and operations) is a development practice that integrates security initiatives at all stage of the software development lifecycle to deliver strong and secure applications. DevSecOps charge security into the continuous integration and continuous delivery (CI/CD) pipeline, allowing development teams to address some of today's most pressing security challenges at DevOps speed. Historically, security thought and practices were frequently introduced now in the development lifecycle. However, with the rise of more advanced cybersecurity attacks, and development teams shifting to shorter, more frequent iterations on applications, DevSecOps is now becoming a go-to practice for ensuring applications are secure in this modern development system.Also the security is very safety it also automatic manual process automation plays and very important role in the information security teams.

KEYWORDS : Security, Operations, Development.

INTRODUCTION :

Moment, utmost companies have enforced DevOps practices within their association. DevOps provides a culture where brigades can deliver dependable software and updates briskly. This approach presents an occasion for brigades to concentrate on quality rather than wasting time on operations. still, as a result, security practices are frequently left to security specialists at the end of the delivery channel. A technical security approach also creates gratuitous above within the delivery process as unanticipated issues constantly arise at the end of delivery. Accordingly,

brigades lose time fixing the law and starting the same process constantly, eventually making delivery expensive and hamstrung. DevSecOps has come raised important as utmost companies have hold on digital metamorphosis. With these plans, companies are moving to the pall. This results in moving down from on- demesne architectures and transitioning to public pall results. pall providers offer cost-effective, scalable, largely available, and dependable results. still, these advantages come with new security challenges. Security deserves a advanced precedence than ever ahead. With pall results, there's no room for miscalculations. By not following security conditions, you might open the door of your network to dozens of security pitfalls. thus, security should be considered before during the design phase. inventors are more successful with this approach because they first produce a secure terrain before developing their features. also, inventors are more involved and apprehensive of security conditions since it's now part of development. DevSecOps integrates security into DevOps as an integral element of the SDLC rather of observing security as an afterthought. It also distributes security liabilities amongst platoon members. In collaboration with security specialists, brigades can apply a " security as law " culture that encourages security to be treated like other software factors of the SDLC channel.

Types of "security work":-

1.Business project :-project that designed to achieve a specific business goal and objectives.

2.**Internal project** :- some security tools and

3.operational change:- upgradation of software, monitering alert,

4.unplanned work:-The pratices of dealing with problem as they arise rather than planning strategically.

LITERATURE REVIEW :

After an original hunt on literature to learn more on the content of DevSecOps, we couldn't find a substantial body of academic exploration on the content. We thus decided to conduct a multivocal literature review(MLR). Multivocal literature is defined as all accessible literature on a content. This includes, but isn't limited to blogs, white papers, papers and academic literature. By using this variety of literature the results will give a further nuanced look at the content, since it includes the voices and opinions of academics, interpreters, independent experimenters, development enterprises and others with experience. preliminarily published MLRs include but isn't limited to is an MLR on automated software testing and the proposed guidelines from interpreters and

experimenters for when and what to automate. is an MLR furnishing an overview of DevOps. is an MLR on software test maturity assessments and test process enhancement. To the stylish of our knowledge, this is the first MLR on the content although it isn't the first for DevOps. points to the significance of MLRs in software engineering(SE) fields by stating that SE interpreters produces multivocal literature on a great scale, but that it isn't published in academic forums. They mention still, that not including that literature in methodical reviews means experimenters miss out on important current state- of- the- art practice in SE. Involving security in DevOps has been a challenge because traditional security styles have been unfit to keep up with DevOps ' dexterity and speed. DevSecOps is the movement that works on developing and integrating modernized security styles that can keep up with DevOps. This study is meant to give an overview of what DevSecOps is, what enforcing DevSecOps means, the benefits gained from DevSecOps and the challenges an association faces when doing so.

METHODOLOGY :

Eventually, DevSecOps is important because it places security in the SDLC before and on purpose. When development associations decode with security in mind from the onset, it's easier and less expensive to catch and fix vulnerabilities before they go too far into product or after release. Organizations in a variety of diligence can apply DevSecOps to break down silos between development, security, and operations so they can release more secure software briskly.

• Automotive DevSecOps reduces lengthy cycle times while still icing that software compliance norms similar as MISRA and AUTOSAR are met

• Healthcare DevSecOps enables digital metamorphosis sweats while maintaining the sequestration and security of sensitive case data per regulations similar as HIPAA

• Financial, retail, and ecommerce DevSecOps helps insure that the OWASP Top 10 web operation security pitfalls are addressed and maintains PCI DSS data sequestration and security compliance for deals among consumers, retailers, fiscal services, and so on

• Bedded, networked, devoted, consumer, and IoT bias DevSecOps enables inventors to write secure law that minimizes the circumstance of the CWE Top 25 most dangerous software crimes.
https://www.google.com/search?q=DIAGRAM+for+devsecops&rlz=1C1ONGR_enIN982IN982&source=lnms&tbm=isch&sa=X&ved=2ahUKEwiwxLau_pL9AhWhX3wKHdtqD5IQ_AUoAXoECAEQAw&b116

ADVANTAGES-

- Reduction of charges and Delivery rate increases.
- Security, Monitoring, Deployment check, and notifying systems from the morning.
- It supports openness and translucency right from the launch of development.
- Secure by Design and the capability to measure.
- Faster Speed of recovery in the case of a security incident.
- perfecting Overall Security by enabling inflexible structure which further involves security robotization.

DISADVANTAGES-

- Integration challenges
- One of the challenges of DevOps is that it requires a high position of integration between development and IT operations. This can be delicate to achieve, especially in large associations with complex systems. In addition, DevOps can bear a significant culture change for some associations, which can be delicate to apply.
- Increased pitfalls
- Another implicit disadvantage of DevOps is that it can increase the pitfalls associated with software development. This is because DevOps requires a high degree of robotization, which can lead to crimes if not duly configured. In addition, DevOps can make it delicate to track the source of problems when they do.
- High cost if misconfigured
- still, it can be expensive to apply, If DevOps isn't duly configured. This is because DevOps requires a significant investment in robotization and structure. In addition, if DevOps isn't enforced rightly, it can lead to increased pitfalls and integration challenges.

CONCLUSION:

DevSecOps empowers an association to take a visionary approach to security. It encourages software inventors to integrate security into their day- to- day sweats. At the same time, security

brigades can work with software inventors to help an association identify and resolve security vulnerabilities before they get out ofhand.Expect the demand for DevSecOps to increase in associations of all sizes and across all diligence. As further associations search for ways to descry and correct security issues beforehand in the software development process, the demand for tools to support DevSecOps will increase consequently.

An association that implements DevSecOps tools moment could reap the benefits of that investment for a continuance. By furnishing software inventors and security brigades with stoner-friendly and effective DevSecOps tools, an association fosters a culture of collaboration, communication, translucency and openness. As a result, this association creates an terrain where inventors and security brigades drive ongoing enhancement.

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Overview & Applications Of Artificial Intelligence

Asst. Prof. Swapnali Kadge[1] Khushi Bhosale[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

ABSTRACT

In today's world, technology is growing very fast, and we are getting in touch with different new technologies day by day. Here, one of the most developed technology in computer science is Artificial Intelligence which is create a new revolution in the world by making intelligent machines. Artificial intelligence term invented in year 1950 by John McCarthy .And the present paper we discuss the current state of Artificial Intelligence (AI) research and its future opportunities. Artificial Intelligence has a ability to design smart machines or to develop self-learning software applications that imitate the traits of the human mind like reasoning, problem-solving, planning, optimal decision making, sensory perceptions etc. This paper focuses on the detailed description of AI, history of AI and its pros and cons. Here we tried to explain the brief ideas of AI and its application to various fields. In Artificial intelligence computer science and physiology are combined. This branch of computer science is helps to make computers behave like humans. In this paper we quickly covered what artificial intelligence (AI) is, how it works, and how it may be applied in our daily lives. Artificial intelligence includes many programming language but lisp and prolog are the most common language in AI. knowledge engineering plays a vital role in Artificial intelligence. Artificial intelligence (AI) is an important technology that supports economic activities And daily social life.

KEYWORDS

Artificial Intelligence , Working, Deep Learning

INTRODUCTION

Artificial intelligence is composed of two words Artificial and Intelligence, where artificial defines "man-made", and intelligence defines "thinking power", hence AI means "a man-made thinking power".AI is a branch of computer science that deals with creating machines which can perform specific tasks that typically require to the human intelligence, such as visual perception, speech recognition, decision-making, and language translation. It is a field that involves the development of algorithms and computer programs that can learn from data, identify patterns, and make predictions or decisions. Artificial intelligence has becoming a trendy field in computer science because it has improved the human life in lot of areas, like a self driving cars, healthcare management, marketing chatbots etc. AI is a growing part of everyday life.

There are two main categories of AI: Narrow or weak AI, which is designed to perform a specific task, and general or strong AI, which has the ability to perform any intellectual task that a human can. AI is also defined as,

• An Intelligent Entity Created By humans

• Capable of Performing Tasks intelligently without being explicitly instructed.

• Capable of thinking and acting rationally and humanely.

WORKING OF AI

Artificial Intelligence (AI) works by using algorithms and statistical models to analyze and learn from data, and then using that learning to make predictions or decisions. There are several techniques and approaches used in AI, including:

1. **Machine Learning:** This is a subfield of AI that focuses on developing algorithms and models that can learn from data and make predictions or decisions without being explicitly programmed to do so. There are several types of machine learning, including supervised learning, unsupervised learning, and reinforcement learning.

2. **Deep Learning:** This is a type of machine learning that uses artificial neural networks with multiple layers to analyze and learn from large amounts of data. Deep learning is used in tasks such as image and speech recognition.

3. **Natural Language Processing (NLP):** This is a subfield of AI that focuses on developing algorithms and models that can analyze, understand, and generate human language. NLP is used in tasks such as language translation and sentiment analysis.

4. **Robotics:** This is a field that combines AI and mechanical engineering to create robots that can perform tasks that typically require human intelligence. AI is used to control the movements and decision-making of the robot.

In order for AI to work effectively, it requires large amounts of data to learn from. This data is used to train the algorithms and models, and the quality of the data can greatly impact the accuracy of the AI system. Once the AI system has been trained, it can make predictions or decisions based on new data inputs. The performance of the AI system can be evaluated and improved over time through further training and refinement of the algorithms and models.

HISTORY OF ARTIFICIAL INTELLIGENCE

Here's a brief timeline of the past six decades of how AI evolved from its inception.

The history of Artificial Intelligence (AI) dates back to the 1950s, when a group of researchers, including John McCarthy, Marvin Minsky, and Claude Shannon, first proposed the idea of creating machines that could think and reason like humans. This marked the beginning of the field of AI research.

In 1956, the first AI conference was held at Dartmouth College, and this event is considered the birthplace of AI as a formal field of study. During the early years of AI research, the focus was on developing algorithms and models that could perform tasks such as playing chess and solving mathematical problems.

In the late 1960s and early 1970s, AI research faced a setback known as the "AI Winter," when funding for AI projects declined due to a lack of progress and unfulfilled promises. However, the field was reinvigorated in the 1980s and 1990s with the development of new technologies, such as expert systems and the introduction of personal computers, which allowed for more wide spread use and experimentation with AI.

In the 2000s and 2010s, the availability of large amounts of data and advances in computing power led to a resurgence of AI research and development, and the field experienced rapid growth. This period was marked by the development of deep learning, a type of machine learning that uses artificial neural networks to analyze large amounts of data.

Today, AI is a rapidly growing field with a wide range of applications in various industries, and it continues to evolve and improve through ongoing research and development.

TYPES OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence can be broadly divided into two categories: AI based on Capability and AI based on functionality.

Based on Capability

1. **Narrow AI:** This type of AI is designed to perform a specific task, such as playing chess or recognizing speech. It is also referred to as weak AI or shallow AI.

2. **General AI:** This type of AI has the ability to perform any intellectual task that a human can, and is also referred to as strong AI or artificial general intelligence (AGI). General AI is still in the early stages of development and is considered a long-term goal of AI research.

3. **Super Artificial Intelligence (Super AI):** It refers to a hypothetical future AI system that is capable of surpassing human intelligence in multiple domains, including general intelligence, creativity, and problem-solving ability. The idea is that a Super AI system would have the ability to improve itself, learn from its experiences, and make decisions that are beyond human comprehension.

Based on Functionality

1. **Reactive Machines**: These are the simplest type of AI systems and only respond to stimuli from the environment. They do not have the ability to form memories or use past experiences to inform future actions. Examples of reactive machines include Deep Blue, the chess-playing computer developed by IBM, and self-driving cars that only respond to sensory input.

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2. **Limited Memory:** These AI systems have the ability to store and recall past experiences to inform future decisions. For example, a self-driving car that remembers the location of obstacles in its environment and uses this information to navigate around them.

3. **Theory of Mind:** These AI systems have the ability to understand and represent the mental states of other entities and use this information to inform their own actions. This type of AI is still in the research and development stage and is not yet widely used.

4. **Self-Aware:** These AI systems have a sense of self and consciousness, and are able to understand their own mental states and emotions. This type of AI is still purely theoretical and has not yet been achieved.

APPLICATIONS OF AI

Artificial Intelligence (AI) has a wide range of applications in various industries and fields, including:

1. **Healthcare:** AI is used to analyze medical images, predict disease outbreaks, and support drug discovery. AI systems can also assist doctors in diagnosing diseases and creating personalized treatment plans.

2. **Finance:** AI is used in finance for tasks such as credit scoring, fraud detection, and portfolio management. AI systems can also analyze financial data and make predictions about stock prices and market trends.

3. **Retail:** AI is used in retail for tasks such as customer service, product recommendations, and inventory management. AI systems can also analyze consumer data to provide personalized shopping experiences and improve supply chain efficiency.

4. **Manufacturing:** AI is used in manufacturing for tasks such as quality control, predictive maintenance, and process optimization. AI systems can also analyze data from manufacturing processes to identify areas for improvement and increase efficiency.

5. **Transportation:** AI is used in transportation for tasks such as route planning, traffic prediction, and autonomous vehicles. AI systems can also improve the efficiency of transportation networks and reduce energy consumption.

6. **Education:** AI is used in education for tasks such as personalized learning, assessment, and student monitoring. AI systems can also provide personalized feedback to students and help teachers tailor their lessons to meet the needs of individual students.

7. **Security:** AI is used in security for tasks such as intrusion detection, facial recognition, and cyber security. AI systems can also analyze data from security cameras and other sources to identify potential threats and provide early warning.

These are just a few examples of the many applications of AI. The field is rapidly evolving and new applications are being developed all the time.

MODELS & ALGORITHMS USED TO BUILD AI

There are various models and algorithm which are used to build an effective AI some of them are are mentioned below.

- Machine learning
- Support vector machine (SVM)
- Decision Trees

Deep Learning

Deep learning is a type of machine learning that uses artificial neural networks to model complex relationships between inputs and outputs. It is based on the idea of artificial neural networks, which are designed to simulate the structure and function of the human brain.

Deep learning algorithms use multiple layers of artificial neurons, each of which processes a portion of the input data and passes the result to the next layer. These layers are designed to learn increasingly complex representations of the data, allowing the deep learning algorithm to automatically identify patterns and relationships in the data. Overall, deep learning has shown impressive results in a wide range of AI tasks and has become an increasingly important area of AI research and development.

PROS & CONS OF AI

In this paper, we have discussed all the pros and cons of AI that can have grave positive and negative effects on the real world, respectively.

Pros:

1. **Improved Efficiency:** AI systems can automate repetitive and time-consuming tasks, allowing humans to focus on more valuable and creative work.

2. **Enhanced Decision Making:** AI systems can analyze vast amounts of data and provide insights and predictions that would be difficult or impossible for humans to achieve on their own.

3. **Improved Accuracy:** AI systems can reduce the rate of human error and improve the accuracy of predictions and diagnoses in fields such as healthcare, finance, and weather forecasting.

4. **Increased Productivity:** AI systems can automate manual processes and help businesses to improve their operations and increase their productivity.

5. **Improved Customer Experience:** AI systems can provide personalized experiences and improve customer engagement by using data to understand customer needs and preferences.

6. **New and Improved Products:** AI can be used to design and develop new and improved products, such as autonomous vehicles, intelligent personal assistants, and smart home devices.

7. **Enhanced Safety:** AI systems can be used to improve safety in fields such as transportation, security, and disaster response, by providing early warnings and automating tasks that are too dangerous for humans.

Cons:

1. **Security Risks:** AI systems can be vulnerable to hacking and cyber-attacks, and could be used for malicious purposes, such as cybercrime and cyberwarfare.

2. **Privacy Concerns:** AI systems can collect and use large amounts of personal data, raising concerns about the privacy and security of this data.

3. **Dependence on Technology:** As AI systems become more integrated into our lives, there is a risk of becoming too dependent on technology and losing our ability to make decisions and solve problems independently.

4. **Lack of Explain Ability:** AI systems can be difficult to understand and interpret, making it challenging to determine how decisions are made and to hold AI systems accountable. It is important to balance these potential benefits and downsides of AI by developing and implementing ethical standards, regulations, and policies to ensure that AI is developed and used responsibly.

CONCLUSION

In conclusion, Artificial Intelligence (AI) is a rapidly evolving field that is having a significant impact on many industries and aspects of our lives. AI systems can automate tasks, analyze large amounts of data, provide personalized experiences, and improve decision making in areas such as healthcare, finance, transportation, and customer service. However, there are also potential downsides and ethical implications of AI that must be considered, such as job loss, bias and discrimination, security risks, privacy concerns, and a lack of human judgment and explainability. As AI continues to develop, it is important to address these potential downsides and ethical implications by developing and implementing ethical standards, regulations, and policies to ensure that AI is developed and used responsibly. By doing so, we can maximize the benefits of AI and minimize its potential negative impacts, ensuring that it is used to improve our lives and make the world a better place.

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Acid Rain Pollution Effect on the Electric Field Distribution of a Glass Insulator

Asst. Prof. Swapnali Kadge[1,] Abhishek Wankhade[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

ABSTRACT

In this work finite element analysis is carried out on an outdoor high voltage glass insulator string exposed to acid precipitation using the of the acid was varied over a range of 25 and 55 and its effect on electric field distribution and heat generation studied this range was chosen to represent recorded values of rainfall acidity in the field high electric fields where observed at lower levels exceeding the threshold value for partial discharge these high electric fields where observed at insulator discs closest to the terminal of the insulator string also heat generation increased with increased rain acidity where flow of leakage current is increased these results can be applied to laboratory experiments and field tests designed to investigate the performance of insulators installed in heavy industrial areas and exposed to acid rain this work finite element analysis is carried out on an outdoor high voltage glass insulator string exposed to acid precipitation using the of the acid was varied over a range of 25 and 55 and its effect on electric field distribution and heat generation studied this range was chosen to represent recorded values of rainfall acidity in the field high electric fields where observed at lower levels exceeding the threshold value for partial discharge these high electric fields where observed at insulator discs closest to the terminal of the insulator string also heat generation increased with increased rain acidity where flow of leakage current is increased these results can be applied to laboratory experiments and field tests designed to investigate the performance of insulators installed in heavy industrial areas and exposed to acid rain pollution

INTRODUCTION

Atmospheric pollution sometimes causes precipitation (rainfall, snow, fog) to become acidic; posing a threat to the environment. This primarily occurs when (SO2) and nitrogen oxides (NOx), combine with water in the atmosphere, to produce acid and nitric acid respectively.

These are then transported over long distances by wind, falling on the earth, plants, animals and man-made structures in the form of acid precipitation (or commonly acid rain) as it travels. SO2 and NOx (comprising of NO and NO2) are largely products of human activities, emanating from motor vehicles, burning of fossil fuels and other industrial activities. Acid rain is well known to be harmful to vegetation, aquatic life and general infrastructure. The extent of its effect on power systems installations remains a huge interest to scientists and engineers. Coal-fired power stations are the major sources of in the air; which in turn, is the key constituent of acid precipitation. While electricity generation from coal sources in the United Kingdom has reduced from 81.1% to 22.9% between 1960 and present, the average world electricity from coal-fired power stations climbed from 32.3% to 40.7% [1]. With this increase, the dangers posed by acid rain cannot be overemphasized. Acidity of rain is measured by the negative logarithm of the hydrogen ion (H+) concentration, known as pH value. The pH scale ranges from 0 to 14. A pH of 7 indicates a neutral solution, while pH below 7 is acidic increasing in acidity from 7 to 0. A pH greater than 7 is alkaline, increasing in alkalinity from 7 to 14. Rain precipitation has been known to have both high conductivity and low pH value . At a pH of 5.6, unpolluted atmospheric water is slightly acidic. Rain water though has been known to have a pH as low as 2.4 in Great Britain; same as vinegar and even less in the USA . Any rain with a pH less than 5.6 could be rightly classed as acid rain . This work investigates the effect of pH level of acid rain on the performance of an integral component of electrical power transmission and distribution high voltage insulator

ACID PRECIPITATION AND HIGH VOLTAGE INSULATORS

Acid rain pollution of an insulator occurs through the process of wet deposition. The acidity of rain may be identical at both the pollution source and at point of deposition Depending on the pH of the acid, a conductive layer could be formed on the surface of the insulator, causing a flow of considerable amount of leakage current . Using h2so4 as a reference, the relationship between conductivity and pH of acid rain as presented in the literature . The flow of leakage current causes heating of the pollution layer, leading to some regions drying out faster than others and creating small insulating gaps between conductive layers. This results in sparking across the insulating dry bands, observable as partial discharges at various points experiencing this unbalanced condition on the insulator's surface When PDs join and expand cross the length of the insulator, a flashover is experienced. The flashover voltage of a heavily polluted insulator

could be 5 times less under wet conditions as compared to dry conditions. Also FOV of an insulator during a rain with high conductivity can be twice lower than FOV under normal rain or fog Acid rain pollution of HV insulators have been studied by previous researchers. Whereas acid rain is known to cause strong reduction in hydrophobicity, erosion and ageing in polymeric insulators, its effect on ceramic insulators has not been extensively investigated. This work focuses on HV glass insulator. This type of insulator is of interest to this research as it is widely deployed in the field with good service history, mechanical strength, higher dielectric strength, high corrosion resistance, suffer less from adverse temperature changes and failure is easily observable in shattering of glass . Also, as glass is not a dangerous waste, it benefits from an environmental friendly disposal

SIMULATION

AutoCAD was used to design a cap and pin insulator string consisting of 10 standard glass discs. The cap and pin are made of steel. The metal and ceramic components are held together by a layer of cement. The glass regions of individual discs are covered in a 2mm uniform pollution layer. The designed insulator is analyzed using COMSOL Multiphysics at a constant voltage level of 110kV, while the pH of the thin pollution layer is varied at intervals of 1 from 5.5 to 2.5, covering a range from natural rain to the most acidic value of rain measured in the UK. To achieve these desired pH levels, the conductivity of the pollution layer is varied to correspond with the given conductivities of acid rain, for each pollution case as presented The polluted insulator is surrounded by a region of air. A minimal conductivity value is assigned to the air region, ensuring that a numerical convergence is facilitated without interfering with the potential distribution. The material properties of the insulator are listed while the insulator geometry and potential distribution.

The electric field distributions for the four pollution levels where studied and their maximum electric field compared with each other as well as with the maximum field stress permissible to avoid .The study was carried out using the quasi-static electric mode of the AC/DC module considering a slow-varying electromagnetic field.

LITERATURE REVIEW

When we burn fossil fuels such as coal or gas, certain air pollutants are released, they mix with the moisture in the air to form an acid which results in the production of acid precipitation. The

wind transports these pollutants, resulting in acid rain over a widespread area. Industries such as power plants, modes of transportation such as cars, busses and trucks and industrial and chemical boilers are all responsible for a portion of the air pollutants being released . Acid rain which falls into streams, lakes and mashes, causes the pH of the water to decrease, acidifying the water . This results in a decrease of aquatic life and the quality of the water. It has been found that acid rain not only causes slower recent study, conducted by a number of great scholars, elucidates the fact that PAH's can be found naturally in the environment, but can also be created as a result of human actions . The sources for these pollutants include coal production, incomplete combustion of organic matter, fuel exhaust and some industrial processes . PAH's are used in various pesticides (US EPA), and an accumulation of these harmful pollutants in plants can cause a significant increase in phytotoxicity . Phytotoxicity is serious injury to plants caused by fertilizers and other chemicals used on plants It is the cause of poor germination, death of seedling and even stunted or delayed plant growth. The increase in the number of PAH chemicals in pesticides and other chemicals used to plants, results in a subsequent increase in crop failures. This soil pollutant is extremely dangerous and poses a great threat to the livelihood of plans with which it is used on, as well as humans who eat from them. This information was collected from various recent and accurate academic journals, as well as official environmental protection agency and university websites. These sources are valid as they have been recently updated and have been reviewed by experts in their respective...show more content...This increases the global phenomenon known as global warming. The National Resources Council describes average global temperature rising at a faster rate in the past 50 years than it has ever been recorded in history before. This increase in temperature is extremely detrimental to the environment and plant life. A recent experiment was done to assess the effects of increased temperature on polluted plants during the early stages of growth Plants take up a greater amount of toxicants when they are exposed to higher temperatures. Therefore, an increase in temperatures from global warming decreases the rate of plant growth. In addition, environmental factors such as soil pollution, have a greater effect on plants during the early stages of growth . experiment found that the survival of seedlings was significantly lower when exposed to pollutants at high temperatures.

METHODOLOGY

Acid rain is the result of air pollutants being dissolved in precipitation. Relationships between air pollution and the acidity of rainfall have been interpreted for much of the northeastern part of North America . Forestry and fishery interests are especially concerned as large areas are involved and there are few physically or economically feasible mitigation measures. Agricultural systems, on the other hand, are relatively amenable to manipulation; large quantities of fertilizer, limestone, and energy are consumed to create soil conditions suitable for a wide range of crops. Agricultural scientists tend to view acid rain as one of many contributing factors in soil and crop management. The magnitude of the stress which acid rain exerts on agricultural land, and its relative importance compared with the acidifying effect of fertilizers, is generally unknown. Acid rain is frequently described in terms of its pH) or SOI- or total S content . The fate of its components in the soil and their consequent acidic effects are qualitatively well under regularly gathered on the ionic composition of precipitation in North America , yet are seldom interpreted quantitatively in terms of contributions to soil acidity. Analyses of acid rain show that it contains small amounts of $(NH_4)_2SO_4$ and $NHaNO_3$, two commonly used fertilizer materials, as well as associated acids) and other ions. Thus if soil reactions of these and other fertilizers can be reasonably predicted, it should be possible to make general predictions of soil acidity resulting from acid rain and fertilizer use. Attempts to predict the acid effects of fertilizers have often been based on the computations made in 1933 by Pierre who assumed that 5O% of fertilizer N was taken up by crops in the NO_3 form and that only the other 50% contributed to soil acidi8 (Pierre 1933). In 1939 approach was adopted by the Association of Official Agricultural Chemists and continues to be their "official" method of assessing fertilizer acidity In 1954 Andrews attempted to correct the apparent underestimation of the AOAC method observed in field trials, by assuming that all in fertilizers was first nitrified . More recently, methods have been proposed that consider the cation-anion balance and excess-base:N ratios of plant materials in relation to their uptake of N and consequent effect on soil acidity . Reactions and transformations in the soil which affect soil acidity are numerous and are controlled by many variables including temperature, moisture, organic carbon, pH and base status. The principal pollutants contained in rain which take pafi in these soil-affecting processes are NHf,, $NO!$ and $SOI-$, and these are the forms of N and S normally measured in precipitation in Canada (Berry 1979). Fertilizer constituen8 affecting soil acidity are also mainly, NO_3 and This paper presents a simple model through which inputs of precipitation constituents and fertilizer materials can be followed

through dominant soil pathways to determine their potential contribution to soil acidity. The relative impact on agricultural soils can then be interpreted within the context of ongoing soil management practices.

4.1 Method of Conceptual Analysis

The direct effects of precipitation and fertilizer on soil acidity are the result of H +-ion input in acid rain and of the H + equivalents generated, released or neutralized in the soil as a result of chemical reactions and microbiological processes. Changes in soil pH occur as a function of the total H --ion equivalents added or generated in the soil and of the buffering capacity of the soil, which is dependent on the soil cation exchange capacity , base saturation , bulk density and depth .Weathering of primary minerals will also affect soil buffering capacity, but annual quantities have been considered to be negligible in the plow layer of non-calcareous Canadian soils It is possible to partition HP into HPn, the naturally occurring H+-ion in precipitation (from solution of CO), and HPo, the H*-ion resulting from dissociation of dissolved pollutants For the purposes of this discussion, reaction steps for the major components of precipitation and N fertilizers have been characterized by constants or proportionality which define the types and amounts of transformations That portion of not (1-a) is mostly taken up by plant roots which is an process, because of the transfer of H3 across the root membrane, leaving H * in the soil. Some may also be volatilized as NH3, fixed by clay minerals, absorbed to the soil cation exchange complex, or leached from the soil. Volatilization is an process as H* is left in the soil; leaching , provides a substitute to the leaching cations, so is a neutralizing process; and adsorption of have little effect on soil pH as they tend to be reversible over time with changing soil temperature and moisture. In developing the model, a simplification was necessary due to the difficulty of obtaining reliable estimates of the proportionality constants for volatilization, fixation, adsorption and leaching.

4.2 Method of Evaluation:

Methodologies (1) and (2) were tested using two HC1 solutions repaired gravimetrically from the standardized stock solution containing 0.0201 and 0.2001 of of solution, respectively. The results of these analyses are summarized in Table I.In Table I, olumn 1 lists three titration end-point pH values, measured using a combination electrode and a pH meter, and a fourth value (pH=9.2) determined with phenolphthalein indicator. The raw titration data or solutions 1 and 2 are listed in columns 2 and 3, respectively. Column 4 gives the apparent acidity of distilled

water, determined to the corresponding end-point pH's. By taking the data for distilled H2O as the ''blanks" and applying these respective corrections to the data in columns 2 and 3, the data in columns 5 and 6 are obtained. It is quite apparent from these data that titrations with sodium hydroxide solution will yield different results for acidities he titer is 92 s. Therefore, a positive bias of about 18$ is encountered for this particular end-point evaluation of the sum of the two acids. It is also quite apparent that the quantitative graphic separation of the two acids in a mixture is quite impossible. Hence some indication of the presence of the two acids in the mixture is there but quantitation is not possible. This situation may be of some concern to those who determine acidity of rain samples.

CONCLUSION

It has been shown in this work that unpolluted natural rain, with pH level of 5.6 will not cause flashover of insulators, but partial discharge is imminent under pollution of acid rain of 2.5 pH. It is of interest to determine the approximate pH level at which the threshold value for PD is attained. Though the uniform pollution layer assumed in this work is not a true representation of field pollution, it was established that in field condition, the thickness of the pollution layer has a significant effect on the electric field distribution of the insulator. the heat generated on the surface of an insulator polluted by acid precipitation was found to be directly proportional to the acidity of the rain with less heat generated as pH approaches neutral value. 6.

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Face Identification Based Intelligent Attendance System

Asst. Prof. Swapnali Kadge[1] , Pallavi Shashikant Bangar[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

Abstract:

Face identification based intelligent attendance system using IoT is a tool for recognizing the students face while taking attendance by using face biometrics based on monitor camera image capturing. s. The long-established method of calling name of each student is tedious and there is always a chance of proxy attendance. We have used deep learning techniques to develop this project. As the process of attendance taking starts the system takes pictures of the attendees and then applies face detection and identification technique to the given image and the recognized students are marked as present and their attendance is updated with corresponding time, student name and register number. This paper provides an efficient and intelligent method for marking attendance. As it is known that primary identification for any human is its face, face identification provides an accurate system which overcomes the ambiguities like fake attendance, high cost, and time consumption. For face detection and face identification the raspberry pi. If the camera is connected to Raspberry pi USB port then only images will capture of the students who are available in the class for face detection.

Keywords: Intelligent attendance system, Biometric Attendance, Face Identification, OpenCV, Raspberry Pi, Camera, SMTP, Image Processing, Python, Faculty Attendance.

Introduction:

One explanation for this decrease in student performance is the inadequate attendance. We have proposed to implement a "

based Intelligent Attendance System Using IoT". Raspberry Pi, Python and OpenCV are the basic requirements for this system. As all the data is stored online in this proposed system, offline registers will become irrelevant, making the maintenance of records easier.

Biometric attendance is automated method of verifying or recognizing the identity of a living person on the basis of some physiological characteristics, such as fingerprints or facial features, or some aspects of the person's behavior. Biometric authentication system are not 100% accurate. Once the recognized face matches a stored image, attendance is marked in corresponding excel sheet for that person. The other reason for taking face identification as biometric parameter is this technology reduces the physical touch of objects/records providing a contagious-by-touch free environment which the whole world is adopting these days. The present implementation includes facial identification that is time saving and eradicates the probabilities of proxy attendance due to the facial detection.

A unique RFID card is given to the faculty, when faculty enters the classroom swipes the RFID card attendance will be marked with date and time and is displayed on OLED. Admin tracks the attendance of the students periodically or whenever required by the administration and finds the result. The result is displayed on the monitor screen. Radio Frequency Identification is one method for attendance making. In this technology an individual has to carry his own RFID card.

Methodology:

There is requirement of data for the system in order to trace and track the individual and mark his/her attendance. The data is loaded by assigning each individual's image with a corresponding id and name. More than 100 images will be taken in gray format using OpenCV. These images will be the input for Haar cascade. It is an Open Source

Computer Vision Library that is free for both academic and commercial use. It has C++, Python and Java interfaces and supports Windows, Linux, MacOS, iOS and Android. It has a strong focus on real time applications. This recognizes and manipulates faces from Python or from the command line. It is a very simple library built using dlib's state-of-the-art face identification built with deep learning. The dlib is a cross-platform open source software library that is implemented on multiple computing platforms. The model has an accuracy of 99.38%. The integrated model illustrating the basic steps for database creation of all the students enrolled in the class, then identification process for further attendance marking, after that comparing the results obtained with the predefined database for accurate output. The features of the face will be detected and stored for further actions. The dataset has to be created in the above said manner to further recognize the faces when needed. Track images option is used for detecting and recognizing the faces of individuals.

SOFTWARE DESCRIPTION:

A. Python IDLE:

IDLE is integrated development environment for editing and running python2.x or python 3 programs. Where we can see or check the output.

B. Raspbian O.S:

Raspbian is a free operating system which is used run the applications. To run our applications install the Raspbian OS. Raspbian oSis best for Ras-pi 3 controller for developing our system.

C. NOOBS:

NOOBS -New Out of Box Software is an installation manager for the Raspberry Pi. We install this manager in SD card of Raspberry pi.

D. Python:

Python is a programming language. Which has easy syntaxes to read that allows fewer lines of code to the programmers. This language is also suitable for other customized applications.

E. Arduino IDE:

Arduino IDE is an open source software were we can write, execute and upload to the board. It can be installed in any PC's like windows, Linux etc. In Arduino IDE we can write different languages like C, C++, embedded C. I have written the program in embedded C and uploaded to hardware board by connecting USB.

F. **Embedded C:**

Embedded c ispreferred language compare to other because it is an efficient code used for microcontroller based applications. The embedded c programs were small and efficient they must be optimized for for size and speed.

G. **PHP:**

PHP (Hypertext Preprocessor), It is backend language used for the development of Web Application.

H. **HTML:**

HTML stands for Hypertext Markup Language. HTML is used for creating web applications With Cascading Style Sheets and Java Script. I. AWS Cloud: In the Amazon Web Service Cloud "S3"(simple storage service) is used to store thecaptured images ,those captured images are analysed and comparedusing AWS"Rekognition" service and results are send back to web application.Camera captures the images in the video streaming, while the face detection resizes the captured image up to certain point. The segmented image is compared with the present data sets and faces are recognized. Admin records the attendance if the particular student and generates the report. The result is displayed in the monitor.

HARDWARE SETUP:

RaspberryPi-3: It is capable of doing everything you'd expect a desktop computer to do. The Raspberry Pi is a low cost, credit-card sized computer that plugs into a   computer monitor or TV, and uses a standard keyboard and mouse.

Webcam: When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and emailed as an attachment. A webcam is a

video camera that feeds or streams its image in real time to or through a computer to a computer network.

Display Unit: A two-dimensional display devices such as computer monitors and an actual amount of screen space that is available to display a picture, video or working space. shows the block diagram of the hardware used in the model. Main component is Raspberry pi, brain of the system. Power is provided using external batteries. Processing, and result generation are the steps carried out by this credit sized computer. A webcam is used to take pictures during database creation and identification process. SD card is connected as external storage, needed for storing data. Using Ethernet cable, pi is connected to display unit.shows the setup and components required for the proposed model.

Algorithm:

    1.   Write Raspbian OS in to the SD card and fix the card into the SD slot

    2.   Install all the open CV libraries into the raspberry pi

    3.   Fix the entire hardware setup.

    4.   Take the video data in that images of individual student from classroom camera

    5.   With the viola Jones Algorithm Face Detection is done.

    6.   Take the detected faces of students.

    7.   Crop the faces of the students.

    8.   In Exit folder the detected images of students will be stored.

    9.   The features of stored images and detected images will be compared

    10. Marks the Student's Attendance based on recognised faces.

Face Detection Algorithm:

In this viola jones algorithm is used in this 160,000 features are there.

For face detection in viola jones we have 4 steps for implementing they are:

a.   Selection of Haar features

b.   Integral images

c.   Adaboost

d.   Cascade Classifier

A.   Selection of Hear features:

Hear features are similar to these convolution kernels which are used to detect the presence of that feature in the given image. Each feature results in a single value which is calculated by subtracting the sum of pixels under white rectangle from the sum of pixels under black rectangle.

Val=Σ(pixels in black region) -Σ(pixels in white region

(a) Edge Features

(b) Line Features

(c) Four-rectangle features
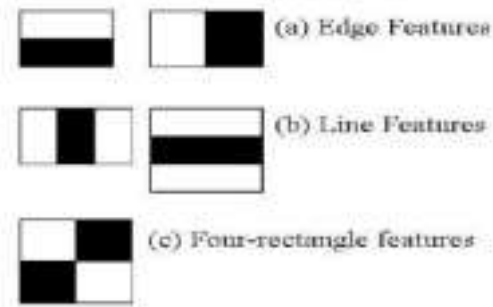
B.   *Integral images:* For generating the sum of values in a rectangular subset of a grid in the image processing domain it is known as integral image. In an integral image the value at pixel (x,y) is the sum of pixels above and to the left (x, y) inclusive.$ii(x, y)= \Sigma\, i\,(x', y')$ (2) $x' \leq x$, $y' \leq y$

Eqn.2 combines neighbour pixel values for easy of calculation.

Input image   Integral image
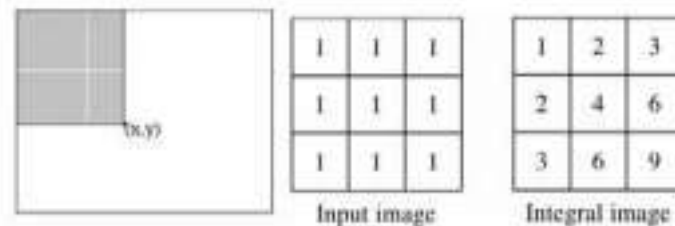
C)Adaboost: As declared in viola jones algorithm have 160,000 features in that only few set of features will be useful among all these features to identify a face. In adaboost we have two classifiers they are strong and weak classifiers. The adaboost constructs a strong classifier has a linear combination of the weak classifier.

$F(x) = \alpha_1 f_1(x) + \alpha_2 f_2(x) + \alpha_3 f_3(x) +$ $F(x) =$ Strong classifier $\alpha f(x) =$ Weak classifier.

D)Cascade Classifier:

The cascade classifier is used for composed of stages each stage contains a strong classifier when all the features are combined into different stages where each stage as number of features. That each stage is used to determine whether it's a face or not a face.
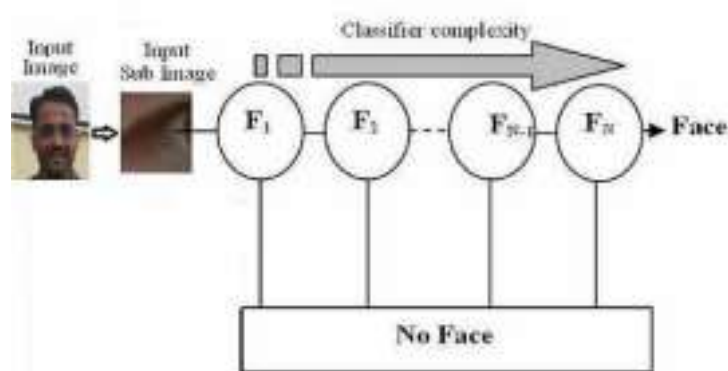
Results:

The system works automatically once the registration of individual student is completed and dataset is created. Face Identification based Intelligent Attendance System Using Internet of Things is simple for usage and works efficiently.

I: Database creation of the students enrolled in the class. Webcam takes only one image of each student and stores for further process.
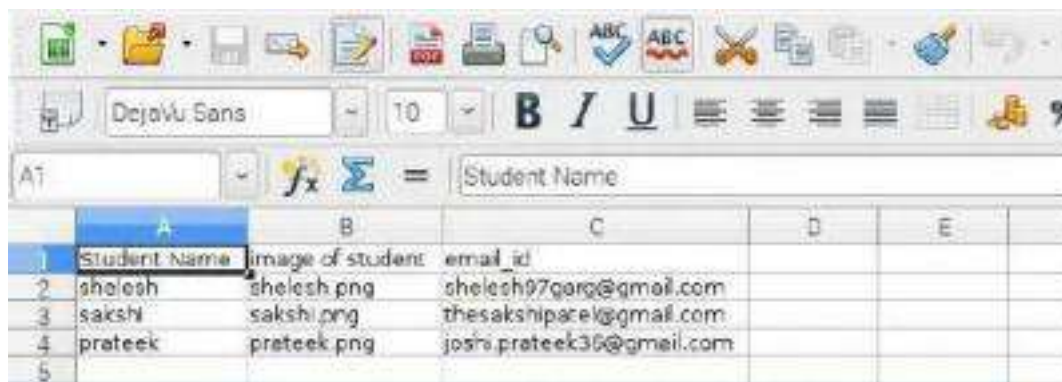
II: During database creation, student's name and parent's email id is entered.

III: An excel sheet of database record is generated including every student's name, image and corresponding parent's email id
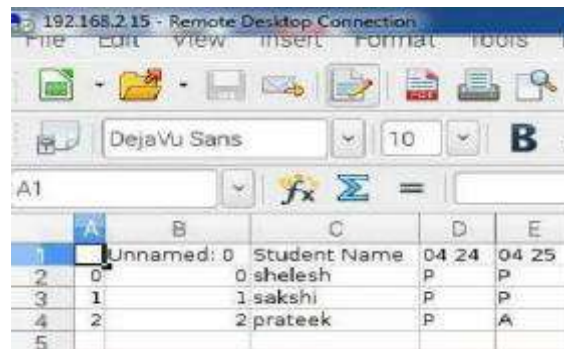
Excel of database created

IV: Identification is done for attendance marking.

V: An excel sheet of attendance record is generated.

VI: E-mail is send to absentee parent mail using concern faculty id, informing the attendance of the ir childin the particular class.

CONCLUSION:

The model has an accuracy of 99.38% and provides a simple face identification command line tool which is far more better than the general algorithms as it needs only one image to work on and not necessary to convert it in gray scale. To make use of IOT, email feature is used which is inbuilt in raspberry pi. SMT Protocol helps us to do so. The system has been implemented using Raspberry Pi, Webcam, OpenCV, Hear cascade and python. Hear cascade, one among the finest face detection algorithmic program is used to confirm the standard of the system. This project can substitute all other attendance systems and performs efficiently. The Automated Classroom Attendance System helps in increasing the accuracy and speed ultimately achieving precise attendance to meet the need for automatic classroom evaluation. Further, Raspberry Pi development board is a cost effective fully functional computational system can be used for many applications, Camera modules are also cost effective and can be used for surveillance sy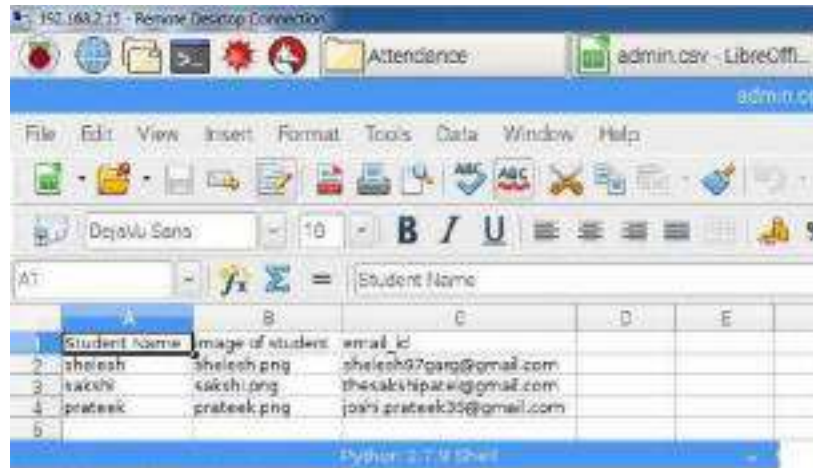stems. The system works automatically once the registration of individual student is completed and dataset is created. The purpose of the paper to reduce errors and human effort in traditional attendance taking is achieved via face identification based attendance system.

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High Tech Automation System Using Internet Of Things

Asst. Prof. Swapnali Kadge[1] , Pooja Keshav Bhatare[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Technological progress is paving way for the automation to be made to the existing machines leading the go to the new technology called Internet of Things. Things get the connection which each other over Internet that reduces human workload. The home is built with electrical devices for secure and pleasant living style. It is specifically for IOT-based the development of an IOT based home automation system that is able to control various components via internet or be impulsively programmed to open High-tech ambient conditions. High tech automation is becoming popular due to its approachable benefits. The work focuses on the concept of High tech automation where the monitor-facilitated control operations are facilitated through smart devices installed in household buildings. A conversation of the similar in one of the risk analysis consequence points to the require for a more general model of security and privacy included in the design stage of advanced homes. Smart home automation provides cooperation to the elderly and physically challenged people. The proposed High tech automation system restrictions to monitor all the restrictions within the desired range that is widely accepted. We provided a data transmission network to create a sis stronger automation. The system considered to control electric appliances and devices in house.

Keywords: High tech-Automation, Intelligence, Connected home, User-friendly Interface.

INTRODUCTION: -

A current study has appeared that more than every fourth person in Sweden feels that they have bad knowledge and control over their energy use, and that four out of ten would like to be more aware and to have better control over their consume. Intelligent home automation is a central example of a smart environment built on various types of computerized systems generating volumes of diverse, heterogeneous, composite, and distributed data from a multitude of

applications and sensors. Internet of things is already applied in many other areas, and it is show its work in a systematized way. Internet of things support is already given in many applications, also helpful in building large and complex embedded systems. One of the main advantages of introducing IOT based Smart home is user causes electrical power and energy. The suggested system does not require a dedicated server PC with respect to similar systems and offers a new and different communication protocol to monitor and control the home environment with more than just the switching functionality. They now have more importance as they are becoming part of the system. It also involves the proficient way to collect and analyze data over a wireless connection that makes the combination between the objects faster. Home automation is defined as the introduction of technology within the home to enhance the quality of its occupants, through the provision of different services such as telehealth, multimedia entertainment, and conserving.

LITERATURE REVIEW: -

The System is better extensible and flexibility supple than the corporate available home automation systems. The User may use the same technology to load to the login web-based application An crossing card has been register to update gesture between the actuator sensors and the raspberry pi card. Cloud-based home machine monitoring and direct System. The important goal of a Home Automation System is to build a home automation system using a RF controlled remote. Now technology is proceed so homes are also getting smarter. Brilliant homes are deliberately transfer from current l switches to centralized control system, containing RF controlled switches.

1. Bluetooth based home automation system using cell phones:

In this Structure the python script is used and it can be install on any of the Symbian OS environment, it is portable. One circuit is designed and executed for receiving the response from the phone, which indicate the status of the device. In Bluetooth based home computerized system the home devices are connected to the Arduino BT board at input output ports using relay. The program of Arduino BT board is based on central interactive C language of microcontrollers; the connection is made via Bluetooth.

2.Wi-Fi based home automation system using cell phones:

Wi-Fi-based home automation systems mainly consist three of modules, the server, the hardware terminal module, and the software package. The figure shows the system model outline. wireless loyalty is used by serving the r, and hardware Interface modules to communicate with each other. The same technology uses to log in log the server web-based application. The server application software can be gain from inter the network
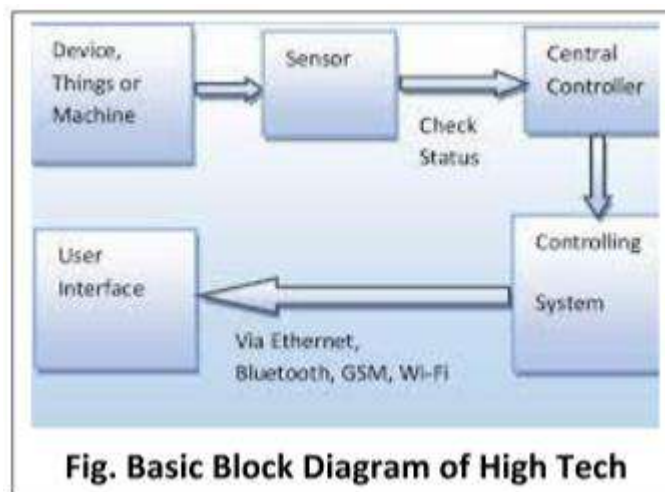
Fig. Basic Block Diagram of High Tech

Automationor from internet if the server has real IP on the internet using any internet guide supports asp.net technology. Server application software is guilty of, keep up the whole home automation system, setup, arrangement. Working principle of high-tech automation system: Every smart home device is connected via the Wi-Fi network and can be controlled over a smartphone, tablet or laptop through an app or a direction. The concept of Home Automation aims to bring the control of operating your daily home electrical instrument to the tip of your finger, thus giving user accessible lighting solutions, better energy conservation with most appropriate use of energy. Apart from just lighting solutions, the concept also further expand to have a overall control over our home security as well as build a concentrate home pleasure system and much more.

The Internet of Things (or commonly referred to as IoT) based Home Automation system, as the name recommend aims to control all the devices of your smart home through internet agreement or cloud based computing. The IoT based Home

Automation system offer a lot of workability over the wired systems s it comes with various advantages like ease-of-use, ease-of-installation, avoid complication of running through wires or loose electrical connections, easy responsibility detection and activate and above and all it even offers easy strength.

There are two basic method you can power your home automation system:

☐ Remote Access, Control and Monitoring:

Connect, access, manage and check the smart home outcome via a data network like smartphones, tablets, etc.

This can build in security systems, surround adjective, turning on work devices, etc.

☐ Automation:

Apply pre-regulated schedules to the devices, such as coffee machines starting up coffee make up at a certain

time, home cooling layout manage the situation when you come into a room, etc.

These results are carry out through three central element of a smart home automation system:

☐ Sensors

In smart home devices monitor the changes, such as movement detection, temperature, light, airflow, sound,

etc. and modify related settings. For case, a security system can find abnormal movements and turn on the

lights or sound the alarm.

☐ Controllers:

Are the devices that are used to access, monitor and contact with your smart home products to control them. For

example, you may power your AC, fan and brightness through a tablet, intelligent, smartwatch, laptop, etc.

☐ Actuators:

Are the real switches, dales, motors, etc., that normally control the movement, function, procedure, etc., of a

smart home device and can be project to be start up by a controller.

Discussion:

In the case of smart home automation, this mechanism takes place in people's normal lives and basically without their sensitivity of the conclusion that this collection may have on their privacy and home security. The advantages and disadvantages of the system derive from this basic technology. All the systems have a control electronics that is used to extreme with the electrical. This find out how the user will interconnect with the system and make grater of control the user exerts over the system. The complete workflow of the project comprises of two ways as we discussed earlier. The automated detect that the users leave behind and that the various associate can gather may also be combined. System Primary Communication Remote access Number of Devices Cost Speed Real-Time GSM SMS messages Access from anywhere in the world Unlimited High cost due to SMS charges Slow due to delivery issues No Bluetooth and AT commands Restricted to Bluetooth range- 10 meters Unlimited Fast due to proximity Fast due to proximity Yes Phone Based Phone lines Anywhere with a phone line 12 due to 12 frequencies of DTMF Fast No Zigbee and AT commands Around 10 meters Unlimited Fast Fast Yes Wireless Radio, infrared, or other waves Depending on the range and The spectrum Unlimited High cost due to licensing and Slow due to interferences Yes of waves used other spectrum issues

Conclusion:

Using this common interface, third party coworker can both monitor energy application and anywise control electronic devices in the homes and buildings. Only then can automated homes become collective viable. There should be a lot of thought put into the design of the user interface for these apps. Plug and play possible will be an added present for the system. Homes can be incorporate with sensors include motion sensors, light sensors and climate sensors and supply mechanical clipping of devices based on conditions. It shows how the concept of security and meaning of the word "invader" has changed in modern homes. certainty is vital for the proper execution and development of the home automation systems. Besides, it provides a sense of security to a home's resident and puts their minds at ease. The proposed new circuit topology is used in a silent based web services in an compatible application layer for transferences between the remote user and the home device. All Android-based smart phone, the Wi-Fi connection is the support built; the home explosion device to control can use the phone. Smart home automation systems make life easy and are a boon for the people with disabilities, professionals who leave children or pets home unattended and so on. Also, smart home devices are energy-systematic and help you save funds on your electricity bill.

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Data Science In Sports

Asst. Prof. Swapnali Kadge[1] Saptam Bagal[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

Abstract:

The rapid growth of information technology, analysing sports information has become an increasingly challenging issue. Sports data come from the Internet and show a rapid growth trend. Sports data contain rich information such as athletes, coaches, athletics, and swimming. Nowadays, various sports data can be easily access, and amazing data analysis technologies have been developed, which enable us to further explore the value behind these data. In this paper, we first introduce the background of sports data. Secondly, we review sports data management such as sports data acquisition, sports data labelling, and improvement of existing data. Thirdly, we show sports data analysis methods, including statistical analysis, sports social network analysis, and sports data analysis service platform. Furthermore, we describe the sports data applications such as evaluation and prediction. Finally, we investigate representative research issues in sports data areas, including predicting the athletes' performance in the knowledge graph, finding a rising star of sports, unified sports data platform, open sports data, and privacy protections. This paper should help the researchers obtaining a broader understanding of sports data and provide some potential research directions.

Introduction:

The era of data has brought an unprecedented impact on the development of the sports industry. Advanced data technique has brought about the changes in the sports field. The proliferation of sports data has generated new opportunities and challenges in the field of sports data. Sports data is the product of the development of the Internet and sports. The McKinsey Global Institute gives the concept of data, which includes four characteristics: volume, variety, velocity, and value. Drawing on the definition of data given by the McKinsey Global Institute sports data

can be defined as a data collection that is so large that it can acquire, store, manage, and analyze. The capabilities of traditional database software tools, including five features: volume, variety, velocity, veracity, and value (see Figure 1).

Hundreds of millions of data are generated each day from millions of schools, various events, and communities, representing the volume feature. The velocity feature can be reflected by the growth rate of data. The variety of sports data stems from the fact that it contains various entities and relationships, which makes sports data systems more challenging (see Figure 2).

Among them, the representative processing includes name disambiguation and data duplications.

The variety feature of sports data mainly contains the following aspects:

(1) Physical fitness such as height, weight, as well as the 50-meter run and sitting posture in the physical fitness category.

(2) Physical exercise behaviors like running, basketball, tennis, table tennis, football, archery, rowing, swimming, skipping rope, and their behavior trajectory.

(3) Personal information.

(4) Various competition results. One of the most important features of sports data is its value. At present, research related to sports data has attracted the attention of researchers, including evaluation.

Exploring sports data can provide great benefits for popular sports, school sports, and competitive sports. For example, through the management and analysis of athletes' usual physical fitness and athletic performance, it is possible to predict potential athletes. The results of these data analysis provide a favourable basis for decision-makers in the allocation of funds for athlete training. The basic motivation is to mine knowledge from sports data to provide better sports services for athletes, coaches, competition-related decision-makers, and the public. In addition, some typical data services such as exercise performance, health data,

training statistics, and analysis can effectively help coaches and athletes in daily training and customizing game strategies and play an immeasurable role for winning competitions.

Sports data analysis aims to solve the problems in sports science by relying on data mining, network science, and statistical techniques]. Sports data analysis focuses on the discovery of the value of data and provides valuable information resources for enterprises and managers. This valuable information is finally displayed through visualization.

They face large-scale, fast-changing, and diverse sports data. They use sports data to evaluate athletes and formulate new strategic plans. It is worth mentioning that they track the movement trajectories of players, and the ball and then establish dynamic evaluation indicators and convert these data in and to valuable information. This has become a professional team to win the game, evaluate players, and optimize offense and defense. Different data mining methods have been applied to uncover hidden relationships, patterns, and laws in sports data. Due to the increasing sports data volumes and various types of sports data, sports data is challenging. This paper presents a review of recent developments in sports data. To the best of our knowledge, this paper is the first effort to provide a comprehensive review of sports data. This overview covers three aspects: sports data management, sports data analysis methods, and sports data applications. In Sports Data Management, we introduce sports data acquisition, sports data labelling, and improvement of existing data. We conclude this survey in Conclusion.

Literature Review:

We followed the Systematic Literature Review Guidelines in Software Engineering to conduct this review. The goal of this review is to:

(1) Identify how modern smart applications and methods assist athletes and trainers in sports training and

(2) How fast the theoretical knowledge is transitioning into practical real-world use cases.

Based on the study goals, the following Research Questions (RQ) were formulated:

1. How do smart applications influence the process of sports training?

2. In which phases of sports training are smart applications utilized?

3. Which sports are the most supported?

4. Which intelligent data analysis methods are the most utilized in smart training applications?

5. How mature are the research ideas of smart training applications in practice

The following sports were detected in the literature review: Archery, badminton, basketball, climbing, counter-movement jumping, cricket, cycling, fencing, fitness (gym), (American/Australian) football, golf, hammer throwing, handball, hockey, jumping, karate, rowing, running, shooting, soccer, swimming, table tennis, tennis, volleyball, weight lifting, and yoga. The remaining research was unrelated to a specific discipline, and was concerned with sports training in general. This research is placed in the general category. Some sports are investigated much more than others, as is shown in Figure 5, which may be due to their popularity among players and regular people, or they may simply be easier to evaluate, and were, as such chosen by researchers. The most popular sports for research were: soccer, running, and weight lifting.

We have also divided the sports by their participation into three categories:

(1) Individual sports, which are sports were the participant normally competes against other individuals and not as a part of a team

(2) Mixed sports, where the individual sometimes completes individually against other individuals, but may, in some competitions, be part of a duo (e.g., Tennis) or a team (e.g., Ski Jumping), and

(3) Team sports, where the individual is always part of a larger team and competes against other teams. We have classified the identified sports in the following way:

• **Individual:** Archery, climbing, jumping, fencing, fitness (gym training), golf, hammer throwing, karate, kickboxing, rowing, running, shooting, skiing, swimming, Tai-chi, tennis, weight lifting, and yoga.

• **Mixed:** Badminton, cycling, rowing, ski jumping, table tennis, and tennis.

• **Team:** Basketball, cricket, (American/Australian) football, handball, hockey, soccer, and volleyball.

Methodology & Experiments:

Data analysis refers to the technique, which can quickly acquire valuable information from all kinds of data. The data analysis technique can use various algorithms to statistically calculate the data and extract important analytical data to meet the actual needs. For example, in the competitive sports area, data analysis technology can not only help coaches and athletes to analyse the previous training and competition sports behaviour but also can pin the athlete's movement and physical condition and adjust the athletes' training activities to improve their competition performance. In addition, data analysis technology can also help coaches and athletes understand the strengths and weaknesses of their opponents to achieve excellent results in large-scale events.

Statistical Analysis:

Based on the statistical theory, the statistical analysis technique is proposed, which belongs to a branch of applied mathematics. The statistical analysis can provide inference for data. A sports data tool is proposed to help improve the analysis of techniques and tactics of competitive sports. In this research the author builds two statistical databases: one is a technical The sports social network analysis can reveal the relationship in team sports. Use a questionnaire survey to investigate how the social networks of adolescent impact their sports behaviours. They conclude that the social networks of adolescents are the important factors of influencing adolescents' sports behaviour. dataset, and the other is a tactical dataset, including the sheets related to the badminton competition information: teams, players, coaches, technical action type, and trajectory.

Although statistical analysis technology has played an important role in sports data research, with the development of the sports industry and data technology, more and more technologies such as machine learning, data and predictive analysis are used in sports data research. In the following section, we introduce sports social network analysis.

Sports Social Network Analysis:

The sports social network analysis can reveal the relationship in team sports. Use a questionnaire survey to investigate how the social networks of adolescent impact their sports behaviors. They conclude that the social networks of adolescents are the important factors of influencing adolescents' sports behavior.

The social network analysis is use to investigate the levels of cohesion occurring among recreational runners by using the running groups to prepare for the running event. Sports Data Analysis Service Platform proposes a Hadoop-based outdoor motion sports data analysis platform, which stores students mass motion data and analyses these motion behaviors by the construction of a large data mining system. In his research, students physical activity information is monitored, recorded, and stored in real time by relying on wearable intelligence terminals. At the same time, these motion data will be sent to the sports data service platform, and based on the distributed platform, each student's motion information data will be set up independently to accomplish various data analysis tasks.

Results:

1.Predicting the Player's Performance in Knowledge Graph:

Although researchers have achieved unprecedented results in predicting player performance, most of their prediction models focus on feature extraction and machine learning algorithms. In the current research, an issue is that the knowledge relationship between athlete performance and players, coaches, and events is ignored. Existing researchers pay more attention to the statistical relationship between them. How to predict players' performance more accurately? One possible solution is to predict the performance of athletes based on the knowledge graph of sports data. Therefore, how to construct a knowledge graph of sports performance and performance-related entities is a crucial task. In addition, how to use the constructed knowledge graph of sports data to predict the performance of players is very challenging.

2.Finding Rising Star of Sports:

The success of a sports career not only depends on the player's personal ability but also is related to the player's team and country. For a team or a country, cultivating an outstanding player requires a lot of manpower and material resources. The rising star of sports refers to the players

who are not outstanding among the peers, and they are at the beginning stage of their sports career, but they have a trend of becoming sports stars in the future. Finding a rising star of sports not only provides constructive guidance on the investment of national funds but also provides necessary help for players to show excellent performance earlier. However, little is known about how to find the rising star of sports. Current research mostly uses statistical methods for the evaluation of the athletes. How to construct the knowledge graph for finding a rising star is a challenging task.

3.Privacy Protections:

In the era of data, while sports data brings great value, it also brings some problems in players' privacy protection. How to protect players' privacy and prevent sensitive information leakage in the process of sports data development and application has become a new challenge. On the one hand, the personal privacy of players requires international sports organizations to establish an independent privacy protection agency; on the other hand, it is necessary to create a special privacy system, the purpose of which is to ensure the priority of privacy of players. For players' privacy protection, it is necessary to implement fine-grained authority control and to cooperate with relevant data desensitization strategies to better protect players' privacy.

Conclusion:

In this paper, we have provided a comprehensive review of sports data, focusing on sports data management, sports data analysis methods, and sports data applications.

There are several changes in the sports data field:

(1) From simple statistic evaluation to model-based evaluation.

(2) From simple statistical analysis to data-driven performance prediction of players.

(3) From social network analysis to knowledge graph analysis.

(4) From explicit sports features to implicit sports features.

However, the analysis of the literature on sports data has led to the conclusion that although researchers have proposed some methods to resolve the problems in sports data area, the solutions of some crucial issues remain unknown, such as predicting the players' performance in the knowledge graph, finding a rising star of sports, unified sports data platform, open sports data, and privacy protections

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The Future Of Robotics Technology With Humans

Asst. Prof. Sayma Natekar[1], Priya Yadav[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

ABSTRACT

Robotics is a branch of engineering that deals with the design, manufacture, and operation of robots. Robots contain intelligence known as 'Artificial Intelligence (AI)'. As a result, one of the most difficult Artificial Intelligence (AI) problems is data acquisition and storage. Robots, like humans, require a variety of private data and sensitive information to complete their tasks. However, there is no guarantee as to how the robot will use this sensitive data. Robots are expected to replace millions of jobs in the future. Robots will be used to perform tasks that were previously performed by humans. Robots can improve our quality of life and make the world a better place by collaborating with us rather than replacing us. The goal of robotics is to create machines that can assist and assist others. As you all can understand that these robots will be playing a great role in the revolution of the world. In future millions of jobs are expected to be replaced by these AI robots. Robots to perform tasks done traditionally by human beings and also tasks not done by human beings. Robots can improve the quality of life for human beings and make the world a better place for living, not by replacing humans but by working effectively and in an efficient manner, together. The goal of robotics is to design machines that can help and assist humans and not destroy them. Robotics integrates fields of mechanical engineering, IT Engineering, electronics engineering, control engineering, software engineering, mathematics, etc. It will be proven later in the future whether it's a boon or a bane for humanity, whether it will help or destroy humanity and Mother Nature. Artificial intelligence will be the key player for all these robotics and engineering.

KEYWORDS-Concept, Batteries, uses of robots, different field.

INTRODUCTION

Robotics is study of robot where one can learn about the working and behavior of robot. It can be also defined as the intersection of science, engineering and technology that produces machines, called robots, that replicate or substitute for human actions. Robotics integrates fields of mechanical engineering, electrical engineering, information engineering, mechatronics, electronics, bioengineering, computer engineering, control engineering, software engineering, mathematics, etc. Therefore, is known as the multidisciplinary branch where all meet. robots have changed human life by completing complex task easily. In upcoming time robots will play an important and big role in human life. Most of human beings will depend on robots for their work. Robotics develops machines that can substitute for humans and replicate human actions. Today, industrial robots, as well as many other types of robots, are used to perform repetitive tasks. They may take the form of a robotic arm, robotic exoskeleton or traditional humanoid robots. Industrial robots and robot arms are used by manufacturers and warehouses, such as those owned by Amazon, Devol, Best Buy and more. Robots will affect the economy growth as the rise of the robots will boost productivity and economic growth. And it will lead to the creation of new jobs in yet-to-exist industries. Robotics technology is becoming one of the leading technologies in the world. More and more people are relying on domestic robots to perform household chores. Some of the most popular are robot vacuum cleaners and kitchen robots, but nowadays we also have robots which are used to cut the lawn in the garden or clean the bottom of the pool, robots which clean our windows or which can even iron our clothes, although the latter are still very expensive and take up a lot of space. We are using robots in almost every field.

HISTORY

Al-Jazari is not only known as the "father of robotics". He also documented 50 mechanical inventions and is considered to be the father of modern-day engineering. The first digitally operated and programmable robot was invented "George Devol" in by 1954 and was ultimately called "The Unimate". This later laid the foundations of the modern robotics industry. The first Indian robot is "Manav". It is a humanoid robot developed in the laboratory of A- SET Training and Research institute by "Diwakar Vaish" in late December 2014.

USE OF ROBOTS IN FUTURE

Robot is an autonomous mechanical device which is invented by human. The purpose to invent robot is to help the human in their work and to reduce the work load. There are many dangerous works which human is unable to perform in that case we can use robots for certain task. There are many types of robots are available for various task. To increase the development of technology we can use robots for various purpose like industrial, military, service, exploration, medical, entertainment, domestic etc. Robots are widely used in manufacturing, assembly and packing, transport, earth and space exploration, surgery, weaponry, laboratory research, and mass production of consumer and industrial goods. But in some case, we need to consider the robots while developing.

For Examples:

Industrial: In industrial field there are many chances to work for robots and yes, they give the speed to work like packing, picking and many more which increase the production of product. All works are so easy they are not dangerous a human can also do this without any doubt. If we use robots for such simple work there will be unemployment.

Military: Robots soldier are autonomous. In military field robots can be used to save the lives lots of people. The average death rate of Indian soldiers is 111. We can save the lives by replacing the human by robots. Sometimes in war there are dangerous place where are unable to go and rescue the people in this case we can use robots. Robots are remote controlled we can control them according to our required and rescue then from dangerous zone.

Service: In the service sector there are many people working and there are many chances for robots to work in service sector. Services like sanitizing, healthcare, retail, hospitality, rescue teams like fire bridged, business and more are available. In dangerous sector robots will be very helpful for simple and easy service we should not replace the human. Because it will cause unemployment which should not happen.

Exploration: There are many places where we want explore and want to find the mystery behind it. Sometimes it's very hard as well as very dangerous to explore that place. So, in this case we can use robots and explore that place. We can also use them to explore the other planet. It will save the life and also helps to find the mystery behind many places.

Hazardous environments: Recently we face the corona pandemic and we lost the life of many saviors. In this type of situation, we can use the robots to save the life and we there are many various cases like high radiation, dangerous area etc. Also, it will be very helpful for rescue team.

Medical: As we all know robots are man-made. We can use the robots to assist the doctor in operation. But a robot should not be a doctor in some case it may be right choice to select robot as doctor but to be a doctor it takes so much time and experience. Yes, they can be a physiotherapist, pathologist even we can use a robot to detect the disease which takes long times like scanning the whole body of patient and detect the disease right away. This can be used in very urgent case and save the patient life.

Entertainment: We can use robots for entertainment. In movies there are many dangerous scenes that is injurious. We can use robot for their replica and it can give better performance. For children's we can use robot as a toy and also it will be advance this will help the children in their growth, they can be learning various language. It will also help the country in future as we know the children are future.

Domestic: Main article: Domestic robot

The Roomba vacuum cleaner is one of the most popular domestic service robots. Domestic robots perform tasks that humans regularly perform in non-industrial environments, like people's homes such as for cleaning floors, moving the lawn and pool maintenance. People with disabilities, as well as people who are older, may soon be able to use service robots to help them live independently. It is also possible to use certain robots as assistants or butlers.

Batteries: Here is the table of comparison between Lithium-Ion and Lithium-Polymer. In robots mostly lithium-ion and lithium-polymer are used. In both batteries there is advantages and disadvantages. We can see this Lithium-ion is cheap but very dangerous for environment and Lithium-Polymer is very better for environment but it's very expensive. Instead of using batteries we can use solar cell which will convert the heat energy into electric energy. Solar cell is more durable than lithium-ion and lithium-polymer batteries. Solar cell can also help to save the energy.

CONCLUSION

From all the research we can see that robots can help the people to work in many sectors but it will also be the reason for unemployment in the future. We need to grow in technology but the most important thing we need to consider is that employment. There are many dangerous sectors where we should definitely use the robots.

Robots are very expensive many people cannot afford it. In future many people may feel inferior because they cannot afford it. Robots may be helpful for children to learn and advance their knowledge about technology. The most important for robot is to work with human help them in their work but by working with them not by replacing them entirely. If there will be number of robots in future then they will also use lots of energy. To save that energy we can use solar cells instead of batteries. Various robots are available for various work but need to use the resources properly. As we all know everything has two side good or bad but if we maintain the both sides equally it will give only give advantages to our society and also it will help the environment to grow widely.

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The Impact Of Computer Virus

Asst. Prof. Sayma Natekar[1], Mahima Tiwari[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

ABSTRACT

 The computer virus has become a challenging architecture and self-organized system. However , only recently have some scientists begun to ask if Computer viruses are not a form of computer architecture. Computer viruses pose considerable problems for users of personal computers. This document provides an abstract overview of computer virus detection and protection. Computer viruses are the most critical area in computers. Most of the computer users in the world are distressed from this threat and it is very difficult to prevent every computer from being compromised by a virus.

 Keyword: virus attack , personal computer

INTRODUCTIONS

A virus is a program that can infect other programs by modifying in the computer/PC itself. The virus program can be simply like displaying a happy force on the user's screen at a certain time and date. This research paper finds the factors which guide the virus attack among personal computer users. Today's society has seen an increase in the use of computers. This helps in protecting our PC with needful security mechanisms to safeguard the secure information. . Nowadays many computer viruses are designed to self-replicate and self-install over a very short period of time .*I*t is important to analyze the actions that a virus performs in one's system and also the activities that are possible to occur over time. Virus attacks on computer are more harmful that shows up and more damage to the computer and It is important to analyze the actions that a virus performs in one system and also the activities that are possible to occur. A computer virus is a kind of malicious computer program, which when executed, replicates itself

and inserts its own code, which spreads a harmful virus in the system. A program inserted into a computer system to perform some short of malicious purpose. It is important to note that a virus can not be spread without human action. The implications of the computer virus's growth are especially important for management information systems. They come included with specific instructions to destroy the advanced truth of its host computer , and can affect a multitude of programs and applications very quickly. Most commonly, the execution of a particular instance of a virus(in a specific host file) will come to an end when the host file has finished as execution. Any operating system that allows third-party programs to support viruses. The computer virus also can be spread by via disk, CD, thai DVD or flash drive or other devices.

TYPES OF COMPUTER VIRUS

1. **Boot infector virus:** These types of viruses affect the disk and the hard drive that holds a small section referred to as the sectors. Once the boot sector is attacked they become infected when you reboot the system with the infected diskette it spreads through the hard drive.

2. **Macro virus:** A macro virus is defined as "a computer virus written in the same macro language used for software applications, such as word processors." Microsoft Word and Excel are two examples of applications that feature powerful macro languages, which are embedded in documents so they run automatically when the documents are open.

3. **Memory resident virus:** A Memory-Resident Virus is a virus that is located in the memory of a computer, even after the 'host' application or program has stopped running (been terminated). Non-Memory-Resident Viruses are only activated once the application or program is started.

4. **Overwrite virus:** A computer overwrite virus is a form of self-replicating malware that deletes data as it spreads.They are called "overwrite viruses" because they overwrite your computer's original data when replacing themselves.

5. **Direct action virus:** Direct Action Viruses are computer viruses. When a device user plans to execute a harmless file attached to the malicious code, direct action viruses

instantly deliver a payload.So it was the basic detail about the direct action virus. A direct action virus is not like all other computer viruses.

6. **Directory virus:** The term directory refers to the way a structured list of document files and folders are stored on the computer. A directory virus is a form of computer virus that ties its own execution to that of other software programs.As a result, a directory occupies less space than other types of files.

7. **Web scripting virus:** Web Scripting Virus is malware that has the capacity to breach web browser security. This virus attempts to breach your web browser's security and exploit its vulnerabilities. The goal of this type of attack is to steal your personal data.

8. **Multipartite virus:** A multipartite virus is a fast-moving virus that uses file infectors or boot infectors to attack the boot sector and executable files simultaneously.The multipartite virus can affect both the boot sector and the program files at the same time, thus causing more damage than any other kind of virus.

9. **Polymorphic virus:** A polymorphic virus is a complicated computer virus that affects data types and functions. It is a self-encrypted virus designed to avoid detection by a scanner.Polymorphism, in computing terms, means that a single definition can be used with varying amounts of data.

10. **Worm virus:** A computer worm is malware that reproduces itself and spreads over network connections. The computer worm does not usually infect computer files, but rather infects another computer on the network. This is done by the worm replicating itself.

11. **Trojan horses virus:** Trojans are deceptive programs that appear to perform one function, but in fact perform another, malicious function.A virus is a program that spreads by attaching itself to other software, while a trojan spreads by pretending to be useful software or content.

12. **E-mail virus:** An email virus consists of malicious code distributed in email messages to infect one or more devices.Email is a common way for malware and viruses to

spread.Email viruses are mostly spread by causing the malicious message or attachment to be sent to everyone in the victim's address book.

CONCLUSION

A computer virus is one type of malware that inserts its virus code to multiply itself by altering the programs and applications.There are many methods to treat and prevent computer viruses with anti-virus.you can prevent viruses from your desktop by only running scripts on your desktop to block viruses which come from the network, mail and USB.The Simplest conclusion for this research is the virus prevention and detection mechanisms.Computer viruses come in different forms to infect the system in different ways.If a virus sends itself from your workstation or institution to your clients or business partners, they may decline to do trade with you, or claim compensations.the operating systems All respondents replied that virus attack has high impact on their personal computer usage. This research reveals a number of lucrative mechanisms which would help the personal computer users to protect their computers from the virus attacks. is more stable against viruses than any other operating system including windows.Computer and biological virus having similar characteristics, researchers doing more research on computer virus as compared to worm and Trojan.before finding the solution against the computer virus people must know the basic thing of computer virus like which are the type of computer virus are created now a days, working of computer virus, problem occurs from computer virus.

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The Impact Of Fibre Optic In Networking System

Asst. Prof. Sayma Natekar[1], Vandita Dubey[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI MUMBAI

ABSTRACT

Fibre optics are important telecommunication structure for world-wide broadband networks. In present day operation wide bandwidth signal transmission with low detention has crucial demand. In telecommunication network, the optic fibre provides enormous and unequalled transmission bandwidth. The optic fibre has a negligible quiescence, and are the transmission medium for long distance and high data rate. This paper gives overview of the impact of fibre optics in networking system throughout the world including their crucial technologies and also discusses their technology trend towards the coming generation.

KEYWORDS: Bandwidth, Broadband, Fibre optics, quiescence, Telecommunication

INTRODUCTION

Fibre optics is a communication networking regarding a transmission of data from one place to another through an optic fibre. The light which is generated carries an electromagnetic carrier surge that's modulated to carry data. When high bandwidth, long distance and impunity to electromagnetic hindrance are needed fibres are preferred as over electrical cabling. In this type of communication, the transmission of voice, videotape, and telemetry through original area networks, computer networks, computer networks, or through long distances ae possible. Fibre optics in day- to- day life is used by numerous telecommunications companies to transmit telephone signals, internet communication and string TV signal network.

Using fibre optical communication experimenters at bell labs have reached internet pets of over 100 beta bit kilometre per second. There are some way which are used in the process of communication using fibre optics:

1. We should produce the optic signal which involves the use of a transmitter, should be generally from an electrical signal.

2. We should bear the signal along the fibre icing that the signal doesn't come too weak and malformed.

3. We must admit the signal.

4. convert the electrical signal.

FREE SPACE OPTIC NETWORK COMMUNICATION

In our history, the communication through the string structure has come a part. optic fibre communication have numerous operations similar as long distance communication up to 40 km without taking a repeater device, it's flexible in nature, which is used to be ready to be used anywhere, duplex mode of communication, EMI(electromagnetic interferences), resistive in nature and has large bandwidth supporting capacity. But except all these, this ultramodern terrain demands for more effective bandwidth application, and better data distance, that's what we appertained to as a new mode of communication called as free space optic communication. As we all know that optic fibre cabled structure has failed to reach some smaller cellular end point. But this limitation has removed has removed by this free space optic communication. The optic fibre is also called as fibreglass optics or optic wireless. This free space optic system requires only the on and out crucial to get started as this modulation format allows a free space optic system to be designed as bandwidth and protocol transparent physical subcaste connection. In order to run a free space a free space optic network, we must have two pivotal factors as a part of it, they're radio access network (RAN) and central network (CN) ran provides a veritably good connectivity between mobile druggies and CN by using a RF frequency signal as medium. RAN uses the base station regulator, while CN provides the

PSTN for mobile- to-mobile communication. The microwave oven RF signal is also used as a source of connectivity.

INTRODUCTORY PRINCIPLES OF FIBRE OPTICS COMMUNICATION

Fibre optical communication is a communication technology that uses light beats to transfer information from one point to another through an optic fibre. The information transmitted is basically digital information generated by telephone systems, string TV companies, and computer systems. An optic fibre is a dielectric spherical waveguide made from low- loss accoutrement, generally silicon dioxide. The core of the waveguide has a refractive indicator a little advanced than that of the external medium(cladding), so that light beats is guided along the axis of the fibre by total internal reflection.

Fibre optical communication systems consists of an optic transmitter to convert an electrical signal to an optic signal for transmission through the optic fibre, a string containing several packets of optic fibres, optic amplifiers to boost the power of the optic signal, and an optic receiver to reconvert the entered optic signal back to the original transmitted electrical signal. unborn trends in fibre optics communication Fibre optics communication is surely the future of data communication. Due to the advancement in data technology and increased in demand for fibre optical communication, the elaboration of fibre optical communication has been increased. It's anticipated in our future that the fibre optic would be have the developed, new, and numerous further advanced technology.

There are some envisaged future trends in fibre optical communication they're as follow as:

• **All Optical Communication Networks:** An optic fibre communication is envisaged which will be fully in the optic sphere, giving rise to an all optic communication network. In this type of networks, all the signal are used to reused by optic sphere, without any form of electrical manipulation. In the present world, processing and switching of signals takes place in electrical sphere optic signal must first be converted to electrical signal before they can be reused, and routed to their destination. This transfer of optic to electrical conversion and electrical to optic

conversion results in added quiescence on network and this is how it has come a limitation for achieving veritably high data rates.

• **Multi Terabit Optical Networks:** Thick Wave Division Multiplexing (DWDM) paves the way for multi-terabit transmission. The world-wide need for increased bandwidth vacuity has led to the interest in developing multi-terabit optic networks. Presently, four terabit networks using 40Gb/ s data rate combined with 100 DWDM channels exists. Experimenters are looking at achieving indeed advanced bandwidth with 100Gb/s. With the nonstop reduction in the cost of fibre optical factors, the vacuity of much lesser bandwidth in the future is possible.

• **Intelligence Optical Transmission Network:** Presently, traditional optic networks aren't suitable to acclimatize to the rapid-fire growth of online data services due to the unpredictability of dynamic allocation of bandwidth, traditional optic networks calculate substantially on homemade configuration of network connectivity, which is time consuming and unfit to completely acclimatize, to the demands of the ultramodern network. Intelligent optic network is an unborn trend in optic network development. and this Intelligence Optical Transmission Network will have the following operations Traffic engineering, dynamic resource route allocation, scalable signalling capabilities, bandwidth on demand, wavelength reimbursement, wavelength wholesale, discerned services for a variety of Quality of services situations, and so on. It'll take some time before the Intelligent optic network can be applied to all situations of network. It would be originally applied in long haul networks and gradationally be applied to the network edge.

• **Ultra- Long Haul Optical Transmission:** In the area of ultra-long haul optic transmission, the limitations assessed due to defects in the transmission medium are subject for exploration. Cancellation of dissipation effect has urged experimenters to study the implicit benefits of soliton propagation. further understanding of the relations between the electromagnetic light surge and the transmission medium is necessary to do towards an structure with the most favourable conditions for a light palpitation to propagate.

• **Improvement in Laser Technology:** There would be another future trend on the extension of present semiconductors spotlights to a wider variety of lasing wavelengths. Shorter wavelength spotlights with veritably high affair powers are of interest in some high viscosity optic operations. Presently, ray sources which are spectrally shaped through chirp managing to compensate for polychromatic dissipation are available. Chirp managing means that the ray is controlled similar that it undergoes a unforeseen change in its wavelength when firing a palpitation, similar that the polychromatic dissipation endured by the palpitation is reduced. There's need to develop instruments to be used to characterize similar spotlights. Also, single mode tuneable spotlights are of great significance for unborn coherent optic systems. These tuneable spotlights lase in a single longitudinal mode that can be tuned to a range of different frequentness.

• **Ray Neutral Network Nodes:** The Ray neural network is an effective option for the consummation of optic network bumps. A devoted tackle configuration working in the optic sphere and the use of ultra-fast photonic sections is anticipated to further ameliorate the capacity and speed of telecommunication networks. As optic networks come more complex in the future, the use of optic ray neural bumps can be an effective result.

• **Polymer Optic Fibre Polymer:** Optic fibres offer numerous benefits when compared to other data communication results similar as bobby lines, wireless communication systems, and glass fibre. In comparison with glass optic fibres, polymer optic fibres give an easy and less precious processing of optic signals, and are more flexible for draw interconnections. The use of polymer optic fibres as the transmission media for aircrafts is presently under exploration by different exploration and Development groups due to its benefits. The German Aerospace Centre have concluded that the use of Polymer Optical Fibres multimedia fibres appears to be possible for unborn aircraft operations. Also, in the future, polymer optic fibres will probably displace bobby lines for the last afar connection from the telecommunication company's last distribution box and the served end consumer. The unborn Gigabit Polymer Optical Fibre standard will be grounded on Tomlinson- Harshika Precoding, Multilevel PAM Modulation, and Multilevel Coset Coding.

CONCLUSION

The design for advance RF network is dependable for complex morass and good for a free space optics prospects. Generally morass are used for short links deportations between antennas. This provides us all the features similar as trust ability, speed and different nature of signal in temporary and indeed worst rainfall conditions. Free space optic link is more general in nature but occasionally it shows us some problematic conditions also but from thereby we can some incommutable operations. The mobility of the optic fibre decreases as the distance increases but it can be removed by globular antennas only. Then the work is going on in a positive manner to increase the system trust ability and durability, but the size and complexity of the system also needs a result in the near future. In the near future there's also a need of stability in connectivity of mobile druggies because of inner druggies because of inner and quasi prolixity transmission. The main issues that affect the hindering growth are temperature, lading goods, bad rainfall conditions; storm structure, and climate. As optic fibres are used for long distance transmission is due to by the optic fibres have high bandwidth which aims as the main factor. For short distance up to a outside of 4 km, free space optic communication is suitable. Due to complexity of access points, openings will grow for short link transmission.

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Use of Artificial Intelligence in Nano-composites

Mr. Mahesh M. Dhaigude [1,2], Ms. Rashmi K. Patil [1]

[1] Ramsheth Thakur College of Commerce and Science, Kharghar 410210, India

[2] Research Scholar, Institute of Chemical Technology, Matunga, Mumbai-400 019, India

ABSTRACT

An Artificial intelligence (AI) has rapid growth and is completely changing all aspects of our life. AI is one of the fascinating and universal fields of Computer which has a great scope in future. AI holds a tendency to cause a machine to work as a human. It is also a field of study which tries to make computer "smart". We know that Machines make our work simpler and easier. But if machines are having the ability to solve problems like human beings and give the result then it is advantage in artificial intelligence. It is currently working with a variety of subfields, ranging from general to specific, such as self-driving cars, playing chess, proving theorems, playing music etc.

Nano-composite are found in nature of multiphase solid material where one of the phases has one, two or three dimensions of less than 100 nm or structures having Nano-scale repeat distances between the different phases that make up the material. The idea behind it is to use building blocks with dimensions in nanometer range to design and create new materials with unprecedented flexibility and improvement in their physical properties. Individual features including mechanical, chemical, electrical, optical, and catalytic ones can be found in Nano-composite materials. Nano-composites used in numerous industries, such as the food industry, biotechnology, energy storage, wastewater treatment, and the automobile industry etc.

Keywords: Artificial Intelligence, Nano-composite etc.

INTRODUCTION

An Artificial intelligence is the simulation of human intelligence process by machine or computer system. Artificial intelligence can be defined as a focus on developing various features of human intelligence in machines or systems. It is an ability of machine to replicate or enhance human intellect.

High performance Nano-composites materials have unique features. Engineering plastics and elastomers are where Nano-composites are most in demand, with an anticipated 25% annual growth rate. Their potential is so great that they are useful in many applications, from packaging to biomedical ones. The many forms of matrix Nano-composites are covered, with an emphasis on the need for these materials, their methods of manufacturing, and some recent findings regarding their structure, characteristics, and possible uses. The necessities for such materials in the future as well as other intriguing applications are projected. Applications of Nano-composites offer new technological and commercial potential for a number of industries, including aerospace, automotive, electronics, and biotechnology, due to their environmental friendliness.

Nano-composites have a high surface-to-volume ratio and hence have strong mechanical characteristics, making them suitable for application in the automotive and construction sectors. Nano-composites show better property enhancement over conventional composites i.e., properties such as electrical, thermal, mechanical, and barrier. They have good transparency and also reduce the property of flammability. Other uses include power tool housing, electronic covers, and so forth. In conclusion the artificial intelligence is achieving a great stability in everyday life. Artificial intelligence is a debate between society and those who support the contribution made to help humanity with the problem of hunger and above all poverty.

RESEARCH METHODOLOGY

The goal of AI is to create system that can function intelligently and independently. Specific applications of AI include expert system, natural language processing, speech recognition and vision. The AI programming focuses on three cognitive skills that are learning, processing and self-correction. The learning process focuses on acquiring data and creating rules (Algorithm) for how to turn the data into information. This process focuses on choosing the right algorithm to reach a desired output and the Self-correction process is designed to continually fine-tune algorithm and provide accurate result.

Anything rises to smarter than intelligence in the form of Artificial Intelligence, computer interfaces based human intelligence enhancement that wins hands down beyond contest as doing the most to change the world. An Artificial Intelligence is composed of two words Artificial and Intelligence, where Artificial defines "man-made" and intelligence defines "thinking power" hence

AI means "a man-made thinking power". A significant portion of cost minimized by means of AI, through monitoring and evaluating data, better tracking from various fields / plants. AI will certainly have an immense impact on the business also. Therefore, embracing AI powered technologies is not only a prudent decision but a necessary one to be able to cope with   possible disruptions of business models in the industry.

The study of matter's properties at the Nano-scale is known as Nano-science, and it primarily focuses on the distinct, size-dependent characteristics of solid-state materials. To create materials at the Nano-scale, new synthesis processes are needed; both bottom-up and top-down methods are used. The study, manipulation, and engineering of materials, particles, and structures at the Nano-scale size are referred to as Nano-science (one millionth of a millimeter, the scale of atoms and molecules). The way molecules and atoms come together to form larger structures on the Nano-scale determines important aspects of materials, such as the electrical, optical, thermal, and mechanical properties. Furthermore, due to the importance of quantum mechanical phenomena, these features are frequently different in nanometer-sized structures than they are on the macro-scale. Carbon nanotubes are on the verge of dislodging silicon as a material for producing smaller, quicker, and more effective microchips and devices, as well as lighter, more conductive, and stronger quantum nanowires.

Nanotechnology is used for many different things and in many different fields, like computer, biology, medicine, physiology, industry, and any mechanical or chemical field. Another such area where the use of nanotechnology has recently been introduced and is consistently demonstrating as a means of maximum success and ease is artificial intelligence. The study approach is based on earlier research and expectations of practical knowledge. Our study aimed to design various Nano-composite materials that require us in the future. We work on various devices for characterization technique with Mechanical, Optical & Dielectric Properties by using XRD, SEM, TEM, AFM, FTIR, XPS (ESCA), DSC, TGA, DTA etc. Now a day there is wide range of Applications of Polymer Nano-composite such as Insulator, Packaging Industry, Energy storage material, Automotive Industry, Medical & life science field (Drug, Tumor, fracture, Joints), Film casting, Fiber spinning, Acrylic coating, Polyethylene, nylon, PVC pipes etc.

Due to their low weight, high strength, high modulus, and excellent design capabilities, composite materials have taken over as the primary components of light-weight structures. Yet, traditional

research approaches based on experiment, theoretical modeling, and numerical simulation meet many new attributes, design optimization, manufacturing, and processing of composite materials as the component, structure, and capability requirements become more complicated. The development of sophisticated composite materials in the future-focused engineering has been severely hindered by insufficient experimental observation, a lack of theoretical model, constrained numerical simulation, and challenging conclusion validation. Artificial intelligence employs data-driven models as opposed to the mathematical models utilized by mechanics. It directly establishes the intricate relationships between variables from high-dimensional and high-throughput data, and then it captures the laws that are challenging to uncover.

The inorganic compound barium titanate (BTO) has the chemical formula BaTiO3. When formed as big crystals, barium titanate is clear and has a white powdery appearance. The photorefractive effect is shown by a ceramic substance that is ferroelectric, pyroelectric, and piezoelectric. It is utilised in nonlinear optics, electromechanical transducers, and capacitors.
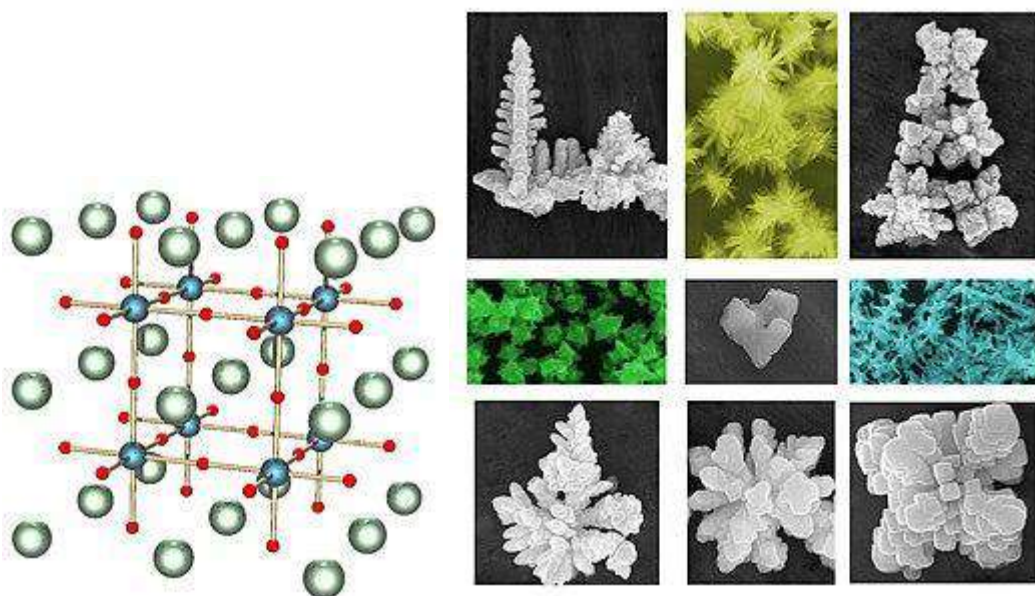
Barium titanate is a <u>dielectric</u> ceramic used in <u>capacitors</u>, with dielectric constant values as high as 7,000. Over a narrow temperature range, values as high as 15,000 are possible; most common ceramic and polymer materials are less than 10, while others, such as titanium dioxide

(TiO_2), have values between 20 and 70. It is a <u>piezoelectric</u> material used in <u>microphones</u> and other <u>transducers</u>.

Borocarbonitrides are two-dimensional compounds that contain <u>boron</u>, <u>nitrogen</u>, and <u>carbon</u> atoms. Borocarbonitrides are distinct from B,N co-doped grapheme in that the former contains separate boron nitride and grapheme domains as well as rings with B-C, B-N, C-N, and C-C bonds. These compounds generally have a high surface area, but borocarbonitrides synthesized from a high surface area carbon material, urea, and boric acid tends to have the highest surface areas. This high surface area coupled with the presence of Stone-Wales defects in the structure of borocarbonitrides also allows for high absorption of CO_2 and CH_4, which may make borocarbonitride compounds a useful material in sequestering these gases.

Here 2 nanomaterial used as Barium Titanate & Boroncarbonitrides. 2 out of 3 Composite materials such as PEEK (Poly Ether Ether Ketone), PVDF (PolyVinylDiFloride) & PMAA (poly meth acrylic acid).

Any of a group of organic or synthetic compounds known as polymers is made up of macromolecules, or very large molecules, which are just multiples of simpler chemical building blocks known as monomers. Many natural and man-made materials, as well as a large portion of the components in living things, are composed of polymers.

Attributes can be developed by means of vary Nanotechnology and artificial intelligence (AI) are two of the most talked-about emerging technologies today. However, they are also the least understood in many ways. Although novel applications of either technology like AI's ability to mimic your own voice, everyday situations. Nano-materials are the only ones with the ability to perform all required tasks in their natural state. They participate in the nanotechnology process, and it is because of them that it is carried out.

RESULT AND DISCUSSION

The main benefit of Nano computing is that it can significantly increase the computing power that is available to researchers. Some have expressed concern in recent years that (Moore's Law) the number of transistors per chip and, consequently, computing power, doubles over a predictable period of time, as we create ever-smaller computers. Using Nano computing is one way to solve

many issues. Nano computers can perform calculations using anything from Nano to organic chemical reactions, among other novel media. However, the majority of these devices rely on complex physical systems to enable complex computational algorithms and machine learning techniques that can be used to produce novel information representations for a variety of applications. Our huge amount of data of chemical reactions useful in algorithms that have to be inputs. At present we are luckily surrounded by different kinds of machines with artificial intelligence, for example mobiles, video games, computers, air conditioners, biosensor, Electronics, Energy, Biomedicine, Environment, Food, Textile etc.

Advantages of artificial intelligence: - Artificial intelligence is quickly growing because of processes much faster and makes the predictions more accurately & fast. While huge amount of data is created on the daily basis which may be bury a human to find or analysis the data, AI applications that use machine learning which used to take that data and quickly into information. It mostly useful in Automation, once AI becomes used more and more, there are concern expressed by many people.

There are some examples of AI such as Siri, Alexa, and other intelligent assistants like Google Assistant, enhanced personal healthcare services, Conversational bots for customer service and marketing, Robotic stock trading advisor, self-driving cars etc.

There are many Applications of Nano-composites such as:- To make flexible batteries with high power output, Making tumors easier to diagnose and remove, Food Packaging, Automotive engine parts & fuel tanks, Thin film capacitors for Computer chips, Flame retardants, Light emitting diodes, Photodiodes, Photovoltaic solar cells, Medical applications, Bone tissue engineering and regenerative medicine, High-voltage insulation, Corrosion protection, Infrastructure (e.g. seismic retrofit of bridges), Improved barrier properties of membranes (e.g. gas separation or filtration), Thermal barrier coatings for electronic components, Making lightweight sensor (Gas Sensor) etc.

CONCLUSION

Here, we provide an artificial intelligence (AI) based design methodology for improving the toughness of Nano-composite materials that has been integrated into a brand-new "Auto Comp Designer" algorithm. The algorithm, which can find de novo materials designs in a huge area of

potential solutions, combines a machine learning predictor with an AI-improved genetic process. Popular python language use here & huge amount of Database of chemical reactions that synthesis route of Nano-composite helps to find result easily.

Without using conventional simulations, we are able to predict the material properties of novel grapheme Nano-composites thanks to a deep convolutional neural network that has been trained on a dataset of hundreds of thousands of combinations of soft and brittle materials from a finite element analysis. By adjusting the material distribution, the algorithm allows us to take physical simulations beyond the prediction of properties and maximize the fracture toughness.

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Online Public Accessible Register

Asst. Prof. Rajashree Salokhe[1], Sakshi Patil[2]

[1]Assistant Professor, [2] T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

The purpose of this type of register is to provide information to the general public in a convenient and easily accessible manner. This information could be in the form of public records, official documents, or any other type of information that is deemed important for public knowledge. An online public accessible register can be maintained by government agencies, non-profit organizations, or private companies. It is a powerful tool for increasing transparency and accountability, and can be used for a variety of purposes such as allowing citizens to access information about government activities, providing access to public records, or creating a centralized database for a particular industry or sector. The main benefits of an online public accessible register include increased accessibility to information, improved transparency and accountability, and the ability to promote informed decision-making by the general public.

INTRODUCTION

These registers are becoming increasingly popular as a way to increase transparency and accountability, and to provide important information to the general public in a convenient and easily accessible manner. They can be maintained by government agencies, non-profit organizations, or private companies and can include a wide range of information, including public records, official documents, and data related to specific industries or sectors. Online public accessible registers provide a number of benefits, including increased accessibility to information,

improved transparency and accountability, and the ability to promote informed decision-making by the public. By making information easily accessible, online public accessible registers can play a crucial role in promoting greater transparency and accountability in government and in various industries.

LITERATURE REVIEW

The review can include a discussion of the various types of information that are typically included in these registers, the benefits and challenges associated with their use, and the impact that they have had on society.

One benefit of online public accessible registers is increased accessibility to information. By making information easily accessible through the internet, these registers allow the general public to access important information without having to physically visit government agencies or other organizations. This can save time and resources and can promote greater transparency and accountability in government and industry.

METHODOLOGY & EXPERIMENTATION

Data collection: Collect data on online public accessible registers, including information on the types of information that are included in these registers, the benefits and challenges associated with their use, and the impact that they have had on society. This data can be collected from a variety of sources, including government reports, academic articles, and online sources such as news articles and websites.

Data analysis: Analyze the data collected to answer the research question. This may involve statistical analysis, qualitative analysis, or a combination of both.

Interpretation and conclusion: Draw conclusions from the data analysis and interpret the results in the context of the research question. This will help to determine the impact of online public accessible registers on society and to identify any areas for future research.

Write up the results: Finally, write up the results of the study, including a discussion of the findings, a conclusion, and recommendations for future research.

This methodology provides a general framework for conducting research on online public accessible registers. However, the specific methodology used may vary depending on the specific research question and the goals of the study. It is important to choose a methodology that is appropriate for the specific research question and that provides robust and reliable results.

RESULTS & DISCUSSIONS

However, some common themes and findings are likely to emerge from the research. One of the key findings is likely to be the extent to which online public accessible registers have improved access to information for the general public. Research may show that online public accessible registers have made it easier for individuals to find information about government policies and procedures, businesses, and public services. This increased access to information can lead to greater transparency and accountability in government and business practices, and can improve decision-making for consumers and citizens. Another key finding is likely to be the impact of online public accessible registers on privacy and data security. Research may show that online public accessible registers can make personal and sensitive information more vulnerable to cyber attacks and breaches, or to misuse by government or business actors. This highlights the need for appropriate regulations and safeguards to ensure that privacy and data security are protected. A related finding is likely to be the potential for bias and discrimination in the information contained in online public accessible registers. Studies may show that the information in these registers can be inaccurate or outdated, or that it may be biased in favor of certain groups or interests. In discussions, it is important to consider the implications of these findings for society and the workforce.

CONCLUSIONS

It is important to note that online public accessible registers are not a panacea for all transparency and accountability issues. They must be properly maintained and verified in order to ensure that the information included is accurate and reliable. In addition, there are privacy concerns associated with the use of these registers that must be carefully considered and addressed. Overall, online public accessible registers have the potential to play a critical role in promoting transparency and accountability and in providing important information to the public. As technology continues to evolve and as the use of these registers becomes more widespread, it will be important to continue

to study their impact and to ensure that they are used in a manner that is ethical and beneficial to society.

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Deadlock Handling In Operating System

Asst. Prof. Sayma Natekar [1], Niveda Nadar[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Deadlock is one of the most problematic situations in operating system systems and deadlock detection has gone through expansive study. A deadlock is a process which generally occurs when a resource is holding a process and staying for the other process which is being held by another resource. There has to be a way of handling deadlock when they do or certain deals will be permanently blocked from processing into completion. So far various ways have evolved which are used to help, descry and break the deadlock. There are three classical approaches for deadlock handling, they are − deadlock Prevention, deadlock Avoidance, deadlock Detection and removal. This research paper will discuss how deadlock is detected in operating system and how to handle it.

KEYWORDS

Deadlock handling, deadlock Prevention, deadlock Avoidance, deadlock Detection and removal.

INTRODUCTION

To learn further about deadlock in operating systems, we need to understand what's an operating system is. So, an Operating system is nothing but a set of programs that allows the user to pierce and interact with the computer. Now further moving to deadlock, we can say that a deadlock is a situation where a set of processes are blocked because each process is holding a resource and staying for another resource enthralled by some other process. This situation is known as deadlock. deadlock is a veritably pivotal issue in operating systems.
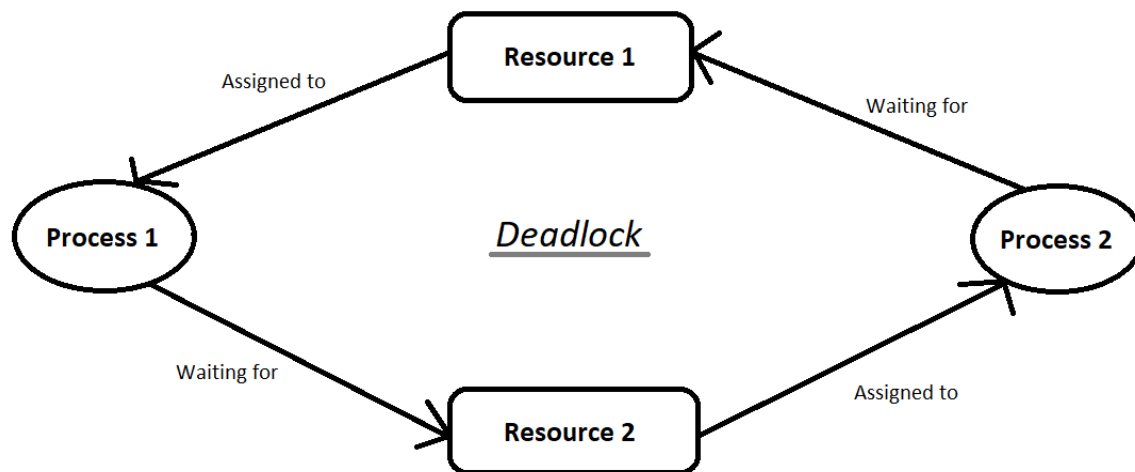
In the above illustration, Process 1 is holding Resource 1 and staying for resource 2 which is acquired by process 2, and process 2 is staying for resource 1. This kind of situation is called deadlock. A deadlock situation in a resource arises only if the following four conditions occurs contemporaneously in a database-

1. **Mutual exclusion:** Only one person at a time can use the resources.
2. **Hold and wait:** A process is currently holding at least one resource and requesting additional resources which are being held by other processes.
3. **No Preemption:** A resource can be released only voluntarily by the process holding it.
4. **Circular wait:** In this process, two more processes wait for resources in circular order.

The above four conditions are known as the Coffman's Condition from their first description in a 1971 article by Edward G. Coffman Jr. To avoid deadlock, the concept of deadlock handling was introduced. Deadlocks are not healthy for a system. In case a system is stuck in a deadlock, the transactions involved in the deadlock are either rolled back or restarted. Deadlock handling is complicated to implement in operating system systems because no one site of the system has accurate knowledge of the current state of the system and because every communication involves a finite and unpredictable delay.

There are four strategies to handle a deadlock, they are as follows:

 • Deadlock Prevention

 • Deadlock Avoidance

 • Deadlock Detection and Recovery

 • Deadlock Ignorance

 Consequently, various ways have been introduced by several computer scientists to remove those deadlocks which will be farther bandied in this paper.

DEADLOCK PREVENTION

Deadlock prevention is a fashion which ensures that the system will no way go under the deadlock state. deadlock can be averted by precluding one of the Coffman's Conditions. They can be averted by-

• **Removing mutual exclusion:** means no process will have exclusive access to a resource. But it's virtually not possible to exclude collective rejection as we cannot force a resource to be used by further than one process at the same time since it'll not be fair enough and some serious problems may arise in the performance.

• **Eliminating hold and wait:** can be done in two ways:

By eliminating wait: The process specifies the coffers it requires in advance so that it doesn't have to stay for allocation after prosecution thresholds.

By eliminating hold: The process has to release all coffers it's presently holding before making a new request.

• The no appropriation condition may also be delicate or insolvable to avoid as a process has to be suitable to have a resource for a certain quantum of time, or the processing outgrowth may be inconsistent or thrashing may do. still, the incapability to apply appropriation may intrude with a precedence algorithm.

• To exclude indirect delay, we assign a precedence to each resource. A process can only request coffers in adding order of precedence.

DEADLOCK AVOIDANCE

Deadlock avoidance is analogous to deadlock prevention which ensures that the deadlock doesn't do in the system. It analyses the transaction and the locks to determine staying or not staying leads to a deadlock. Deals start executing and request data particulars that they need to lock. The lock director checks whether the lock is available. However, the lock manager allocates the data item and the transaction acquires the lock, If it's available. Still, if the item is locked by some other transaction in inharmonious mode, the lock director runs an algorithm to test whether keeping the transaction in a staying state will beget a deadlock or not. Consequently, the algorithm decides whether the transaction can stay or one of the deals should be abandoned. There are two algorithms to avoid deadlock, namely-

- **Wound-wait:** Aged transaction rolls back the youngish transaction and reschedules it. Which means when a transaction demands a resource that's formerly locked by another transaction, the database compares the timestamps of the two deals to stay until the resource is free for prosecution.

- **Wait-die:** Aged transaction delays and the youngish is rolled back and tallied. Which means when an aged transaction requires a resource that has been locked by a youngish transaction, also the youngish transaction is obliged to stop its processing and relinquish the locked resource for the aged transaction own prosecution. The youngish transaction has been renewed with- in a nanosecond detention, but the timestamp remains unchanged. When a youngish transaction wants a resource which is held by an aged transaction, the youngish restatement is forced to stay until the aged transaction releases the resource.

DEADLOCK DETECTION & RECOVERY

This strategy of handling deadlock suggests ways to descry the deadlock in a database and ways to recover the system from the deadlock state.

• **Detection of deadlock:** The detection of deadlock is done periodically to check whether the system is in a deadlock state or not. However, the recovery ways are used to resolve the

deadlock, If it's in a deadlock state. The system invokes a deadlock detection algorithm periodically to look for cycles. Generally, the delay for graph fashion is used. In this system, if the Wait- for- Graph contains a cycle also we can say that the system is in a deadlock state.

• **Recovery from deadlock:** The system can be recovered from the deadlock with the help of the following approaches-

1. Rollback: There are generality two types of rollback, they are-

   • Total rollback In this the entire transaction is abandoned and renewed.

   • Partial rollback It rollbacks only the transaction which is demanded to break the deadlock.

2. Starvation: Starvation happens if the same transaction is always chosen as a victim. Include the number of rollbacks in the cost factor to avoid starvation.

3. Select a victim: Some transaction will have to rollback to break deadlock. elect that transaction as a victim that will dodge minimal cost.

DEADLOCK IGNORANCE

Deadlock ignorance is one of the most extensively used strategies to handle a deadlock in an operating system. In this strategy we simply ignore the deadlock when it occurs. The Ostrich Algorithm is used for deadlock ignorance. The Ostrich Algorithm simply states that they will ignore the deadlock formerly passed and to assume that the deadlock situation no way   happed. This algorithm is veritably effective to exclude deadlock as it occurs veritably infrequently.

CONCLUSION

So, we conclude the research paper by studying various ways of deadlock handling in an operating system. This paper principally concludes that a deadlock is a situation which arises in a participated resource terrain process which indefinitely waits for a resource which is held by some other process which in turn waits on a resource by some other process. In an operating system, deadlock is an unwanted situation that isn't supposed to do in which two or further deals are kept staying for a restatement process to be completed from another resource. In this paper we've learned about the various ways in order to handle a deadlock in an operating system and have suggested a few algorithms to help or avoid them.

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THE FUTURE OF WORK: AI AND AUTOMATION

Asst. Prof. Swapnali Kadge[1], Dipti Gupta[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Artificial Intelligence (AI) and automation are rapidly transforming the way we work and live. This research paper aims to explore the future of work and the impact of AI and automation on the labor market and job opportunities. A literature review is conducted to examine the existing knowledge on the subject, including previous research on the impact of AI/automation on jobs and the labor market, as well as ethical considerations and challenges. The results of the study highlight the potential benefits and negative impacts of AI/automation, and the importance of responsible development and deployment. The study concludes with recommendations for policy and practice, and suggestions for future research to help ensure that AI/automation contribute to a more equitable and sustainable future for all. The findings of this study contribute to our understanding of the complex and rapidly evolving relationship between AI, automation, and the future of work.

KEYWORDS:- Artificial Intelligence (AI), Automation, Future of Work, Labor Market, Jobs, Productivity, Efficiency, Income Inequality, Re-skilling, Job Training.

INTRODUCTION

The advancement of Artificial Intelligence (AI) and automation has the potential to transform the way we live and work. With machines and algorithms increasingly able to perform tasks that were once exclusive to humans, these technological advancements are transforming the labor market and the nature of work itself. While the benefits of AI and automation are undeniable, including increased efficiency and productivity, there are also important ethical and social considerations that must be taken into account.

In this research paper, we will examine the future of work and the impact of AI and automation on the labor market and job opportunities. Through a literature review, we will explore previous research on the subject, including the effects of AI/automation on jobs and the labor market, and ethical considerations and challenges. The results of our study will help us better understand the potential benefits and negative impacts of AI/automation and the importance of responsible development and deployment.

This research will contribute to our understanding of the complex and rapidly evolving relationship between AI, automation, and the future of work. It will also provide insights into the policy and practice implications of these technological advancements and the role of government and other organizations in mitigating the negative impacts and promoting responsible development and deployment of AI/automation. The goal of this research is to inform decision-making and ensure that the future of work with AI and automation is equitable and sustainable for all.

LITERATURE REVIEW

Artificial Intelligence (AI) and automation are transforming the labor market and the way we work. In this literature review, we will examine the existing research on the impact of AI/automation on jobs and the labor market, as well as ethical considerations and challenges.

Previous research has explored the potential benefits and negative impacts of AI/automation on the labor market. On the one hand, AI and automation have the potential to increase productivity, efficiency, and economic growth. For example, some studies have found that AI and automation can reduce the need for manual labor, leading to increased productivity and economic growth (Brynjolfsson & McAfee, 2014). On the other hand, there is also evidence to suggest that AI and automation may contribute to income inequality and job displacement. For example, some studies have found that AI and automation are likely to replace certain jobs and skills, leading to job losses and wage stagnation for certain workers (Autor, 2015).

In addition to the potential impact on the labor market, there are also important ethical and social considerations associated with AI and automation. For example, there are concerns about privacy, security, and the role of machines in decision-making (Liu & Shokri, 2021). There are also questions about the fairness and transparency of AI algorithms and the potential for AI to perpetuate biases and discrimination (O'Neil, 2016).

In conclusion, the literature review highlights the potential benefits and negative impacts of AI and automation on the labor market and job opportunities. It also underscores the importance of responsible development and deployment of AI and automation, as well as the need for further research to help ensure that these technologies contribute to a more equitable and sustainable future forall.

METHODOLOGY:

In order to explore the impact of Artificial Intelligence (AI) and automation on the future of work, we will conduct a literature review of existing research on the subject. The literature review will be based on a comprehensive search of academic databases, including the JSTOR, ProQuest, and Scopus databases, as well as a manual search of relevant journals and books. The search will be conducted using keywords such as "AI and automation," "future of work," "job displacement," "labor market," "productivity," and "income inequality."

The inclusion criteria for the literature review will be based on the relevance and quality of the sources. Relevant sources will be those that directly address the impact of AI and automation on

the future of work and the labor market, as well as ethical and social considerations associated with these technologies. High-quality sources will be peer-reviewed articles and books published in academic journals and books.

Once the relevant sources have been identified, we will conduct a comprehensive analysis of the literature to extract key findings and themes. The analysis will be conducted using thematic analysis, a qualitative research method that involves identifying and analyzing patterns and themes in the data. The themes that emerge from the analysis will be used to formulate a summary of the existing research on the impact of AI and automation on the future of work and the labor market. The results of the literature review will provide a comprehensive overview of the current state of research on the subject and will be used to inform the conclusions and recommendations of the research. The goal of the methodology is to provide a thorough and systematic examination of the impact of AI and automation on the future of work and the labor market, as well as the ethical and social considerations associated with these technologies.

RESULTS:

The literature review of the impact of Artificial Intelligence (AI) and automation on the future of work revealed several key findings.

- **Job Displacement:** AI and automation have the potential to displace certain jobs and skills. Previous research has found that low-skilled and routine tasks are most at risk of being automated, while jobs that require creativity, social skills, and emotional intelligence are less likely to be affected (Autor, 2015). However, it is important to note that the exact extent of job displacement remains uncertain, as the impact of AI and automation will depend on various factors such as technological advancements, government policies, and the availability of alternative employment opportunities.

- **Productivity and Economic Growth:** AI and automation have the potential to increase productivity and economic growth by reducing the need for manual labor and increasing efficiency. For example, some studies have found that AI and automation can improve supply chain management, reduce waste and errors, and increase output and sales (Brynjolfsson & McAfee, 2014).

- **Income Inequality:** There is evidence to suggest that AI and automation may contribute to income inequality, as certain workers and skills may be displaced and face wage stagnation. On the other hand, some studies have found that AI and automation may also create new and higher-paying jobs in areas such as data analysis, programming, and machine learning (Brynjolfsson & McAfee, 2014).

- **Ethical and Social Considerations:** The literature review also highlighted the importance of ethical and social considerations associated with AI and automation. For example, there are concerns about privacy, security, and the role of machines in decision-making (Liu & Shokri, 2021). There are also questions about the fairness and transparency of AI algorithms and the potential for AI to perpetuate biases and discrimination (O'Neil, 2016).

In conclusion, the literature review revealed that AI and automation have the potential to transform the future of work and the labor market. While there is evidence to suggest that these technologies may lead to job displacement and income inequality, there is also potential for increased productivity, efficiency, and economic growth. The literature also highlights the importance of responsible development and deployment of AI and automation, as well as the need for further research to ensure that these technologies contribute to a more equitable and sustainable future for all.

DISCUSSION:

The results of the literature review on the impact of Artificial Intelligence (AI) automation on the future of work suggest that these technologies have the potential to transform the labor market in several ways. In this section, we will discuss the implications of these findings and explore the challenges and opportunities associated with AI and automation.

- **Job Displacement:** The findings on job displacement highlight the need for policies and programs that help workers adapt to the changing labor market. For example, governments can provide training and retraining programs to help workers acquire new skills and

transition to new jobs. Companies can also play a role by investing in reskilling and upskilling programs for their employees.

- **Productivity and Economic Growth:** The results on productivity and economic growth suggest that AI and automation have the potential to drive economic growth and increase efficiency. However, there is a need for policies that ensure that the benefits of these technologies are shared widely and not just accrue to a small group of individuals or corporations. For example, governments can tax the profits of companies that benefit from AI and automation and use the revenue to fund public goods such as education and infrastructure.

- **Income Inequality:** The findings on income inequality suggest that AI and automation may exacerbate existing inequalities in the labor market. To address this, governments can implement policies that ensure that workers are paid fairly and have access to benefits such as healthcare and retirement savings. Companies can also play a role by investing in fair and equitable compensation and benefits programs for their employees.

- **Ethical and Social Considerations:** The results on ethical and social considerations highlight the need for responsible development and deployment of AI and automation. There is a need for policies and regulations that ensure that these technologies are used ethically and do not perpetuate biases and discrimination. There is also a need for ongoing research to better understand the impact of AI and automation on society and to ensure that these technologies are developed and deployed in a way that benefits all members of society.

In conclusion, the findings of the literature review on the impact of AI and automation on the future of work suggest that these technologies have the potential to transform the labor market in several ways. However, there are also challenges and opportunities associated with AI and automation, and it is important for policymakers, companies, and individuals to work together to ensure that these technologies contribute to a more equitable and sustainable future for all.

CONCLUSION

The Future of Work: AI and Automation is a topic of great importance and has been the subject of much research and analysis in recent years. The literature review has shown that AI and automation

have the potential to transform the labor market in several ways, including job displacement, increased productivity and economic growth, exacerbation of income inequality, and ethical and social considerations.

While the findings suggest that AI and automation have the potential to bring about significant benefits, there are also challenges and opportunities associated with these technologies. To ensure that the benefits of AI and automation are shared widely and that the technologies are used ethically and responsibly, policymakers, companies, and individuals must work together.

In conclusion, the future of work will be shaped by AI and automation, and it is important for stakeholders to understand the implications of these technologies and to take action to ensure that the future of work is equitable, sustainable, and benefits all members of society. Further research and analysis is needed to better understand the impact of AI and automation on the labor market, and to develop policies and strategies that support the responsible development and deployment of these technologies.

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Learning Management Systems: Issues and Solutions from a Student Perspective in Higher Education

ARUN R. DHANG

B.Sc. M.C.A.

Ph.D. Research Scholar,

Email-ID: dhang.arun@gmail.com

SHRI JAGDISHPRASAD JHABARMAL TIBREWALA UNIVERSITY, RAJASTAN

Abstract:

The National Education Policy (NEP) 2020 places a major focus on the use of technology, particularly Learning Management Systems, to increase the standard of education in India. Access to digital content, personalized learning, improved collaboration, improved evaluation, and increased productivity are just a few benefits that LMS provides through the integration of LMS, NEP 2020 aims to improve the quality and accessibility of education in India. A learning management system (LMS) is a piece of software used to administer, document, track, report, and provide training sessions, educational courses, or learning and development programmes. LMSs are frequently utilized in higher education to deliver online courses and improve traditional classroom-based instruction. The need for a virtual university has arisen here. Which results, in future we will see a lot of good results and changes in the field of education

Keywords – LMS, MOOCS, VPU, NDU, NEP..

Introduction

The education system is supported by a technology revolution during a pandemic. Different educational approaches evolve in response to societal demands and changes in human living. Human life depends greatly on education. The Indian government imposes a lockdown during the COVID-19 Pandemic, which has an impact on face-to-face instruction and learning. Several approaches were used in education, particularly higher education, during the COVID-19 epidemic, including the self-learning method (MOOCs, LMS, and Live Sessions). Technology is well known to the pupils. Online education enables students to study any subject at any time and from any location. The student can access high-quality content at a low price. This study is being conducted to evaluate the effects of the LMS implementation on students in higher education.

Need LMS Tool For Education:

A learning management system (LMS) is a piece of software used to administer, document, track, report, and provide training sessions, educational courses, or learning and development programmes. LMSs are frequently utilized in higher education to deliver online courses and improve traditional classroom-based instruction. An LMS with important attributes for higher education include:

1. delivery and management of course content
2. management of student enrolment
3. Evaluation and evaluation
4. Tools for communication and collaboration

5. reporting and analytics
6. cellular compatibility
7. Adaptation to various educational platforms and tools

LMSs assist teachers in managing and delivering course materials, evaluating pupil performance, and monitoring pupil progress. Students can also use it to access course materials, take part in online conversations, and get constructive criticism on their assignments. Blackboard, Canvas, and Moodle are a few of the well-liked LMSs for higher education.

An LMS is a centralized platform that offers access to course materials, assignments, and assessments from the viewpoint of the student. Additionally, it might make interaction and cooperation between students and teachers easier. The main benefits of an LMS for students include the ones listed below:

1. Convenient access: Students may easily stay on top of their studies because they can access course content and resources from any device with internet connectivity.
2. Organization: An LMS makes it easier for students to keep track of due dates, assignments, and grades all in one location.
3. Learning that is interactive: A lot of LMSs have capabilities for online conversations, group projects, and other interactive activities that improve learning.
4. Feedback: Through the LMS, instructors may give fast and valuable feedback to students, enabling them to monitor their development and pinpoint areas that need work.

What is Current Need of Research?

There will be need study of Learning management system in Higher Education also measure the impact of LMS in higher education with student perspectives. Also need to identify problem faced by the student in Online Education. Design and development of Innovative LMS for Higher Education.

[09]During the Education ministers session of 'Voice of Global South' summit held recently on Jan. 16, 2023, Indian Union minister of Education talks about establishing a National Digital University, which will transform access to higher education drastically reducing all direct and opportunity costs. The UGC Chairman recently revealed the framework of India's first-ever National Digital University(NDU) as envisioned under the National Education Policy, 2020.

The Central Government in its Budget 2022-23 announced the establishment of a digital university that provides access to students for world-class quality universal education with personalized learning experiences at their doorsteps.

Structure of NDU:

The institution will function under a hub-and-spoke model, which is where one product is delivered to various stakeholders from a central location. The digital content for various courses will be hosted on the Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) platform. The IT and administrative services will be provided through the government's Samarth portal.

Facilities offered:

The university will offer exclusively online courses from its partner institutes, which could be both private and public universities, so far as they follow the NDU's model. The students can

opt for certificate, diploma, or degree courses. NDU will allow students to pursue multiple courses at a time from the various partner institutes of NDU. Students will be able to register for programmes of individual universities through this Digital University.

NDU aims to give students the liberty to design their own courses. Students will have the option of earning credits from multiple institutions and will have multiple exit points throughout the course. Courses will hold a certain number of credits, and students will be eligible for a degree from a particular institute when they have accumulated 50% of the credits of a programme from the institute concerned. In case the student earns credits from multiple institutions and crosses the credit threshold, the degree awarded will be by NDU.

Looking at all these processes and reviewing all the factors, one thing is noticed that the need for one stop solution has arisen today.

Virtual Private University

An online educational institution that provides academic programmes, courses, and degrees over the internet is known as a Virtual Private University (VPU). It gives students the freedom to study whenever, whenever, and at their own pace. VPUs are intended to be accessible, practical, and cost-effective alternatives to conventional on-campus institutions.

CONCLUSION

The above research concludes that technological development is unavoidable and only persistent thing in universe. Aim of this research is not only effect on finding the effect of LMS system on students but also focused on building cost effective and user friendly LMS system. In upcoming future government give the business institution to start own Virtual Private University. Which help to improve quality education with more cost effective.

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Review On Content Extraction And Analysis From Ancient Tamil Palm Leaf Manuscripts

Steola Mascarenhas[1], Dr.Siva Sathya[2]

[1]Department of Computer Science, Pondicherry University, Pondicherry, India.
Steolam2@gmail.com

[2] Head of the Department, Department of Computer Science, Pondicherry University, Pondicherry, India.
 ssivasathya@gmail.com

Abstract :
In this digital era, leading researchers are ongoing in optical character recognition to make every content machine-readable and interpretable content. There more improvised methods are devised to recognize the handwritten content in most languages all over the world. But, still, there are more challenging areas in character recognition that are not explored in detail. One such area is the palm leaf manuscript. These manuscripts are knowledge repositories of ancient culture and practices, and we are urged to make them sustainable from deterioration. This survey paper elucidates the history of processes and challenges in this particular research on various languages palm manuscripts and discusses the proposal for resolving the issues in the same research.

Index Terms: OCR, manuscripts, pattern recognition, classification, and repository

INTRODUCTION:

Human beings record their knowledge and experiences in any form in the available material of their own age. They pass the knowledge about cultural practices and lifestyles through different forms like inscriptions in stones of temples, paintings in palace, and paintings in caves, by building artistic temples through the statues they portrait their lifestyle practices of that century and most important recording method of in ancient days even before when the paper was not invented was the manuscripts, there are many kinds of manuscripts are there and they are entitled as Gandi(rectangluar palm leaf scripts of equal in width and thickness), Kachchap (both side painted colorful wooden panels), Mushti, Samput Phalak(typical like palm leaf manuscripts), Cheda Pati, Scroll and Wooden Boards. Throughout south Asia the common writing material used for recording ancient scriptures was palm leaf manuscripts[1]. The most common palm leaf used in talipot because of its smooth, delicate and supple nature which is familiar in south Asian countries. These palm scripts contain a wide account of different information on medicine , philosophy , combat skills, etc… And they are written in different periods so writing methods to changes based on the periods[2]. And it's the old writing medium, so illumination, stains, smudges, and even eroded due to a physical word make it very hard to decode manually. As centuries pass we adapt to new technology so to overcome the preservation of palm leaf content for the centuries to come we seek the help of our machines to learn the images and extract the characters from the palm leaf so we

can preserve the information in digitalized format and future, we can interpret the content in the palm leaf using Natural language processing[3]. This survey paper elucidates the overview of general approaches in the character recognition system in section 2. And Section 3: we confer the existing techniques in recognizing the character in palm leaf manuscripts. Section4: we tabulate the metrics and give some proposal ideas for future work.

OVERVIEW OF HANDWRITTEN CHARACTER RECOGNITION SYSTEM:

A handwritten character recognition system is the most challenging task in OCR techniques. Here we have 2 types' online characters and offline characters.
- Online character can be identified by keeping track of the strokes of the stylus or input devices[4].
- Offline character are even more challenging because everyone have their own writing strokes so character recognition is even more complex when we have pooled character strokes for same character. So to make it more reliable and accurate the following are general procedure we adapt in character recognition systems[4][5].

a.   **Image Acquisition:** It's the initial step of character recognition system[6].
b.   **Digitalization** : the character in the scripts today we have lots of digitalisation hardware and software application in smart phones are available to make the images in more easy[7].
c.   Binarization : Convert the image foreground and background unique colour mostly black pixel (0) and white pixel (1) by finding the maximum and minimum value intensity of the image.[8]. Its classified as two types
   1. Global thresholding
   2. Local thresholding
d. **Compression**: compress the image to reduce the storage space and computation cycles.
e.   **Pre-processing techniques:** Every image we acquire will not be of that much clarity to the machine to recognise the character there are various artefact's and noises incorporated even during scanning the offline character for recognition process. so we need a processing techniques to make the image more enhanced to recognize the character[9][10][11][12].

1. RGB to Gray-Scale Conversion: we convert color images to gray scale value for representing the image in single matrix value. And It's easy to detect to gray scale text than the color text.[13]
2. Skew Correction: during image capturing the images don't fall in the proper horizontal line so we need to adjust some degree of rotation of characters in some places where it's necessary.[14]
3. Noise Reduction :   The image may contain different noises (Gaussian noise, Impulse noise, Poisson noise, speckle noise) to remove are reduce this noise from the image we use statistical and adaptive filters [15].
4. **Skeletonization:** Make the image thinner to identify the character more accurately we reduce the binary value regions of the character to make it more crisper character[12].

5. **Segmentation:** segmentation is process of portioning the image into individual pieces of character, words, sentences, lines. It's mandatory in character segmentation to segment the image to recognize the characters. So while segmenting we can remove the artifacts and touching in the imaged character for better recognition[16].

  Its basically done as following:

i. **Region based:** region based are done in noisy images to segment the area where character pixels are present.

ii. **Edge based :** its utilized for boundary fitting and it has 3 steps : Filtering and enhancement , Detection of edge points and edge localization [12].

6. **Threshold :** It's a power technique to convert the multi-level image into binary image and there are two methods thresholding they are local(uneven background) and global (even background image).[12].

7. **Feature based clustering:** grouping the images of similar features in one category so dissimilar character can be grouped to another category. Methods used are K-Means clustering, fuzzy clusters, fuzzy C means clustering,

  a. In character recognition system segmentation are also done in the form of line segmentation and character segmentation (hover method) [17].

8. **Normalization –** Normalization is done to change the pixel intensity value so it enhances the image,[18] normalization is sometimes called contrast stretching or histogram stretching, or the aspect ratio of the image can be changed dynamical values to recover the smooth image[11]. The methods of normalization is explained with algorithm in [19][20] .

9.   Feature extraction and classification : Its use to derive the characters to be extracted in machine readable format classification is done to optimize the output of the whole recognition system   process   by   classification   techniques.(statistical   ,ANN,   CNN,   hybrid approaches).[21][22][23][24] .

CHALLENGES IN RECOGNISING THE CHARACTERS IN TAMIL PALM LEAF MANUSCRIPTS:

Tamil palm leaf manuscripts (Fig.1) is made of dried palm leaves in long rectangular shape and using sharp stylus the characters are carved then Ink is applied to make the engraved characters in dark colour with more visibility on the yellow brown colour palm scripts.

1. **Artefacts:** The challenges in working in these palm leaf manuscripts is the degradation process due to ages on the hardcopy of it. So, due to that many artefacts are noticed along with the noises in recognizing the characters. This makes the pre-processing task more complicated and results from binarizing the images are not achieving the high level of accuracy.

2. **Touching's:** The characters are in the manuscripts suffer mostly due to the connectedness of the characters with one on the another. Some characters are overlapped with   characters the above lines also(fig 2) .

3. **Different character sizes:** The characters in the manuscripts are hand engraved so they differ in their sizes and structure. Hence boundary allocation for every single character segmentation in a manuscript can't be neither equally segmented nor unique global value can be assigned for segmenting the letters for the entire palm script.

4. **Broken / faded characters: The** characters since made visible when a ink is applied on the script some places the ink get smudged or not applied properly on the surface of the palm scripts the characters look distorted so, detection of such characters is also becomes complicated.

5. **Wrong character slicing**: The Tamil character structure is different from other language character structure, some character like in fig (3) are sliced wrongly.

6**. synthetic characters**[25]: sometimes synthetic character can be created from the original data image to make better recognition of characters. So creating such character also need proper human inspection, if wrong prediction and creating a wrong synthetic character can change the meaning of the content in the manuscript.

7. **strokes**[23] **:** the strokes of the Tamil characters goes upward in some characters like (k; /aP)and down wards in some characters like (w X M) . In such character recognition the strokes differ person to person just verify the strokes of same character in different handwritten format in fig

(4).
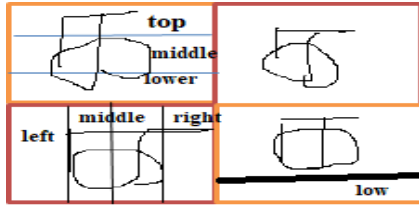
8**. crossed lines** [26] : The lines in the palm leaf manuscripts over lapping each other .

DATASETS BASED ON PALM LEAF MANUSCRIPTS :

AMADI_LontarSet[27]**:** It's the first handwritten Balinese palm leaf dataset this dataset comprised of three components 1. binarized images ground truth dataset, 2. word annotated images dataset, and 3. isolated character annotated images dataset.

sleukhRith set [28]: It's a collection of digitized collection of annotated data from 657 pages of Khmer palm leaf manuscripts. There are three annotated data in the set 1. Glyphs / characters, 2. Words and 3. Lines and they are stored in xml file format.

COMPARISON OF HANDWRITTEN CHARACTER RECOGNITION IN HISTORICAL METHODS ON DIFFERENT PARAMETERS BASED ON THE METHOD

Issue	Authors	Year	Techniques	Parameters		
				DR	RA	FM
Line segmentation	Spurgen Ratheash et.al[29].	2019	Adaptive partial projection	39.57%	54.38%	45.71%
			A*path planning	82.02%	86.62%	84.14%
	Surinta et.al[30].	2008	Horizontal Projection profile analysis	82.5%	45.18	-

Character segmentation	Mohammed sathik et.al[17].	2021	HorVer character segmentation algorithm	92.43	91	91.39
	Rapeeporn Chamchonget.al [31].	2011	Theo Pavlidis's algorithm	46	43.2	42.21
			Zhang-Suen thinning algorithm			
				Prediction	**Mis-prediction**	**Prediction Time**
Classification Methods	Paramasivam Muthan et.al [32].		KNN	77.21	22.79	1.04
			FFNN	89.21	10.79	0.95
			SVM	85.46	14.55	1.06
	Ma et.al [33].		Hausdroff image comparison	66.78	34.54	-

DR-Detection Rate,   RA- Recognition Accuracy,   FM- F-measure
Table 1 : Comparison on historical methods used for character recognition.

The table above explains the different techniques used in the previous studies on character recognition and each techniques employed for different issues in the above said problem have different benchmark parameters to evaluate their performance on the existing methods.

COMPARATIVE EVALUATION OF EXISTING CNN ARCHITECTURES

LeNet : Learning Neural Network its made of 3 or 5 layers of learnable parameters, it has some sets convolutional network with combination of average pooling and after that we have fully connected layer and finally softmax classifier for classification of dataset[34].

ResNet: Residual Network, Its designed to overcome the issues of vanishing and exploding gradient[26][35]. This network uses skip connection technique which is used to connect activations of the layer by skipping some layer in between. Thus the ResNets are made of stacked residual blocks together.

Alex Net : Alex Net consist of eight layers. Among that five layers are convolutional layers and three are fully connected layers[34]. And it has some additional features like
 a. ReLU Nonlinearity, b. Multiple GPUs, c. Overlapping Pooling. And to overcome overfitting models it uses 2 methods they are as follows:
        a. Data Augmentation
        b. Dropout

DenseNet: It's a densely connected-convolutional network, It's similar to the ResNet but this network takes the output of the previous layer as the input of the future layer. And its designed for improving the accuracy and vanishing gradient in higher level neural networks[36].

Thimu Net: Its designed for identifying the cursive handwritten tamil characters. It consist of six layers, convolution network, max pooling layer and fully connected layer[10].

Network	Precision	Recall	Sensitivity	Specificity	F-measure
LeNet	63	65	65	79	63.87
ResNet	91	79	79	99	85.01
AlexNet	84	47	47	93	57.45
DenseNet	94	85	86	99	90.14
ThimuNet	92	89	89	99	90.51

Table 2: Comparative Evaluation of Existing system

From the above comparison table we got some insights about various CNN architectural methods in character recognition. Overall Thimu Netis the best performer in all the parameters, and DenseNet   also showing an evident performance. From this it proves the validity of the CNN architecture is more applicable for this kind of study.

CONCLUSION/SUGGESTION:

A detailed study on analysing the character recognition techniques, we understand that the construction of letters in different languages have unique pattern. So, every language needs some techniques that are specialized recognition techniques for its own. So there is no common technique character recognition. But ostu's thresholding method [37]. It is the most predominately used technique for binarizing the characters in the image which gives more efficient results in most of the palm leaf datasets. And Backpropagation infused CNN feature extraction method also shows more evident recognition results character recognition. When we compare foreign language and Indian languages foreign languages characters in manuscripts are less curvy in nature and segmentation is comparatively easy but common problem prevail there is touching's due to improper preservation technique. But most of Indian languages have curves and touching's so we need to explore some geometrical pattern recognition to in resolving the above said nature in the manuscripts

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Data Security In Cloud Computing

Asst. Prof. Rajashree Salokhe[1] , Ruchika Tak[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

This paper discussed the security of data in cloud computing. It is a study of data in the cloud and facet related about security. .Cloud Computing is continuously developing and showing consistent growth in the fiel d of computing .It is in more demand due to different services available such as cloud storage, cloud hosting, and cloud servers etc. for different types of application as well as in education.

On the other side there are lots of matter interconnected to the cloud data security. Security is still critical challenge in the cloud computing. These challenges include user's secret data loss, data leakage and disclosing of the personal data privacy.

The paper will also give an perception on data security feature for Data-in- Transit and Data-at-Rest. The study is established on all the levels of SaaS (Software as a Service), PaaS (Platform as a Service) and laaS (Infrastructure as a Service).

 Keywords- Data security, Privacy protection, Cloud Computing, Data-in-transit, Data-in-use.

INTRODUCTION

Computing security is one that is more important to be addressed nowadays. Several definition of cloud computing are available ,one of the easiest is, "Cloud computing is the distribution of different services through the Internet".Cloud computing is the on-demand accessibility of computer system source, mainly data storage and computing power, without direct active management by the user.

Cloud computing is believed to have been invented by **J. C. R. Licklider** in the 1960s with his work on ARPANET to connect people and data from anywhere at any time. American computer scientist **J.C.R. Licklider is also called as the father of the cloud computing technology.**

A main concern in adaptation of cloud for data is security . It is very important for the cloud service to ensure the data integrity and protection. For this purpose, several service providers are using different policies and mechanism that depend upon the nature, type and size of data. One of the advantages of Cloud Computing is that data can be shared among various organizations. However, this advantage itself poses a risk to data. In order to avoid potential risk to the data, it is necessary to protect data depository.

Data security is a critical aspect of cloud computing and involves the protection of data from unauthorized access, use, disclosure, disruption, modification, or destruction. In the cloud, data is stored on remote servers and accessed over the internet, which increases the risk of security breaches.

LITERATURE REVIEW

A literature review of data security in cloud computing is a comprehensive examination of the existing research and discussions surrounding the security of data in cloud computing environments. Cloud computing has rapidly become a popular computing model for organizations looking to increase their IT capabilities and reduce costs, but security has remained a primary concern for many organizations. The following is a summary of some of the key findings from the literature review of data security in cloud computing:

1. **Encryption:** Encryption is a commonly used technique for protecting data in the cloud. Encryption can be applied at rest, in transit, or both, depending on the specific security requirements of an organization.

2. **Access Control:** Access control is a crucial aspect of data security in the cloud. This involves the implementation of authentication mechanisms and authorization policies to ensure that only authorized users have access to data.

3. **Data backup and recovery:** Data backup and recovery are important considerations in cloud computing as they help to ensure that data is not lost in the event of a disaster or system failure.

4. **Threats to data security in the cloud:** There are many potential threats to data security in cloud computing environments, including hacking, malware, and insider threats. Research has shown that these threats are becoming more sophisticated and persistent, requiring organizations to be proactive in implementing effective security measures.

5. **Compliance with regulations:** Many organizations are required to comply with various regulations, such as HIPAA or PCI-DSS, when storing and processing data in the cloud. Literature has emphasized the importance of understanding the regulatory requirements and ensuring that security measures are in place to meet those requirements.

6. **Cloud Service Provider (CSP) security measures:** The security of data in the cloud is largely dependent on the security measures implemented by the cloud service provider. Literature has emphasized the importance of carefully evaluating the security measures of a CSP before choosing to use their services.

7. **Security management:** Effective security management is crucial to maintaining data security in cloud computing environments. This includes the implementation of security policies, regular security assessments, and ongoing monitoring and management of security systems.

These are some of the key findings from the literature review of data security in cloud computing. It is clear that data security is a critical consideration for organizations looking to use cloud computing, and that effective security measures must be implemented to ensure the protection of sensitive information.

METHODOLOGY

There are several methodologies that organizations can use to ensure the security of data in cloud computing:

1. **Encryption:** Encrypting data before it is uploaded to the cloud can help protect it from unauthorized access. This can include encryption of data at rest and in transit.

2. **Access control:** Organizations can use access control mechanisms to restrict who has access to sensitive data in the cloud. This can include user authentication, role-based access, and network segmentation.

3. **Virtual private networks (VPNs):** VPNs can be used to create a secure connection between an organization's network and the cloud, helping to protect data in transit.

4. **Multifactor authentication:** Multifactor authentication can add an extra layer of security to the login process, requiring users to provide not just a password but also something they have, such as a code sent to a mobile device.

5. **Data backup and disaster recovery:** Regular data backups and disaster recovery plans can help ensure that data can be restored in the event of a security breach or other disaster.

6. **Security monitoring and management:** Ongoing security monitoring and management can help detect and respond to security threats in a timely manner.

7. **Compliance:** Organizations must comply with various data protection regulations and standards, such as the General Data Protection Regulation (GDPR) and the Payment Card Industry Data Security Standard (PCI DSS).

It is important to note that no single solution can provide complete protection for data in the cloud. Organizations should adopt a comprehensive and multi-layered approach to security in order to best protect their data

CONCLUSION

The conclusion of data security in cloud computing can be summarized as follows:

Cloud computing provides many benefits, such as scalability, accessibility, and cost savings. However, it also raises security concerns providers due to the fact that sensitive data is stored and processed on remote servers that are managed by third-party.It is important for organizations to carefully assess the security risks associated with cloud computing and to choose a cloud provider that has strong security measures in place.

Encryption is a key tool for protecting data in the cloud. This can include encryption of data at rest, encryption of data in transit, and encryption of backups.Access controls and user authentication are also crucial for ensuring the security of data in the cloud. This can include using multi-factor authentication and limiting access to sensitive data to only those who need it.Regular monitoring and auditing of cloud systems can help organizations detect and respond to security incidents in a timely manner.It is also important for organizations to have a comprehensive disaster recovery plan in place to ensure that their data is protected in the event of a security breach or other disaster.

Overall, the conclusion of data security in cloud computing is that while it poses some unique challenges, there are also a variety of strategies and tools that organizations can use to mitigate the risks and ensure the security of their data in the cloud.

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- NIST Cloud Computing Synopsis and Recommendations (Special Publication 800-146) - This publication from the National Institute of Standards and Technology (NIST) provides an overview of cloud computing and includes recommendations for securing data in the cloud.
- ISO/IEC 27001:2013 - This is an international standard for information security management that provides a systematic approach for managing and protecting sensitive information in the cloud.

- Cloud Security Alliance (CSA) - The CSA is a not-for-profit organization that promotes the use of best practices for securing cloud computing. The CSA provides a range of resources, including the Cloud Security Alliance Security, Trust & Assurance Registry (STAR), which provides a framework for evaluating the security of cloud computing providers.

- The Cloud Security Alliance Cloud Controls Matrix (CCM) - This is a security framework that provides a comprehensive set of security controls for cloud computing. The CCM is designed to help organizations evaluate the security of cloud computing providers and assess the security of their own cloud deployments.

- Gartner - Gartner is a research and advisory firm that provides a range of reports and services on cloud computing, including security. Gartner provides research and analysis on a variety of cloud computing topics, including security, to help organizations make informed decisions about their cloud deployments.

- Cloud Security Alliance Guidance for Critical Areas of Focus in Cloud Computing V3.0 - This publication provides guidance on the critical areas of focus in cloud computing, including data security, governance, risk management, and compliance.

- OWASP Top 10 Project - The Open Web Application Security Project (OWASP) is a non-profit organization that provides a range of resources on application security, including the OWASP Top 10 Project. The OWASP Top 10 provides a list of the top 10 most critical web application security risks, including risks specific to cloud computing.

Interactive Media Mobile Services

Asst. Prof. Swapnali Kadge[1] , Atharv Sanjay Mandhare[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Mobile multimedia applications involve audio, data, speech, image, video processing and distribution of over mobile platform. However, compressed media packets are vulnerable to channel errors, thus making it difficult to sustain good perceived video quality performance within limited resources. In this research work, the weight length and impact of different video packets are analyzed. In this paper we examined the QoS parameters of multimedia streaming systems over mobile networks. This study also investigates what barriers there is for mobile multimedia services. The identified barriers are analyzed using the Innovation Diffusion Theory (Rogers, 1995). Even if complexity issues could be identified regarding the configuration of the mobile devices, they were not critical. The simulation results carried out with compatible multiple media streams of different priority levels and Network Abstraction Layer.

Keywords:

Audio, communications, data, multimedia, network, quality enhancement, speech, video, Adoption.

INTRODUCTION:

The fear is that network level architecture and the air interface do not have sufficient capacity and flexibility to deliver real-time multimedia services at an acceptable quality of service level. UMTS-networks as well as the upcoming standards for WIMAX and HSDPA enables a mobile Internet where the combination of mobile functionality, Internet accessibility and multimedia capabilities provides the necessary means to provide mobile multimedia services (Srivastava et al., 2006). Examples of such services are downloads of music, video and text as well as multimedia messages,

individualized infotainment, mobile office, shopping and banking services (West lund, 2006). These factors affect the performance of these applications. Media encoding algorithm supports error-resilient features such as data partitioning, intra update, slice interleaving for robustness of media stream over error prone channels. The study conducted in this paper aims at presenting a profile of young Swedes use patterns of mobile services as well as investigating possible added value and benefits with mobile multimedia services. Hence, Automatic Re-transmission on Request is not suitable for delay sensitive video applications such as live football match playout and car racing videos. Channel coding such as Forward Error Correction maybe employed in video communication system to enhance the reliability of transmitted video streams over error prone channel.

SYSTEM DESIGN:

The system design consists of source coding, transmission and receiving chains. The source coding includes capturing of scene using video camera, filtering and encoding process. The source encoding involves removal of redundancies using algorithm. The transmission section involves channel coding and the receiving. The encoding block performs media compression function by exploiting redundancies in video sequence and application of various algorithms to enhance robustness of the media streams. The transmitted media streams are processed at the receiver. The reconstructed media stream is processed and displayed on the receiving device.The proliferation of smartphones is associated with the development of multimedia applications. Mobile multimedia applications involve audio, data, speech, image, video processing and distribution of over mobile platform.

THEORETICAL BACKGROUND:

In this section we present the Innovation Diffusion Theory by Rogers (1995) and specifically present research related to adoption of mobile services.

- **The Innovation Diffusion Theory:**The relative advantage regards the added values compared to existing artifacts, in value for the money or other advantages. The innovation decision process consists of five stages, 1) knowledge, 2) persuasion, 3) decision, 4) implementation and 5) confirmation. Experiences of existing similar artifacts

can reduce complexity. The extent to which the artifact can be tested and tried out is referred to as trialability and influences the acceptance of the new artifact. The less complexity will havea more rapid adoption rate compared to other innovations.

- **Adoption of Mobile Services:**The last generations of telecommunication, such as UMTS, has provided the users with the possibility to always be connected to a mobile Internet. This may cause a change in the customer population, meaning that the early adopter group may not be the same for both technologies. Mobile Internet is most appropriate for customers. s that users may lack motivation to adopt mobile services if not these services creates opportunities where mobility matters. Furthermore, Kasinen states that value may be one of the key features of a service.

- **Mobile Multimedia Services:**The boundaries between these use cases are vague, and will become more so as new applications and services are introduced. Opportunities with mobile multimedia for service providers and mobile operators.

1. Marketing and product awareness, through fun interactive games and downloads.

2. A channel to market as part of an enterprise's multimedia call centre strategy.

3. A channel to market for the media industry – building on the success of ringtones to include audio-track streaming and download, video clip download, pop group trivia and "mobile merchandise", sports highlights, and cartoons.

4. Vertically integrated devices and applications are camera, phones, etc.

- **Young Swedish mobile users:** Although there are more similarities than differences regarding the mobile communication. Approximately 94% of the Swedish households can access UMTS-networks, making Sweden the best covered country in Europe (PTS, 2006). Teenagers seem to have formed an own social reality through mobile devices and the Internet. The mobile phone is an important device handling their social contacts enabling them to be accessible 24-7. young people are showing again and again that they are willing to experiment with new services and that they define new uses for mobile devices and services.

EXPERIMENTAL SYSTEM CONFIGURATION:

Common Intermediate Format. Each test media sequence has a total number of 900 frames. The received media streams are processed using H.264/AVC reference software. The channel performance is carried out with presimulated error patterns composed of traces of different Signal-to-Noise Ratio for different modulation schemes. The experimental process to measure efficiency of the proposed technique is discussed in this section. The experimental system configuration and simulation are performed to evaluate the proposed technique. The overall media quality performance is obtained by averaging the PSNR values throughout the video sequence. Higher PSNR values indicate better quality. Although, PSNR is not the most reliable metric of video quality assessment, it is employed. Peak Signal-to-Noise Ratio (PSNR) measures video quality by correlating the maximum possible value.

RESULTS:

The tested media sequences include standard Football, and Akiyo test sequences. In the experiment, pre-encoded media streams are transmitted to the mobile terminal through the wireless simulator. The quality performance of the proposed technique was tested with two standard media sequences in Common Intermediate Format. Young users represent an early adopter type of group concerning mobile services (Westlund, 2003; Ericsson, 2004) that can serve as a proxy for the majority of users (Rogers, 1995), when examining technology adoption. Our selection of users, even though it is somewhat limited regarding background and gender, provides an interesting picture of early adopters use patterns of mobile services. According to Karja uoto (2006) it is important to investigate the user acceptance of mobile services. One way to mitigate the cost issues was according to our respondents the incorporation of a flat rate solution. This would make it easier for the users to know exactly what their monthly cost would be for mobile multimedia services. A closer cooperation between service providers, phone manufacturers and operators can for example lead to preconfigured phones that can handle advanced mobile multimedia services.

CONCLUSION:

The advance technique systematically adapt the NALU of the media packets based on the sensitivity of the media content. The contents with high sensitivity to channel errors are packetized uniquely compared to the media packets of low sensitivity to channel errors. This indicates that mobile multimedia services may be a feasible strategy for service providers and mobile operators to reach a younger audience. For further research it would be interesting to follow up the issue about the lack of knowledge of mobile services that was identified in the focus group. If the problem concerning lack of knowledge exists among young users, it seems reasonable that this problem also exists among other target groups. Our results show that there was a limited added value identified by our target group. The added value concerning the ability to access the services anywhere anytime is generic for all kind of mobile services and not specifically multimedia services. . The proposed advance technique saves the limited wireless network resources through intelligent adaptation of the NALU based on media stream error sensitivity. Test results recorded improvement in the overall received media quality performance compared to the conventional approach.

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Recycling In Green IT

Asst. Prof. Sayma Nateka[1], Aryan Dilip Kadke[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Green computing is the study and practice of using computing resources efficiently and eco-friendly. The goals are that is reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote recyclability or biodegradability of defunct products and factory waste. In recent years, companies in the computer industry have come to realize that going green is in their best interest, both in terms of public relations and reduced costs. This paper presents at several green initiatives currently under way in the computer industry, as well as issues that have been raised regarding these initiatives and presents a study about the green computing and e waste recycling process. Ultimately green computing focuses on ways in reducing overall environmental impact, its main purpose is to find and promote new ways of reducing pollution, discovering alternative technologies, and creating more recyclable products.

INTRODUCTION

Green computing is the study and practice of using computing resources efficiently. The goals are reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote recyclability or biodegradability of defunct products and factory waste. In this era of information and communication technology, the use of electronics and computational resources has grown exponentially. Excessive use of electronics EQUIPMENTS has given rise to a number of adversaries such as high energy 418 RANJITA Panda consumption, global warming,

accumulation of e-wastes, environmental pollution etc. Faced with the sever realities of global warming and rising energy costs, government agencies and private firms worldwide have started examining ways to protect the environment. To address these issues, there is a growing global movement to implement more environmental friendly computing.

ADVANTAGES AND DISADVANTAGES

- **Green Computing Advantages: -** Energy saving - Environmentally Friendly - Cost-effective (pays over time) - Save more money per year - can give you a tax right off

- **Disadvantages:** - High start up cost - Not readily available - Still in experimental stages - SACRAFICE performance for battery life - Not for everyone

IMPORTANCE OF GREEN COMPUTING

Due to rapid growth of the internet, Computer energy is often wasteful not in use when leaving the computer is on. ¬ Printing email, meeting agendas often wasteful [4]. ¬ Computer components like motherboard, memory, printers, spinning disks Consumers lot of energy. Example: for hours of usage, CPU uses 120 watts and CRT uses 150 watts. Therefore 5 days a week 562k Watts consumes. ¬ Pollutions due to manufacturing, disposal technique.

UGANDA

Uganda Green Computer Company Uganda Green Computer Company (UGCCL) is a computer refurbishment center of excellence established by the Ugandan private sector, with support from the Government of Uganda. It is a profit-making social enterprise that has brought new technical tools and industrial knowledge to Uganda, raising the country's refurbishment and recycling capabilities of used PCs to global standards. This has created new jobs in Uganda's fledgling green businesses sector and has set new standards of service for local organizations looking to dispose of PC assets in a secure and sustainable way. In addition, it has created a network of distribution partners who sell refurbished PCs across the country for less than one-third of the price of a new PC, providing SMEs with affordable access to ICT. Partnerships both within Uganda and internationally allow UGCCL to ensure full recycling of PCs with zero landfill. As part of the creation of UGCCL, Microsoft and UNIDO played a key role of bringing stakeholders and

additional partners together in Uganda and internationally. They also offered technical expertise in the development of the UGCCL business plan through a Uganda market study and e-waste study.

4 Recycling To handle the above mentioned issues related to excessive use of electronics equipment and their effect on the environment, environmental scientists emphasize on 3R (reduce, recycle and reuse) process as an alternative to the present e-waste management practice. For a developing society like ours, reduced use of electronics equipment being not a feasible option, we, therefore, have to emphasize on reuse and recycling processes. Besides this, different companies nowadays are looking for other eco-friendly alternatives for Industrialization and sustainable development. We feel that, an integrated approach with scientific techniques can minimize the e-waste generation at the base level. Segregation of toxic substances at the root level with systematic planning can eliminate the pollution load and develop a green society. Used or unwanted electronic equipment should be discarded in a convenient and environmentally responsible manner. Computers have toxin metals and pollutants that can emit harmful emissions into the environment. Computers should never be discarded in a landfill. Computers should be recycled through manufacturer programs such as HP's Planet Partners recycling service or recycling facilities in the community. Still-working computers may be donated to non-profit agencies. The recycling methods adopted in India include open burning of circuit boards or using acid stripes which are potentially harmful. The IP chips are reused. The parts that cannot be used are sent for open dumping to extract metals like copper. PVC-coated cables are openly burnt. Nitric acid is also used to remove Gold and Platinum. Both open burning and acid baths lead to occupational exposure to pollutants and endanger the health of nearby communities. This has been linked with various health problems like Silicosis, Respiratory irritation and pulmonary OEDEMA

LITERATURE REVIEW

Waste comes in many different forms, from different sources and is dumped in different ways. The overall end result is that material that is no longer used, stored or otherwise released into the natural environment and affects the overall quality of life. Some sources of waste can be measured, but the impact on the environment is not so easy to

quantify. Two significant sources of waste generation are municipal solid waste and industrial hazardous waste. Food entering the household is subject to normal household practices. Studies of these practices have shown that the likelihood that food will be wasted is affected by the way consumers plan, shop, store and cook food and the way they are guided . There are different types of waste, such as industrial waste, agricultural waste, household waste, health center waste, organic waste and toxic waste .

These wastes are also found in various forms, such as solids, liquids and gases. The way waste is managed differs depending on the type of waste . Recently, a new wave of political interest in understanding how "growth" can go hand in hand with "green" has occurred in the midst of the worst economic crisis in decades. Green growth means turning investment in the environment into an engine of

economic growth. Modern waste management practices attach importance not only to the treatment of waste, but also to converting it into useful substances . Large amounts of food waste from the household sector also mean high costs of collection and transportation

as well as separation and treatment at waste management facilities. In addition, there is still a lack of knowledge about local waste prevention, especially about monitoring methods and how local waste management systems can be developed to stimulate waste reduction in

households . Waste is an expensive and sometimes unavoidable result of human activities and, if not adequately addressed, can have serious consequences for the environment and the quality of life and health of people. Waste and society are interconnected. In wealthier communities, the concepts of environmental and commodity management are also supported. As economic actors, environmentally conscious consumers in these communities may demand cleaner products from their retailers, making the relationship between service providers and environmental

METHODOLOGY

Today there is no common view on which of the technologies for MSW disposal is the most correct. Currently, incineration is a widespread method of waste disposal. This method is well used in countries with a good climate. In many European countries, thermal decontamination is one of the main methods of waste treatment, as their laws do not allow

waste with organic content of more than 5 % to be taken to landfills. In this connection, the last few years in the EU countries, USA and Japan there is a general tendency to expand the construction of new waste incineration plants and the reconstruction of existing ones with the production of power plants using alternative fuel - MSW. The total production of solid domestic waste in 2017 was 267.8 million tons of MSW, an increase of about 5.7 million tons over the amount produced in 2015. MSW produced in 2017 increased to 4.51 pounds per person per day .

DISCUSSION

The materials used, occurrence of hazardous substances, lack of awareness, legislative requirements, availability of technologies, supply chain uncertainty are some of the major issues pertaining with e-waste management. Hence, it is a challenge to us to establish proper line up to pave a sustainable path of future to ensure green computing.

Progress in research and development is increasing and formal recycling is gaining pace everyday. In the developing countries like India, China, Nigeria the formal recycling is getting boost from the government and local NGOs. Despite of the fact that a lion's share of the e-waste generated in these countries are recycled, refurbished and reused by the informal sector and the semi-informal sector. This in one hand ensures recyclability and reusability thereby enhancing the life cycle of the electronic product. Whereas, the techniques and methods implemented are so-called

"juggad technologies", a popular term, which is nothing but anything goes mentality, is actually harming the environment. So, informal sector is beneficial as well as it is harmful. Integration of informal sector with formal sectors and training them properly could be a viable solution. Awareness among the consumers is increasing.

Earlier, the consumers used to care about only speed and price while buying computers. But as Moore's Law marches on and computers commodities, consumers will be choosy enough about being green. As far as the legislation is concerned, the parties associated with Basel Convention, which bans illegal import of hazardous waste (including e-waste) from other countries, have taken necessary step to stop this and this reflects in their legislation documents. For example, India, being a signatory of Basel Convention, bans illegal import of e-waste. However, in most of these countries, mainly the developing ones, there are some hidden or pirate routes that ensures there is

always an illegal material flow of e-waste. Another problem is the charity welcome approach towards Used .

CONCLUSION

Overall the effects of green computing with its benefits, practicality, and uses are all positives. All which are great for not only the individual, but also all around the globe. By going "green" in technology we help promote an ecofriendly and cleaner environment, along with our own IJSER International Journal of Scientific & Engineering Research, Volume 4, Issue 5, May-2013 1106 ISSN 2229-5518 IJSER © 2013 http://www.ijser.org benefits by reducing costs, conserving energy, cutting down on waste. Green computing has definitely come a long way, but with so many new innovations coming along in regards of preserving the environment, it is safe to say that green computing is a great development. Finally follow the ecology and economy system.

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Green Cloud Computing In Artificial Intelligence

Asst. Prof. Kuldeep Prabhu[1] , Priyanthi Ugde[2]

[1]Assistant Professor, [2]S.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

Green cloud computing is use of cloud computing in environment friendly manner. As the scale of cloud computing expands, its impact on energy and the environment is becoming more and more prominent. According to statistics, data centers energy consumption has accounted for 50% of operating costs of the data centers. The high-energy consumption of electricity not only needs energy in large quantity but also imposes heavy pressure on the environment. Therefore, it has become a major issue people pay close attention to, in the IT field. It is has become a major problem to be solved. Now days there are two reasons. First, a resource scheduling mechanism and Second the current refrigerating system which causes excessive cooling supply, increases operation cost, and this leads to huge waste of energy. In this paper, because of high power consumption in air, we have considered the green cloud technique. Using the techniques relevant to artificial intelligence, we put forward a some of the methods used in artificial intelligence. Green computing controls both the usage of computer resources and their negative environmental impacts. The International Energy Agency concludes that utilize 1% of the world's electricity for data centers and that by 2025, they will consume 20% of the world's power. Therefore where green cloud computing is set to make a difference. It provides solutions for the high power consumption and maintaining infrastructure and the carbon emissions produced by their use.

KEYWORDS

Carbon footprints, refrigerating engine, cloud computing, Data centers

INTRODUCTION

Cloud computing is a delivery of computer services, including servers, storage, databases, networking, etc. over the internet, a.k.a. the cloud. It enables businesses services to achieve agility, scalability, reliability, and for increasing speed, productivity, and performance of a system.

Green cloud computing are combination of two words that are green means environmentally friendly, and cloud computing, which is the delivery of IT services over the internet.

• Reduce the accumulates of hazardous materials like mercury, lithium and PVC plastics that come from hardware equipment's that can be harmful to the environment once they are disposed.. By reducing the quantity of hardware equipment, you also reduce the amount of environmental-waste you release to the environment when those devices reach their end-of-life (EOL).

• Increase energy efficiency. During their lifespan, hardware consumes energy. The large amount of their energy consumption, the greater the amount of carbon dioxide and other carbon compounds are released to the environment (a.k.a. carbon footprint). By choosing energy-efficient equipment and techniques, you can reduce your carbon footprint.

ARTIFICIAL INTELLIGENCE

AI using the cloud computing is a powerful technology that can automate repetitive tasks, improve decision-making and increase productivity. Machine Learning of AI Which teaches computers to perform human-like functions, such as speech recognition and image processing, by solving complex problems using algorithms. AI is found of simply one component that is machine learning. AI requires a specialized hardware and software for writing and training machine learning algorithms. No one programming language is same as with AI, but a few languages that are Python, R and Java, are popular. • In general, AI systems work by ingesting large amounts of labeled training data, analyzing the data for correlations and patterns, and using these patterns to make predictions about future states. Some of examples are Chat bot, Image recognition etc.

LITERATURE REVIEW

A lot of energy is consumed by many data centers, which cause Amazon, Google like many other companies to pay millions of dollars each year accessed in the cloud, as more digital information is "virtualized", not only they are expensive but also these companies face pressure from governments and others concerned with the environment to reduce their carbon emission.

Artificial intelligence (AI) is a revolutionary feat of computer science. It becomes more prominent for modern software for coming years. Whereas; new means of cyber attack will be invented to take advantage of the particular weaknesses of AI technology.

METHODOLOGY

- Nano Data Centers are newly developed computing platform which uses internet service providers (ISP) controlled gateways to offer computing and storage services and devices. Nano Data Centers are consumes high energy-efficient than conventional data centers. They help reduce the cost of heat dissipation and they have high service proximity. They have the capacity for self-adaptation or self-scalability.

- Dynamic Voltage Frequency Scaling is a method that reduces the high power and energy consumption processes .it is used for frequency scaling. Implementing this technique will reduce energy consumption and leverage the utilization of the resources.

- Virtualization is one of the other technique that improves machine management and energy efficiency through sharing a single physical instance of a resource/application with multiple customers or organizations at the same time. it also maximizes the number of available system resources in an eco-friendly way. It can enables better monitoring and management of the resource allocation. It also aids the server group in maximizing their ability to share resources over the internet.

- Dematerialization is the practice of substituting physical products with virtual equivalents. For example, replacing a physical server with a virtual server or a DVD player with a cloud-based video streaming service. This not only reduces an organization's overall carbon emission in the environment but also reduces its volume of e-waste eventually (e.g., when the physical devices reach EOL).

RESULTS AND DISCUSSIONS

When you run your workloads in the cloud instead of a traditional on-premises datacenter, several things can happen that can benefit the environment. Here are some of them.

- More efficient information processing
- Infrastructure costs are eliminated, or at least reduced, for those that employ hybrid cloud strategies
- Businesses are eligible for the "green status." With a strong brand image, they may demonstrate sustainable business practices in their advertising.
- Savings brought on by better resource management
- Decrease in the use of natural resources
- Lowers ongoing operational expenses
- Server consolidation through virtualization**.** This reduces the number of physical servers.
- Automation, orchestration, and dynamic provisioning. This prevents overprovisioning of virtual machines, common malpractice in traditional datacenters that results in wasted storage space and energy.
- Multitenancy. It allows multiple organizations to share resources without sacrificing performance.

CONCLUSION

In maximum techniques of AI consumes high power consumption. May it takes short period for larger amount of work to be done? If we use various techniques or Algorithms to reduce the power consumption with the help of "Green cloud computing" . Here, green computing is the need of the hour to protect the environment.it will be very helpful for environment and human resources.

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Importance Of Sql Injection In DBMS

Asst. Prof. Sayma Natekar[1] , Ranjana Vishwakarma[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E. SOCIETY'S SCIENCE AND COMMERCE COLLEGE, KALAMBOLI, NAVI

MUMBAI

ABSTRACT

SQL injection is one of the most popular hacking techniques. It is present on every web application that is run through electronics such as email, e-shopping, online payment of bills etc. SQL injection creates some problems in employees' business because it can hack their website, data information etc.Therefore, the person who uses a website that has website security and password is made strong. When our password is strong, hackers do not hack our website easily. Research has proposed many approaches to address the problem of sql injection attacks.

Keywords:- database SQL injection attack, secure system.

INTRODUCTION:-

SQL is a short form of "structured query language". The Database Normally contains data definition language(DDL) and data manipulation language(DML) for allowing fetch the result from execution.

SQL injection is a technique for hackers to execute the malicious code on the database server and it is the common way to be used by the Hackers. The mysql was hacked by this technique when hackers use injection to obtain Unauthorized access to the underlying data, structure and DBMS. It is a Code injection technique that attackers use to fetch the client information on their program. SQL injection attacks are used to attack databases for fetching and retrieving secret information

such as private Information and financial records. When an attacker performs a sql injection attack then the attacker must locate a vulnerable input in a web application or website. It uses user input in the form of an sql query directly. Hackers can execute specifically crafted sql commands as malicious cyber instructions. SQL server as the way of communication to the database and sql statement are used to fetch and update data in the database. SQLinjection is performed by using the structured query language. SQL injection is one of the common techniques attackers use to retrieve the information in the database. SQL injection is a code injection attack, in which data provided by the user is included in SQL injection is the most common cyber crime case pertaining to stealing credit card numbers and stealing money using SQL injection in the wake of this decode. The attacker first finds the proper user input within the web page. It can create input content when it is often called a malicious code that is a part of the attack. When an attacker sends malicious sql commands are executed in the database.

PROCESS OF SQL INJECTION

In that figure the hacker first identified the username and her password Them entered malicious query by input data The hacker injects malicious SQL query tham command is execute Database.

 In that hacker is access to view and alter records and act as administration. Employees server fetch their information using SQL injection.

IMPORTANCE

SQL injection to prevent sql injection which Minimizes the privilege (security-relevant function on a computer system.)and implementation of consistent Coding standards and sql server firewalling. A firewall is a software that prevents unauthorized access to networks. Decreasing the privileges by giving security and suitable steps.

 Firewall is important because only the trusted clients can be Contacted. If an attacker can access your data then the Firewall protects your applications and database against all Type of injection attacks. Firewall should be reject all the Untrusted In SQL injection attacks,these are some methods of injection Attacks such as using unauthorized queries, UNION query And bypassing web-based applications In order to execute SQL injection keywords such as 'FROM' And 'WHERE', 'SELECT' are used and this is important for Executing the code. The attacker takes

benefit of such architecture and can Provide malicious code in the input parameter. If the proper Separation between program instruction and user has not Been done in the code the malicious input by the attacker may Be executed. Sql injection is mainly known as an attack vector for websites But it can be used to attack any type of sql database. Attackers can use sql injection vulnerabilities to bypass

Application security measures. They can go to web Applications and retrieve the content of the entire sql Database. It is used in SQL Injection to add, modify.

SQL injection is prevented by different programming Languages. Prepare statements is a very effective technique Used by many languages such as JAVA, PHP, PYTHON etc. In programming we do not allow multiple queries in a Single statement.

This is a partial solution that injection attack Could be launched with only one sql query through carefully Framed user inputs. Databases like mysql does not allow multiple SQL queries to Be execute as a single statement. In parameterized query which parameter ase used as Placeholders and supplied at execution time.

 The most Important reason to use parameterized queries is to avoid sql Injection attacks. Stored procedure is a parameterized queries function the Same way as stored procedures. A stored procedure provides An important layer of security between the user interface and The database. It supports security through data access Controls because end users may enter or change data, but do Not write procedures and stored procedures are kept permanently in the database.

Hacker always enters a true statement like 1=1, entering OR 1=1 in the query it will return a response of the details of the table. "OR" And "=" Through this signs server as the malicious code to break into the application and an attacker can fetch user data from the application and 'OR=' in the user ID or password.

SQL injection is the common attack vector that used malicious code for access to information that was not known to be displayed. If the query does not match the model and monitor will tell about the attack information which can help developers to design proper ways to handle the attacks according to our need. One of the most common types of sql injection used by the UNION operator, it involves combining the results of multiple select statements to fetch the data from

multiple tables as a single result set. For Example SELECT age FROM teachers UNION SELECT age FROM STUDENT;

Database errors can be used with SQL injection to gain information about your database. You can keep your web application safe from everyone involved in building the website. There must be the risk associated with SQL injection. Hence do not trust Any user input that is used in an SQL query introduces a risk of an SQL injection.

CONCLUSION:-

In today's modern area, the possibility of an SQL injection attack is highly spread . Through SQL injection the attacker targets all the website and application. In this paper write how to save our website or data. The sql attackers modify , delete and perform server shortcuts by taking benefit of the weakness in the system. This paper presents how we protect data from hackers. Hence the security of the system against SQL injection attacks is of great importance. This research has proposed a secure coding approach for the prevention of SQL injection attacks on PHP based web.

SQL injection attack is a commonly used method to attack the database server. SQL injection attack is smarter and more greatest in finding vulnerable websites. There are many tools available for scanning the SQL injection vulnerability. Developers could utilize this to scan the application. Data should be protected well as the information stored in it.

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The World Of Data Science

Mrs. Sonal Nilesh Patil[1], Mrs. Pranali Pankaj Patil[2]

[Model College (Autonomous, Thakurli(E)]

ABSTRACT:

Can you imagine a world where a machine knows everything about you and it can shop for you without asking for it? What if it knows the food you like? What if a machine cooks food for you and knows your choices as well as can make decisions for you? How nice if the machine knows what is good for you and plans your life? This world is far away into the future and requires Artificial Intelligence to take over our lives. To accomplish this dream, we need to be data- driven. Data science is beneficial for companies and consumers. This paper describes the purpose of using data. This paper is intended to help define the data scientist role, including typical skills, qualifications, education, experience, and responsibilities. Computer science have all the features of computational systems, from theory to application whereas data science applies elements of Computer Science to the business world with applications in business analytics, business intelligence, statistics, and scientific research, among other fields, so this paper helps to understand the difference between Computer Science and Data Science, pillars of Data Science. This paper also helps to understand exactly what is the difference between Data Scientists, Data Analysts, and Data Engineers? What are the Job opportunities in Data Science? Tools required for becoming a data scientist, Data Science roles and how they interact, applications of data science. The Development of Data Science in Education, and what will be the future of Data Science? All the above-mentioned topics are discussed in this paper.

Keywords: Data Science, OLAP (Online Analytical Processing), SAS (Statistical Analysis System), AI (Artificial Intelligence), Machine Learning

INTRODUCTION

Data science combines math and statistics, specialized programming, advanced analytics, artificial intelligence (AI), and machine learning with specific expertise to uncover actionable insights hidden in an organization's data. This information can be used to guide decision making and strategic planning in different areas.

BENEFICIAL AREAS OF DATA SCIENCE

Some industries are better suited to using data science and analytics – retail, pharmaceuticals, banking and finance, construction, transportation, communications, media, entertainment, education, manufacturing, natural resources , government, energy and utilities, and outsourcing industries **.**

ROLE OF DATA SCIENTISTS

The job of a data scientist is to collect large amounts of data, analyze it, extract the necessary information, and then use tools such as SAS, R programming, Python, etc. Extract insights that

can be used to improve business productivity and efficiency. Some of the roles and responsibilities of a data scientist are- Collect data and identify data sources, analyze large volumes of structured and unstructured data, create solutions and strategies for business problems, develop data strategies with team members and leaders to spot trends and patterns, combine various algorithms and modules, present data using various data visualization techniques and tools, research and develop other techniques and tools for innovative data strategies, creating comprehensive analytics solutions from data collection to display; help build data engineering pipelines, depending on the projects need to support teams of data scientists, BI developers and analysts.

DIFFERENCE BETWEEN COMPUTER SCIENCE AND DATA SCIENCE

Data science is a combination of mathematical tools, algorithms, statistics, and machine learning techniques used to find hidden patterns and insights from data. Computer science is a superset of data science as it encompasses the entire field of technology.

Computer science is the study of hardware and software, data management and analysis, and becoming a computer professional. Data science is a subset of computer science that deals with the study of data and its analysis.

THE PILLARS OF DATA SCIENCE

Here are the Four Pillars of Data Science -

1. Domain Knowledge
It is this understanding of the business and its customers that allows you to develop products and services tailored to your customers and their needs.

2. Mathematical and Statistical Skills
Mathematical and statistical skills are essential to data science because you will use knowledge from these disciplines to analyze, interpret and present the data you collect.

3. Computing
Computer scientists use their expertise to solve complex problems and develop algorithms, software, and systems that collect, store, analyze, and distribute data.

4. Communication and visualization
Communication is essential because it allows you to share what you have learned with other members of the organization and helps them understand how it will affect their lives.

DATA SCIENTISTS VS. DATA ANALYSTS VS. DATA ENGINEERS

Data Scientists
Create programming and automation techniques, such as libraries, to simplify daily processes by developing and training machine learning models using tools such as Tensorflow.

Data Analyst

Data analysts share many of the same skills and responsibilities as data scientists and sometimes have similar backgrounds. Some of these shared skills include the ability to:
access and query (e.g. SQL) different data sources

Data Engineer
Compared to data scientist/analyst counterparts, they are less concerned with statistics, analysis and modeling, and more concerned with data architecture, data computing and storage infrastructure, data flows , etc.

Data science Job, Roles and Opportunities

1. Data Scientist
They acquire a variety of skills and talents; from working with raw data, analyzing it using statistical techniques, to sharing their insights with peers in a persuasive way.

2.Advanced Analytics Professionals
Advanced Analytics Professionals typically perform simulations, predictive analytics, prescriptive analytics, and other forms of advanced analytics.

3.Data Analyst
TheData Analyst job listing covers a wide range of responsibilities, from creating systems for business users to obtain information, to ensuring the quality and governance of data, up to carrying out analyzes of real data.

4.Data Engineer
Making the work of data scientists and data analysts easier is what data scientists do: work quietly behind the scenes. These technologists have in-depth knowledge of Hadoop and Big Data technologies.

5. Business Analyst
Business analysts typically have specialized knowledge in their area of work, which they then apply specifically to business operations.

6.Database Administrator
The Database Administrator is responsible for all matters related to the monitoring, operation and maintenance of a database, typically a relational database management system SQL or whatever.

7.Business Intelligence Professional
Business Intelligence Professionals are those who are proficient in using OLAP tools, reports and dashboards to view historical trends in data sets. Business intelligence can include data visualization.

8.Statistician
Statisticians are able to work with all types of data. Moreover, due to their quantitative experience, modern statisticians can immediately grasp new techniques to improve their intelligence; they also bring math to the table, and their insights can fundamentally change businesses.

9.Data Architect
Data architects create blueprints for data management systems to integrate, centralize, secure, and maintain data sources.

10.Machine Learning Engineer
There are many companies whose data or data analytics platform is their product. If so, continuous data analysis or machine learning can be very stressful.

DATA SCIENCE APPLICATIONS

The following are some examples of applications that use data science to provide their services:

- Results of Internet searches (Google)
- Engine for Recommendations (Spotify)
- Digital assistants that are smart (Google Assistant)
- Vehicle with Autonomous Driving (Waymo)
- Spam blocker (Gmail)
- Filter for Abusive Content and Hate Speech (Facebook)
- Robotics (Boston Dynamics) (Boston Dynamics)
- Automatic Detection of Piracy (YouTube)

TOP DATA SCIENCE TOOLS

1. SAS
This is one of the data science tools designed specifically for statistical manipulation. SAS is proprietary, closed-source software used by large organizations to analyze data. SAS uses the basic SAS programming language to perform statistical modeling.

2. Apache Spark
Apache Spark or simply Spark is a versatile analytical engine which is the most widely used data science tool. Spark is specifically designed to handle both batch and stream processing. Spark outperforms other big data platforms in processing streaming data.

3. BigML
BigML, another widely used data science tool. It provides a fully interactive, cloud-based GUI environment that you can use to work with machine learning algorithms. BigML uses cloud computing to deliver standardized software for industry needs.

4. D3.js
Javascript is mainly used as a client-side scripting language. D3.js is a Javascript library that allows you to make interactive visualizations on a web browser. With the various APIs in D3.js, you can use various functions to create dynamic in-browser data visualization and analysis.

5. MATLAB

MATLAB is a multi-paradigm digital computing environment for manipulating mathematical information. It is a closed-source software that facilitates matrix functions, implementation of algorithms, and statistical modeling of data.

6. Excel

is probably the most widely used data analysis tool. Excel, developed by Microsoft primarily for spreadsheet calculations, is widely used today for data manipulation, visualization, and complex calculations.

7. ggplot2

ggplot2 is an advanced data visualization package for the R programming language. The developers created this tool to replace the native graphics package of R, which uses powerful commands to create stunning visualizations.

8. Tableau

Tableau is data visualization software that includes powerful charts to create interactive visualizations. It focuses on industries in the field of business intelligence.

9. Jupyter

Project Jupyter is an IPython-based open source tool that helps developers build open source software and experiment with interactive computing.

10. Matplotlib

Matplotlib is a plotting and visualization library developed for Python. It is the most popular tool for generating charts using analytical data. It is mainly used to draw complex graphics with simple lines of code. By using it, you can generate bar charts, histograms, scatter plots, etc.

11. NLTK

Natural language processing has become the most popular field in data science. It involves the development of statistical models that help computers understand human language.

12. Scikit-learn

Scikit-learn is a Python-based library for implementing machine learning algorithms. Implementing tools widely used in analytics and data science is simple and easy.

13. TensorFlow

TensorFlow has become the standard tool for machine learning. It is widely used in advanced machine learning algorithms such as deep learning. The developers named TensorFlow after multidimensional array tensors.

14. Weka

Weka or Waikato Knowledge Analysis Environment is a machine learning software written in Java. It is a collection of various machine learning algorithms for data mining. Weka consists of various machine learning tools such as classification, clustering, regression, visualization and data preparation.

DATA SCIENCE FOR EDUCATION

Educational data science will enable educators to perform data visualization, data reduction and description, and predictive tasks. Data visualization can make information more intuitive and understandable for practitioners. Data reduction can be used to make sense of very complex student data records and fields (such as grade books, assignments, etc.). But even basic descriptions of the education system, such as stream structures, key career shifts, etc., apply. All of this is possible with data science recorded in schools.

BROAD AREAS OF RESEARCH IN DATA SCIENCE
1. Mathematical Foundations
    - Information Theory and Models
    - Mathematical, Probabilistic and Statistical Models and Theories
    - Machine Learning Theories, Models and Systems
    - Knowledge Discovery Theories, Models and Systems
    - Deep learning and metrics
    - Analysis and evolutionary learning
    - Data curation, heterogeneous integration of data/information
    - Data preprocessing, sampling and reduction
    - Data dimensionality reduction
    - Selection, transformation and construction of features
    - Optimization at Scale
    - Architecture, Management, and Processes for Data Science

2. Machine Learning and Knowledge Discovery

    - Learning from Streaming Data
    - Learning from Structured and Relational Data
    - Latent Semantics and Deep Learning
    - Multi- and Mixed-Source Information Exploration
    - Mixed-Type and Structured Data Analysis
    - Cross-Media Data Analysis
    - Data Visualization, Modeling and Analysis
    - Multimedia/Stream/Text/Visual Analysis
    - Relational, Link, Link and Graph Exploration
    - Personalized Analysis and Learning

- Web/Online/Social/Network Exploration and Learning
- Structure/Groups/Communities/Exploration Web
- Cloud computing and data analysis services

3. Storage, retrieval and search

- Data warehousing and cloud architecture
- Large-scale databases
- Information and knowledge search and semantic search
- Web/Social/Database query and research
- Personalized research and recommendations
- Human-computer interaction (HMI) and interfaces
- Crowdsourcing and collective intelligence

4. Confidentiality and security

- Data security, trust and risk
- Data integrity, compliance and sharing
- Privacy and protection standards and policies
- Data access/analysis privacy protection
- Societal impact

5. R&D proposals for data science applications
R & D proposals covering (but not limited to) the following topics:

- Best practices and lessons learned from successes and failures
- Data-intensive organizations, businesses and the economy
- Quality assessment and benchmarking
- Complexity, efficiency and scalability
- Data representation and visualization

6. Case studies of large-scale applications and domain-specific applications such as, but not limited to:

- Online data analysis/ social/real-time/ambient
- Handheld mobile device analysis
- Anomaly/Fraud/Anomaly/Change/Deviation/Event/Crisis Analysis
- Large Scale Recommender and Search Systems
- Applications of Data Analytics in Cognitive Systems, Planning and Support decision
- End-user analytics, data visualization, in-the-loop, Prescriptive Analytics
- Government/commercial data e.g. financial services, manufacturing, retail, utilities, telecommunications, national security, e-government, etc.

DATA SCIENCE'S CONTRIBUTION TO THE FUTURE

The industries that will benefit the most are:

Image Recognition - As businesses collect more and more data, so does its clarity. For example, think of self-driving cars, Tesla, self-driving cars. How do you think it detects the road? When many people travel the same route over and over again, the road image becomes more accurate. This better image will make the ride more comfortable for the next person on the same route.

Healthcare Advancement – With a larger patient database, the healthcare system will quickly identify any gaps, which can help the government immediately mitigate the impending healthcare crisis.

Weather Forecast - With enough data from previous years and powerful analysis tools, it may soon be possible to predict upcoming storms, saving hundreds of lives and minimizing property damage.

Fraud detection – Fraudulent transactions are immediately corrected if algorithms and artificial intelligence tools are in place. Such activity can also be disabled if it concerns AI.

Games - Today, video games are sports. As more and more data is collected, the user experience becomes personalized. When this data is collected, a person's habits, likes and dislikes can be taken into account.

Logistics - Artificial intelligence systems have become advanced, such as Google Maps, which will tell us which routes to take or avoid due to traffic. This system can be made more powerful and can also solve different problems such as traffic accidents.

Recommender Systems - The entertainment industry already benefits from all the data it collects using apps and websites like Netflix, Amazon Prime, Disney or any other OTT platform. Your viewing history is a rich database of these companies. Therefore, the more you know about the platform, the better your recommendations will be.

CONCLUSION

Data Science is about data gathering, analysis and decision-making. Data Science is used in many industries in the world today. Data Science is creating more employment. There are various job opportunities all over the world. In nearly every field we are using Data Science for the ease of working/taking decisions. Some myths are there about it and that is people think everyone working in a Data Science field is a Data Scientist but unfortunately this is not the truth. Not everyone in the field of Data Science is a Data Scientist! Data Science is giving us various advantages/facilities over the time. And we are expecting more and more!

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Ethical Hacking Overview

Asst Prof. Kuldeep Prabhu[1] , Anchal Shukla[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E Society's Science And Commerce College Kalamboli, Navi Mumbai

ABSTRACT

A ethical hacker is a network specialist and computer who provide some security systems on behalf of its possessor seeking docile that could be exploited by malicious hacker. The Internet Stormy growth has conduct various virtuous things like ecommerce, e-mail, collaborative computing's new fields for advertisement . Ethical hacking has become a main anxiety for businesses and government it is also known as the invasion of testing or penetration testing or red teaming .Organizations are concerned about the probability of being "hacked" and prospects are concerned about keeping personal information under control . Hackers are classified according to their knowledge. The white hat hackers are the ethical hackers. They are using hacking approaches to ensure safety. The major reason behind the study of ethical hacking is to assess the security and report back to the owner of the intent system.

Keywords:

Key concepts of ethical hacking, Problems dose hacking identify, Limitations of ethical hacking.

INTRODUCTION

Ethical hacking involves an authorized attempt to gain unauthorized access to a computer system, application, or data. Carrying out an ethical hack involves duplicating strategies and actions of malicious attackers. This practice helps to identify security vulnerabilities. Which can be then resolved before a malicious attacker has the opportunity to exploit it. Ethical hackers use their knowledge to secure and improve the technology of organizations. They can provide an essential service to that organization. Which are looking for vulnerabilities that can lead to a security breach .An ethical hacker should have a wide range of computer skills. They often specialize, becoming subject matter experts (SME) on a particular area within the ethical hacking domain.

KEY CONCEPTS OF ETHICAL HACKING

Maintain The Legal Status: They have necessary permissions before accessing or performing a security assessment.

Define The Scope Of The Project: The scope of evaluation to ensure the work is legal or within the extent of organizations permission.

Vulnerabilities Should Be Reported: The organization should be informed of any vulnerabilities discovered throughout the evaluation. Have to make recommendations on how to address this security issues.

PROBLEMS DOES HACKING IDENTIFY

Ethical hacking aims to mimic an attacker. Once they gathers huge information, they use it to look for vulnerabilities against the asset. They perform this assessment with a combination of automated and manual testing.

Some of the most common vulnerabilities discovered by ethical hackers include:

- Injection attacks.
- Broken authentication.
- Security mis-configurations .
- Sensitive data exposure.

LIMITATIONS OF ETHICAL HACKING

1. **Restricted methods:** Some organizations ask experts to avoid test cases that lead the servers to crash (e.g., Denial of Service (Do'S) attacks).
2. **Resource constraints :** Malicious hackers don't have time constraints that ethical hackers often face. Computing power and budget are additional constraints of ethical hackers.
3. **Limited scope :** Ethical hackers cannot progress beyond a defined scope to make an attack successful. However, it is not unreasonable to discuss out of scope attack potential with the organization.

CONCLUSION

The security problems will endure as long as constructor remain committed to present systems architectures, generated without some security requirement . Each new technology has its advantages and risks. While the ethical hackers can help customers for their better security

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IoT Based Road Safety Alert System

Manju R. Pillai[1], Vinit Minde[2],Pushpendra Singh[3],Pravin Singh[4]

[1]Assistant Professor, Department of Computer Science and Information Technology,

Smt.Devkiba Mohansinhji Chauhan College of Comm. & Sci., Silvassa, India,

[2,3,4] Student, Department of Computer Science and Information Technology,

Smt.Devkiba Mohansinhji Chauhan College of Comm. & Sci. ,Silvassa,

pillai.manju_csit@devkibacollege.com

Abstract

India is a populous country and many wide roads are crossed in different parts of the country. Due to the large number of vehicles on the street, risk of road accidents increases. Some even lead to death. As the laws of road crossing are not very strict in India, it becomes important to use an IoT based road safety system. A cost effective solution to this is using a system based on Arduino UNO R3 devices that are fully autonomous and can work as per the pedestrian crossing and traffic signal rules. IR sensors are used to calculate and measure the parameters needed. This device will alert and take necessary actions to prevent damage to life.

Keywords— Arduino UNO R3, IR Sensors, Servo Motor, Pedestrian Crossing, Blind curve

INTRODUCTION

IoT-based automation are now a days rapidly been implemented for security purposes, but still there are no such applications used in traffic control or for road safety purposes. Our major arterial roads are highly prone to accidents that lead to above 50% of pedestrian death. Even the blind curves are riskier as drivers cannot see approaching traffic. Also it would be tedious and difficult for a person to concentrate and handle traffic 24/7. This paper introduces a road safety system based on IoT, to provide solutions to the problem faced in the road safety issue. The main concerns are as follows:

1. Pedestrians do not notice the traffic approaching while crossing the street.
2. Vehicle struck in the traffic signal tries to break the rule and escape the signal.
3. Due to blind curves, vehicles might collide with each other while approaching from the opposite side of the curve.

LITERATURE REVIEW

The risk of road accidents is increasing day by day as the population increases. Research have been done aiming at figuring out different parameters like age for making decisions on road traffic crossings. According to these studies, women are considerably slower than men are when crossing paths. Some studies claim that males have less waiting tendency than females that can be dangerous when it comes to following traffic rules. (Khan et al., 1999; Tiwari et al. 20, 1999 [2]; A narrow, steep road with a blind curve are contributing to the spate of accidents. Most accidents at the curves happen due to high speed and often it turns out to be human error, which cost lives.

RESEARCH METHODOLOGY

Research & Studies shows that pedestrian activities correspond to street orientation, ambient characteristics, vehicle, pedestrian features etc.

a. SYSTEM BLOCK DIAGRAM
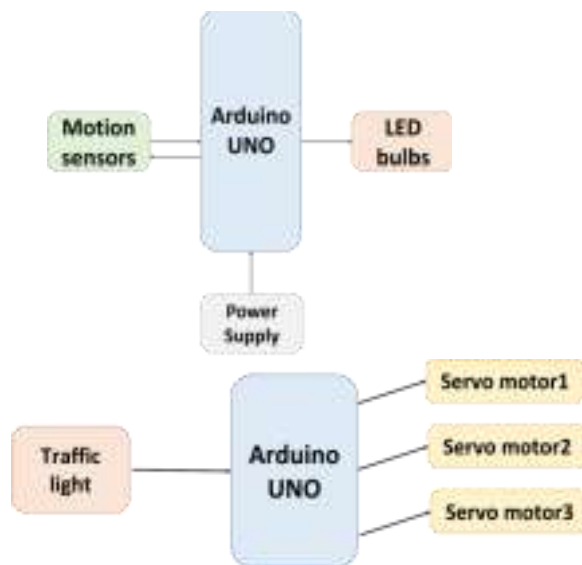
In the block diagram of this system, Blind curves are equipped with two IR sensors connected with Arduino Uno R3 to transmit signals in the form of pulses from trigger pin. When any object is detected by the signal, it is transmitted to Arduino Uno R3 and LED is operated according to the command. i.e. LED will glow if any object is detected and in the absence of the object, the LED will not glow.

For pedestrian crossing, Servo motors are used in the traffic signal to block vehicles and pedestrians alternatively. When the signal is ON for the vehicles passing by, this servo motor will activate a blockage for the pedestrians near the zebra cross and once the signal is ON for the pedestrians, servo motor will activate a blockage for the vehicles. This system will help in reducing pedestrian accidents.
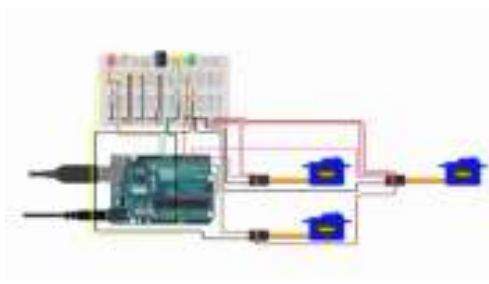
b. SYSTEM ARCHITEC TURE
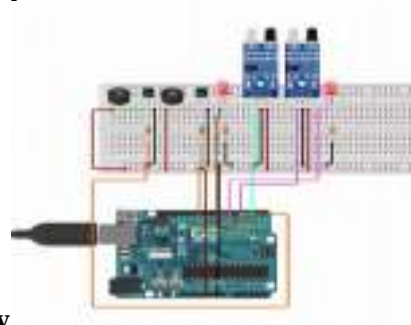
Figure 1. System for Traffic signal safety

Figure 2. System for Blind Curve safety

HARDWARE

The hardware required for zebra crossing system and blind curve safety is as follows:

- Servo Motors
- IR sensor
- Arduino Uno R3
- Breadboard
- Jumper Wires
- LED bulbs

VI. CONCLUSION

This system addresses the automated zebra crossing system and blind curve accident prevention. This system will minimize the risk factors associated with road and will be a cost effective system due to use IR sensors. With the implementation of this project in the busy roads across developed and developing countries, road accidents can be eliminated.

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Internet Of Things: Survey and Challenges in Education Sector- II

Ms.Shilpa Dattatraya Kolhe

MAEERS MIT Arts, Commerce and Science College, Alandi

shilpaa3@gmail.com

ABSTRACT

IoT has been gradually bringing a sea of technological changes in our daily lives, which in turn helps to making our life simpler and more comfortable, though various technologies and applications. There is innumerable use- fullness of IoT applications into all the domains including medical, manufacturing, industrial, transportation, education, governance, mining, habitat etc. The future is Internet of Things, which will transform the real world objects into intelligent virtual objects.

The IoT aims to unify everything in our world under a common infrastructure, giving us not only control of things around us, but also keeping us informed of the state of the things. In Light of this, present study addresses IoT concepts through systematic review of scholarly research papers, corporate white papers, professional discussions with experts and online databases. Moreover this research article focuses on definitions, geneses, basic requirements, characteristics and aliases of Internet of Things.

The main objective of this paper is to provide an overview of Internet of Things, working, and vital technologies and their usages in our daily life and mainly challenges in Education Sector.

Keywords: Internet of Things, IoT, RFID, Barcode, Wi-Fi, Bluetooth, NFC, ZigBee, Sensors, Actuators.

WHAT IS SURVEY OF THIS PAPER?

A Survey is a piece of academic writing demonstrating knowledge and understanding of the academic literature on a specific topic placed in context. A literature review also includes a critical evaluation of the material.

A survey is a piece of discursive prose, not a list describing or summarizing one piece of literature after another. It is an iterative process, assessing and distilling information. One of the key purposes of the literature survey is to investigate a problem that no one else has addressed.

The rise of mobile technology and the IoT allows schools to improve the safety of their campuses, keep track of key resources, and enhance access to information in the learning environment. Teachers can even use this technology to create "smart lesson plans," rather than the traditional plans of year.

HISTORY OF INTERNET OF THINGS

The phrase "Internet of Things" which is also shortly well-known as IoT is coined from the two words i.e. the first word is "Internet" and the second word is "Things". The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. Today more than 100 countries are linked into exchanges of data, news and opinions through Internet.

DEFINITIONS

There is no unique definition available for Internet of Things that is acceptable by the world community of users. In fact, there are many different groups including academicians, researchers, practitioners, innovators, developers and corporate people that have defined the term, although its initial use has been attributed to Kevin Ashton, an expert on digital innovation. What all of the definitions have in common is the idea that the first version of the Internet was about data created by people, while the next version is about data created by things. The best definition for the Internet of Things would be:

It emphasizes the fact that objects are connected over the internet rather than people. The properties of Internet of Things (IOT) are product information, electronic tag, standard expressed and uploading information.

REQUIREMENTS

For successful implementation of Internet of Things (IoT), the prerequisites are:

a) Dynamic resource demand
b) Real time needs
c) Exponential growth of demand
d) Availability of applications
e) Data protection and user privacy
f) Efficient power consumptions of applications
g) Execution of the applications near to end users
h) Access to an open and inter operable cloud system

According to another author, there are three components, which required for seamless Internet of Things (IoT) computing

(a) Hardware—composed of sensors, actuators, IP cameras, CCTV and embedded communication hardware

(b) Middleware—on demand storage and computing tools for data analytics with cloud and Big Data Analytics

(c) Presentation—easy to understand visualization and interpretation tools that can be designed for the different applications.

HOW IoT WORKS?
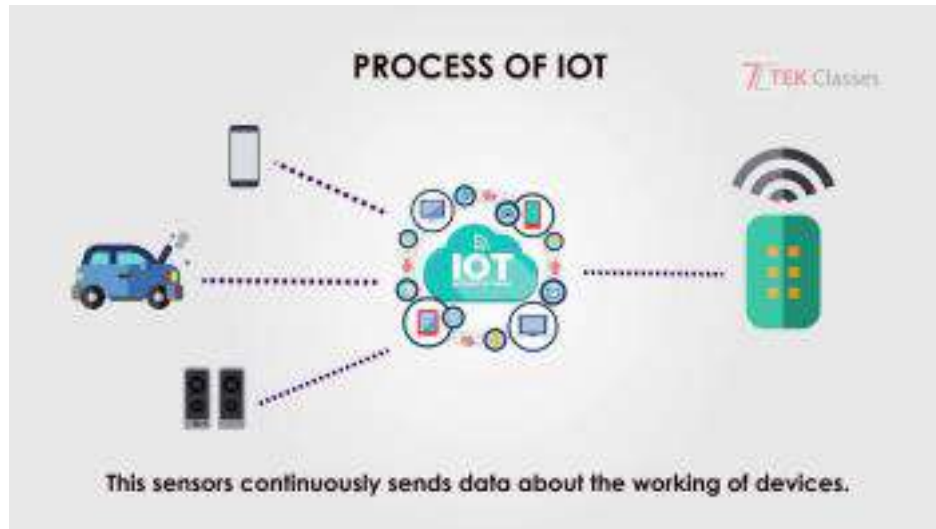
An IoT system consists of sensors/devices which "talk" to the cloud through some kind of connectivity. Once the data gets to the cloud, software processes it and then might decide to   perform an action, such as sending an alert or automatically adjusting the sensors/devices without the need for the user.

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to computer interaction.

The main parts of IoT systems are Sensors/devices, connectivity, data processing, and a user interface.

The IoT and its counterpart, the Industrial Internet of Things (IIoT), are bringing sensor usage to a new level. Broadly speaking, sensors are devices that detect and respond to changes in an environment. Inputs can come from a variety of sources such as light, temperature, motion and pressure.

TECHNOLOGIES USED

1) Raspberry Pi (RPi) defines as a series of single-board computers that are now increasingly being used to connect IoT devices. RPi can be plugged into a computer monitor. It is a capable little device that enables people to explore computing and learn how to program in languages like Scratch and Python.

2) Arduino IoT Cloud is an application that helps makers build connected objects in a quick, easy and secure way. You can connect multiple devices to each other and allow them to exchange real-time data. You can also monitor them from anywhere using a simple user interface.

3) Radio Frequency Identification (RFID) Radio Frequency Identification (RFID) is a system that transmits the identity of an object or person wirelessly using radio waves in the form of a serial number.

4) Bluetooth Bluetooth wireless technology is an inexpensive, short-range radio technology that eliminates the need for proprietary cabling between devices such as notebook PCs, handheld PCs, PDAs, cameras, and printers and effec-tive range of 10 - 100 meters. And generally communicate at less than 1 Mbps and Bluetooth.

5) ZigBee ZigBee is one of the protocols developed for enhancing the features of wireless sensor networks. ZigBee tech-nology is created by the ZigBee Alliance which is founded in the year 2001. Characteristics of ZigBee are low cost, low data rate, relatively short transmission range, scalability, reliability, flexible protocol design. It is a low power wireless network protocol based on the IEEE 802

CHALLENGES

With the help of the Internet of Things, a teacher can use digital pens and interactive whiteboards to display information on the student's connected tablet in real time, making it possible for their students to be instructed wherever they are.

There are various types of challenges in front of IoT.

Security challenges in IoT :

1. **Lack of encryption:**
Although encryption is a great way to prevent hackers from accessing data, it is also one of the leading IoT security challenges.
These drives like the storage and processing capabilities that would be found on a traditional computer.
The result is an increase in attacks where hackers can easily manipulate the algorithms that were designed for protection.

2. **Insufficient testing and updating:**
With the increase in the number of IoT(internet of things) devices, IoT manufacturers are more eager to produce and deliver their device as fast as they can without giving security too much of although.
Most of these devices and IoT products do not get enough testing and updates and are prone to hackers and other security issues.

3.**Battery life is a limitation:**
Issues in packaging and integration of small-sized chip with low weight and less power consumption. If you've been following the mobile space, you've likely see how every yr it looks like there's no restriction in terms of display screen size. Take the upward thrust of 'phablets', for instance, which can be telephones nearly as huge as tablets. Although helpful, the bigger monitors aren't always only for convenience, rather, instead, display screen sizes are

growing to accommodate larger batteries. Computers have getting slimmer, but battery energy stays the same.

4. **Connectivity:**

It is the foremost concern while connecting devices, applications and cloud platforms. Connected devices that provide useful front and information are extremely valuable. But poor connectivity becomes a challenge where IoT sensors are required to monitor process data and supply information.

CONCLUSION:

The rise of mobile technology and the IoT allows schools to improve the safety of their campuses, keep track of key resources, and enhance access to information. Teachers can even use this technology to create "smart lesson plans," rather than the traditional stoic plans of yesteryear.

Below, we've compiled a list of IoT education examples, including the uses of the IoT in higher education, the future of the internet in education, and examples of companies that are using the IoT to enter the education space.

Students, particularly in college, are increasingly moving away from paper books toward tablets and laptops. With all of the necessary information at their fingertips, students can now learn at their own pace and have a nearly identical educational experience in their homes and in the classroom.

And while this trend provides increased convenience for students, it also makes the teaching process more efficient for professors. The surge in connected technology means that instructors do not need to manually grade tests on paper or perform other routine tasks.

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Role Of Big Data Analytics For Real-World Applications

Asst. Prof. Swapnali Kadge[1] , Shweta Pandey[2]

[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E Society's Science And Commerce College Kalamboli, Navi Mumbai

ABSTRACT

Every day, contemporary information systems and digital technologies like the Internet of Things and cloud computing produce a vast reservoir of data that amounts to terabytes. It takes a lot of work on many different levels to analyse these enormous amounts of data to gather information for decision-making. The phrase "big data" is presently used to express a broad range of concepts, from obtaining data from external sources, storing and maintaining it, to analysing such data with analytical techniques and tools. It is a buzzword in both academia and industry.As a result, research and development are now being done in the field of big data analysis. This paper aims to examine the possible effects of big data problems, open research questions, and related technologies. Therefore, proposed paper offers a framework for exploring big data at various phases. In an effort to emphasise the significance of big data analytics for decision making, this thesis work therefore intends to present an overview of current big data analytics principles.

As big data is becoming increasingly popular and important for academia, business, and society, so solutions for handling data and extracting knowledge from datasets must be created and made available quickly so that decision-makers can benefit from the rich and constantly changing data to which they now have access.

Keyword: Big data analytics, decision making, Internet of Things, cloud computing, datasets.

INTRODUCTION

Data are produced in the digital age from a variety of sources, and the quick development of digital technology has fuelled the expansion of big data. With the compilation of massive datasets, it offers evolutionary advancements in a variety of domains. It often refers to a collection of very vast and complicated datasets that are challenging to handle with conventional database administration software or data processing tools. These are accessible in petabytes and beyond in organised, semi-structured, and unstructured formats. From 3Vs to 4Vs is how it is defined formally. Volume, Velocity, and Variety are referred to as 3Vs. Volume describes the enormous quantity of data that is produced every day, whereas velocity describes the pace of increase and the speed at which data are gathered for analysis. Structured, unstructured, semi-structured, and other forms of data are described by variety. Veracity, which combines availability and accountability, is the subject of the fourth V. Processing data with a large volume, velocity, diversity, and veracity while utilising a variety of conventional and computationally clever methodologies is the main goal of big data analysis.
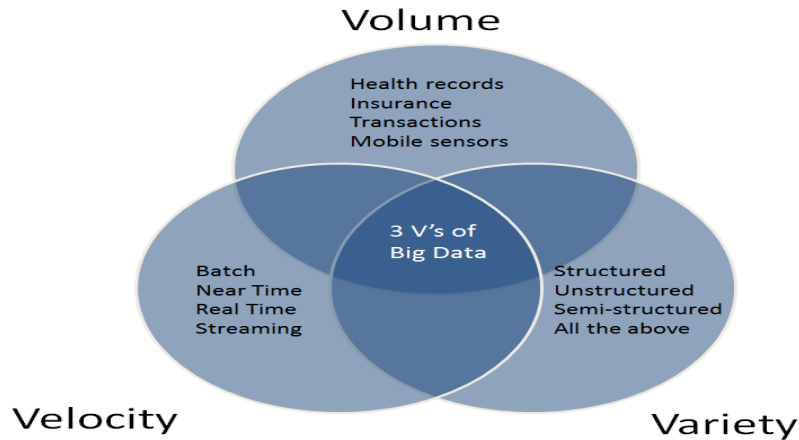
Fig. 3 V's of Big data

Gandomi and Haider have talked about a few of these information extraction techniques. Big data, however, lacks a precise definition and is thought to be problem-specific. This will enable us to make better decisions, find new insights, and optimise while being creative and economical.

The term "Big Data" has lately become popular in order to describe a new model for data use. These new innovations in information technology have a tendency to be widely publicised and often introduced, but it might take some time for people to notice the key differences. Big Data, often known as BD, differs from other types of data in a number of respects, including volume (too much), velocity (rapid arrival), variability (quick changes), veracity (a lot of turmoil), and variety (diversity). This Big Data is handled in constrained reckoning structures using conventional theories and practises. Even BD support technologies have diverse presentation types, which makes it difficult to encourage the development of tools and apps that can assist incorporate data from many sources. The Big Data Model essentially reflects a paradigm change in data infrastructures, moving away from significant systems with perpendicular mount and towards parallel mounted systems that agglomerate an unlimited linked collection of reserves.

This shift from parallel to perpendicular predicates several issues in various fields, including information orchestration, information delivery, and inactivity in the consistency across schematics, stack stabilising, and process inadequacies and their interdependencies, all on the same hand. On the other side, the Big Data model incorporates the same shift but employs various devices to give the clamour in data management. This action is being taken in order to distribute codes and information among loosely connected assets and accommodate information scalability. Executing analysis is a distinct reason for storing and retrieving enormous volumes of data since it helps to develop more understanding about the data. In the past, an undirected sample of the data was often used for the experiment. The term "Big Data" has a variety of different qualities and is used in a variety of circumstances. We must broaden our understanding of the word to some degree of agreement in order to understand where ideology would most effectively support the big data paradigm. The term "Big Data" refers to a collection of information with exceptional qualities (such as capacity, momentum, array, range, precision, etc.) that, at any given time, cannot be effectively managed utilising current/accessible/perceived/routine developments and tactics with a particular focus.

This is accomplished by using a more thorough evaluation alongside the whole amount of data, scale-agnostic. These target edges are parsed using cases in the respect exchange for Huge Information.
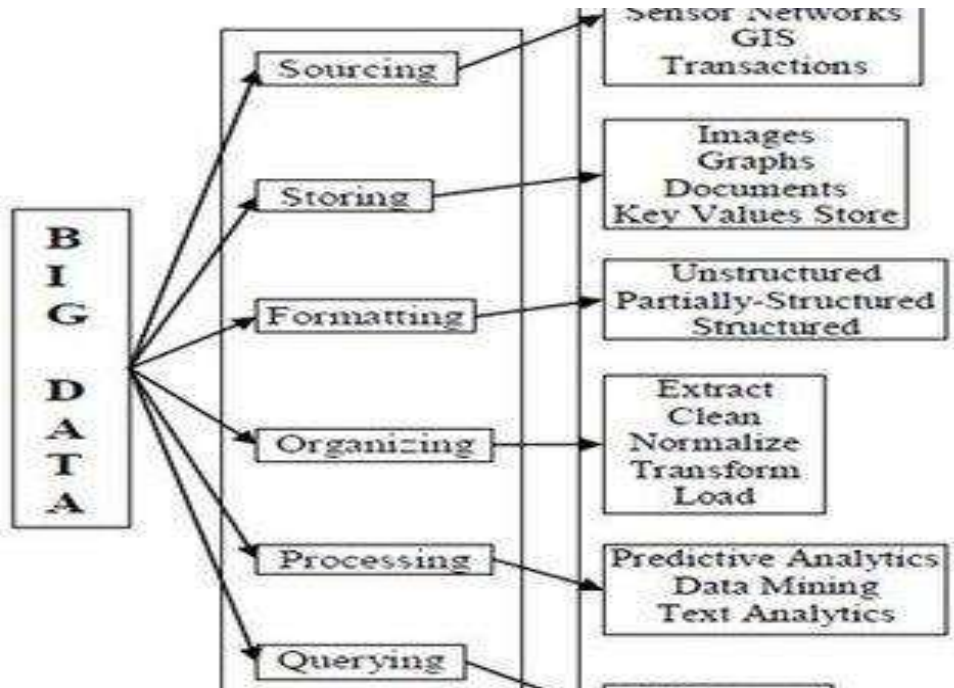

        Fig. Functional View of data

Background

Big Data Analysis

Contrary to traditional data, big data describes vast, expanding quantities of data in different formats, such as structured, unstructured, and semi-structured data. Big Data is complicated, necessitating the use of strong tools and cutting-edge algorithms. Numerous organizations are increasingly interested in managing and analyzing data as big data continues to develop quickly. As it is difficult to analyses datasets with analytical methodologies and infrastructure based on standard data management, organizations aiming to benefit from big data are embracing big data analytics to allow quicker and better decisions (Constantinou et al., 2015). Thus, there is an increasing demand for innovative, big data analytics-specific tools and techniques. Big data's growth has an impact on all aspects of data management, including data collecting, processing, and decision-making. Offering big data tools and technology can assist in controlling the otherwise exponential expansion of network-produced data as well as improving organisations' scaling and capturing capabilities. Therefore, Big Data applications cannot be effectively handled by the conventional static Business Intelligence tools.

Analytics can be classified in to three types they are: Predictive Analytics, Descriptive Analytics and Prescriptive analytics.
• Descriptive analytics: The most straightforward class of investigation," one that permits you to consolidate huge information into littler, more valuable chunks of data.

• Predictive analytics: It is the following stride up in reduction of data. It uses an assortment of measurable, displaying, information mining, and machine learning strategies to study later and

verifiable information, along these lines permitting experts to make forecasts about what's to come.

• Prescriptive analytics: It is a type of predictive analytics. It's essentially when we have to endorse an activity, so the business decision maker can take this data and act.

BIG DATA APPLICATIONS

Internet of Things (IoT):

One of the key markets for big data applications is the Internet of Things (IoT; Chen et al., 2014b). The Internet of Things (IoT) applications are constantly changing due to the wide diversity of things. There are several Big Data apps available now that serve logistical businesses. In fact, sensors, wireless adapters, and GPS may be used to track the locations of moving objects.
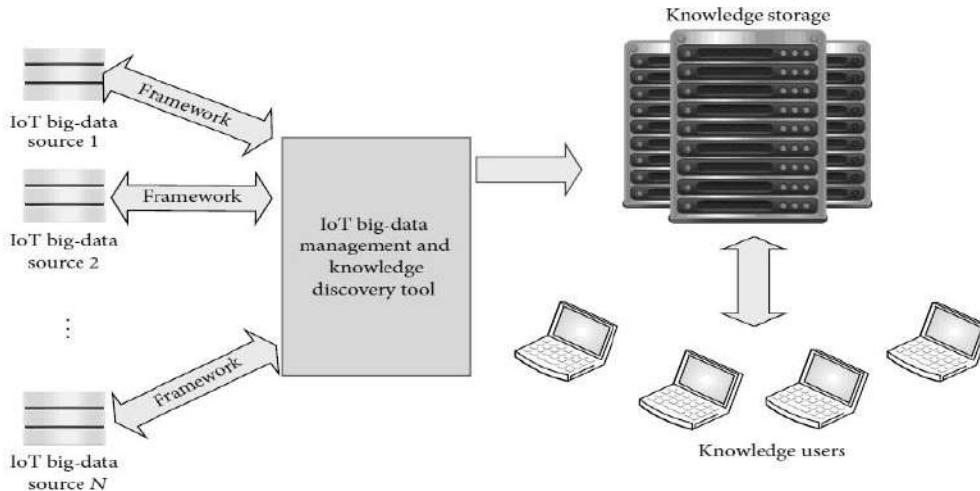

Fig. IoT Big data Knowledge discovery

As a result, these data-driven solutions give businesses the ability to improve delivery routes in addition to managing and supervising their workforce. By utilising and synthesising different information, including prior driving experience, this is accomplished. Based on the use of IoT data, smart cities are another popular study topic.

Transportation and Logistics:

RFID (Radiofrequency Identification) and GPS are widely used by public transportation firms to track vehicles and discover relevant data to enhance their services... To optimise bus routes and trip frequency, for instance, data gathered on the number of people using the buses on various routes is employed. Numerous real-time systems have been put in place to advise passengers when to anticipate the next bus that will take them where they need to go as well as to make

recommendations. Using big data mining to forecast demand for public or private networks also benefits the tourism industry.

Smart grid case:

Real-time management of the nation's electronic power usage and monitoring of Smart grid operations are essential. Multiple connections between smart metres, sensors, control centres, and other infrastructures are used to achieve this. Big Data analytics aids in the detection of anomalous activities in linked devices and the identification of transformers that are at danger. Thus, Grid Utilities may decide on the most effective course of action. Modelling event situations is possible because to the real-time analysis of the produced Big Data. This makes it possible to set up strategic preventative programmes to cut down on the expenses of corrective action. Additionally, energy forecasting analytics support improved resource planning, load management, and profit maximisation.

Cloud Computing

Supercomputing has become more accessible and inexpensive thanks to virtualization technology, and cloud computing is one of the most effective big data solutions. By providing on-demand access to flexible computer resources via virtualization techniques, cloud computing harmonises huge amounts of data. It increases availability and lowers costs by only paying for the resources required to build the product and providing resources when there is a need for them. Big data and cloud computing open problems and research questions are thoroughly covered. With infrastructure and tools, cloud computing assists in creating a business model for all types of apps.

MAJOR CHALLENGES IN BIG DATA

Researchers and professionals are facing several challenges when exploring Big Data sets and extracting value and knowledge. These include data capture, storage, searching, sharing, analysis, management and visualization, security and privacy issues, and the deluge of information and distributed streams. The current technological capacity to handle and explore Big Data sets is only in the lower levels of petabytes, exabytes and zettabytes of data. This section discusses some technological issues still open for research.

Main challenges include…,

Data security issues:

In public affairs, privacy, internet access disparities, and legal and security issues are key concerns. Watson (2019) presented some security issues with big data and gave some suggestions for avoiding them. Data sources should be monitored by organisations, with end-to-end encryption used to prevent anyone from accessing the data in transit. Big data is defined by the 5V's, and these characteristics mean that it cannot be processed with traditional data analytic techniques. Big data faces intrusion detection challenges, as the system busy times are extended.

Solution to these challenges include taking a more comprehensive approach to monitoring the data that comes from different sources in order to develop better situational awareness of the threats in cyberspace. Hadoop is an open-source distributed storage platform used for storing large amounts of data that flows quickly.

Data Privacy Issues:

Gathering data from users can lead to privacy challenges, as sensitive information such as medical records and banking transactions may not be appropriate for normal data transmission protocols. Data security and privacy must be considered before the adoption of any protocol for sharing information. Big data privacy contains two aspects: protection of personal data privacy during data gaining, and discharge of personal privacy data during storage, transmission, and usage.

Data Storage, Capture and data Quality:

Capturing and storing data is becoming increasingly difficult due to the growing size and complexity of data sets. Modern big data challenges include big data management, big data cleaning, big data aggregation, and big data analytics. Big data management involves collecting, integrating, and storing data with minimal requirements, while big data cleaning involves cleaning data for reliability and aggregating data from different sources. Big data aggregation involves synchronising outside data sources and distributed big data platforms into a cohesive system. Big data analytics involves real-time analysis, but requires accurate result but not necessarily the same levels of speed. Big data analysis mainly arises due to the 5V's and their effects on dataset performance**.**

BIG DATA ANALYTICS TOOLS AND TECHNIQUES

Increasing the volume of data and the need for highly accessible information are essential aspects of Big Data; yet, straight systems have physical restrictions that are required by the topology tied to them. On a network of commodity hardware, it provides a flexible and highly available architecture for big-scale computation and data processing. Apache Hadoop, a platform for processing and storing enormous amounts of data, was created to close this gap. Hadoop is a Java-based Apache open-source framework that enables dispersed dataset preparation across a network of PCs using straightforward programming paradigms. The use of Apache Hadoop applies the thought of master/slave in a network environment of computers connected by an Ethernet network, where computers, also called nodes within a cluster have dissimilar functions.
Hadoop can run because the master and slave nodes coexist in harmony. Whether it comprises of a network of scattered high-end servers or simply on a home network of personal computers, Apache Hadoop is designed to be applied at any level of clusters. It is possible to coordinate several databases, whether social, non-social, organised, or unstructured, using Apache Hadoop's capabilities. Hadoop's structure makes it possible to store and take into account all of these differences. The Apache Hadoop system includes distributed computing, parallel processing, document frameworks, working frameworks, differences of data (organised and unstructured information), and record management through its own document framework HDFS (Hadoop File System), enabling through its various components.

Hadoop Framework Architecture
Hadoop framework consists of two main core components
• Distributed file system (HDFS)
• Execution engine (MapReduce)
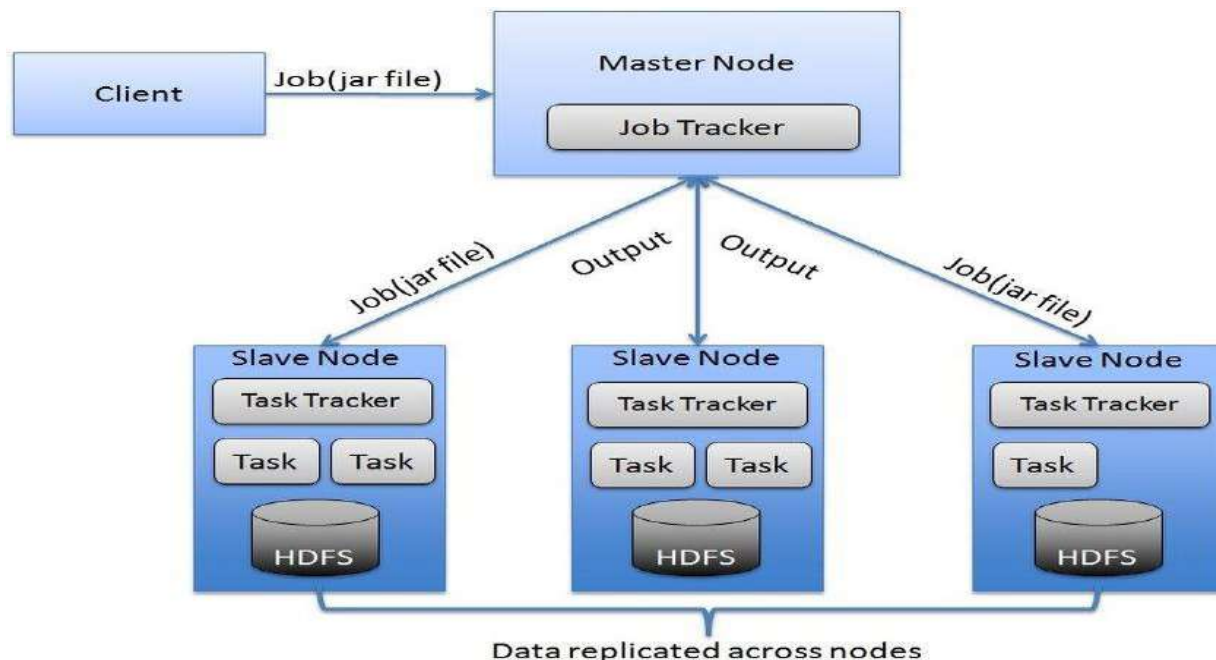Hadoop Master/Slave Architecture is depicted in Figure given below.

Fig. Hadoop Master/Slave Architecture

CONCLUSION

Big data is an advancing field where a significant part of the research is yet to be finished. Cloud services are being used to prepare and break down data, and Hadoop is inadequate. To outfit the capability of Big Data, broad research needs to be carried out and innovative technologies need to be developed. Big data analytics has the potential to modify the way healthcare providers utilize advanced innovations to pick up knowledge from their clinical and other data archives and make informed decisions. This paper has studied Big Data characteristics, challenges raised by Big Data computing systems, and explained the value of Big Data mining in several domains.

It has also compared the components and technologies used in each layer of Big Data platforms, and categorized Big Data systems based on their features and services provided to final users. Despite the important developments in Big Data field, many short comings exist, and further work needs to be done in areas such as data organization, domain specific tools and platform tools to create next generation Big Data infrastructures.

RESEARCH METHODOLOGY:

Primary Data- It is collected through questionnaires.

Secondary Data-It is collected through different websites, e-notes, research papers, journals etc.

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Artificial Intelligence In Medical Operations

Asst. Prof. - Sayma Natekar[1], Sahil Shaikh[2]
[1]Assistant Professor, [2]T.Y.BSc(IT) Department of Information Technology

K.L.E Society's Science And Commerce College Kalamboli, Navi Mumbai

ABSTRACT

Artificial Intelligence (AI) has the potential to revolutionize surgical procedures, offering benefits such as improved accuracy, increased efficiency, and reduced risks. This paper provides an overview of AI in surgery, examining the current state of AI in surgery, its applications, and its advantages and challenges. AI algorithms can be used for preoperative planning, surgical navigation, robotics-assisted surgery, and postoperative care. The use of AI in surgery requires significant technical expertise and investment, as well as careful consideration of data privacy and security, regulatory approvals, and cost. Despite these challenges, the future of AI in surgery is promising, and it is likely that we will see increasing use of AI in surgical procedures in the coming years

Keywords:
Artificial Intelligence Trend, Next Generation Surgery, Ai Surgery, Easy Surgery,
Low Cost Surgery, Ai In Medicals.

INTRODUCTION:

Artificial Intelligence (AI) has been making significant advancements in various fields, including healthcare. In recent years, AI has been increasingly used in surgical procedures, offering a range of benefits, such as improved accuracy, increased efficiency, and reduced risks. In this research paper, we will examine the current state of AI in surgery and its potential applications.

Fig:-1.1

SOME STUDY ABOUT AI SURGERY:

What is Artificial Intelligence in Surgery?

Artificial Intelligence in surgery refers to the use of AI algorithms, machine learning, and robotics in surgical procedures. AI algorithms can be used to analyze large amounts of data, such as medical images, patient data, and surgical outcomes, to provide real-time information and support to surgeons during surgeries. Additionally, AI can be used to develop and control robotic surgical systems, offering improved accuracy, dexterity, and efficiency in surgical procedures.

APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN SURGERY:

Preoperative Planning: AI algorithms can be used to analyze medical images and patient data to create accurate surgical plans, reducing the risks of surgical complications.

Surgical Navigation: AI algorithms can be used to provide real-time information and support to surgeons during procedures, helping to improve surgical accuracy and outcomes.

Robotics-Assisted Surgery: AI can be used to develop and control surgical robots, offering improved accuracy and dexterity in procedures, as well as reducing surgical fatigue and errors.

Postoperative Care: AI algorithms can be used to analyze patient data and monitor patients post-surgery, helping to identify and mitigate potential complications and improve recovery outcomes.

ADVANTAGES OF ARTIFICIAL INTELLIGENCE IN SURGERY:

Improved Accuracy: AI algorithms can analyze large amounts of data, helping to provide accurate and up-to-date information to surgeons during procedures.

Increased Efficiency: AI algorithms can help to reduce the time required for preoperative planning and postoperative care, improving overall surgical efficiency.

Reduced Risks: AI algorithms can help to reduce surgical risks by providing real-time information and support to surgeons during procedures, and by monitoring patients post-surgery.

Increased Access to Surgical Care: By reducing the risks and costs of surgical procedures, AI can help to increase access to surgical care for patients, particularly in underserved and rural communities.

CHALLENGES OF ARTIFICIAL INTELLIGENCE IN SURGERY:

Technical Challenges: The development and deployment of AI algorithms for surgical procedures requires significant technical expertise, including the development of robust and reliable algorithms.

Data Privacy and Security: The use of AI in surgical procedures involves the collection, storage, and analysis of large amounts of patient data, which must be securely stored and protected to maintain patient privacy and confidentiality.

Regulatory Approvals: The use of AI in surgical procedures is subject to regulatory approvals, which can be a time-consuming and complex process.

Cost: The development and deployment of AI algorithms for surgical procedures can be costly, requiring significant investment in hardware, software, and personnel.

METHODOLOGY:

The methodology of using artificial intelligence (AI) in medical operations can vary depending on the specific application and type of AI being used. However, there are some common steps that are involved in the process.

Data collection: One of the first steps in using AI in medical operations is to gather large amounts of data, including medical images, lab results, and patient records. This data is used to train the AI algorithms and improve their accuracy.

Data preprocessing: Before the data can be used to train AI algorithms, it needs to be preprocessed and prepared for analysis. This may involve cleaning and organizing the data, as well as removing any irrelevant or redundant information.

Algorithm development: Once the data has been prepared, the next step is to develop and train AI algorithms. This involves using machine learning techniques to train the algorithms to recognize patterns and make predictions based on the data.

Evaluation and validation: Before AI algorithms can be used in medical operations, they need to be evaluated and validated to ensure that they are accurate and reliable. This may involve testing the algorithms on a sample of data and comparing the results to ground truth.

Implementation: If the AI algorithms have been shown to be accurate and reliable, they can be integrated into medical operations and used to assist with diagnosis, treatment planning, and surgical procedures.

Monitoring and maintenance: Ongoing monitoring and maintenance of AI algorithms is important to ensure that they continue to be accurate and reliable. This may involve updating the algorithms as new data becomes available or adjusting their parameters as needed.

In conclusion, the methodology of using AI in medical operations involves several steps, including data collection, data preprocessing, algorithm development, evaluation and validation, implementation, and monitoring and maintenance. By following these steps, healthcare providers can ensure that AI is being used in a responsible and effective manner in medical operations.

RESULTS:

The results of the use of artificial intelligence (AI) in medical operations can vary and depend on a number of factors, including the specific application of AI and the quality of the algorithms being used.

In general, the use of AI in medical operations has the potential to greatly improve patient outcomes and the efficiency of medical procedures. For example, AI can assist with diagnosis, providing more accurate and precise results, and can also assist with treatment planning and surgical procedures, reducing human error and improving precision.

However, the results of AI in medical operations can also vary depending on the quality of the algorithms being used and the amount of data available to the AI system. AI algorithms may be affected by biases and may not always provide accurate results, leading to potential harm to patients.

In addition, the results of AI in medical operations can also be impacted by the availability and quality of data being used by the AI system. AI in medical operations relies on access to large amounts of sensitive medical data, and the accuracy of the results can be impacted by the quality and quantity of data available to the AI system.

In conclusion, the results of the use of AI in medical operations can vary, but there is potential for it to greatly improve patient outcomes and the efficiency of medical procedures. However, it is important to thoroughly evaluate the potential benefits and risks of AI in medical operations and to ensure that these technologies are being used responsibly and effectively

DISCUSSIONS:

The use of artificial intelligence (AI) in medical operations has the potential to revolutionize the healthcare industry. AI can assist with diagnosis, treatment planning, and surgical procedures, helping to improve patient outcomes and reduce human error. However, there are also concerns about the reliability and potential for errors associated with AI in medical operations, as well as ethical and safety concerns related to data privacy and security.

One of the main benefits of AI in medical operations is its ability to improve diagnostic accuracy. AI can analyze large amounts of medical data, including images and lab results, to provide more accurate and precise diagnoses. This can help to improve patient outcomes and reduce the need for multiple procedures.

In addition, AI can assist with treatment planning and surgical procedures by providing real-time data analysis and decision support. AI can help to reduce human error and improve the precision of surgeries, leading to better patient outcomes.

However, there are also concerns about the reliability and potential for errors associated with AI in medical operations. AI algorithms can be affected by biases and may not always provide accurate results, leading to potential harm to patients. It is important for healthcare providers to thoroughly evaluate the potential benefits and risks of AI in medical operations before implementing these technologies.

Another concern is the issue of data privacy and security. AI in medical operations relies on access to large amounts of sensitive medical data, which could be at risk of being hacked or misused. There is a need for strong data protection measures to ensure that patient data is protected and kept confidential.

In conclusion, the use of AI in medical operations has the potential to greatly improve patient outcomes and the efficiency of medical procedures. However, it is important to thoroughly evaluate the potential benefits and risks of AI in medical operations, as well as the ethical and safety concerns associated with these technologies. Ongoing research and development is needed to further understand the full potential of AI in medical operations and ensure that it is used in a safe and effective manner.

LITERATURE REVIEW:

A literature review on the use of artificial intelligence (AI) in medical operations would examine existing research and studies on the topic. The review would analyze the current state of AI in medical operations, its benefits and limitations, and its impact on patient outcomes. It would also discuss the ethical and safety concerns associated with the use of AI in medical procedures.

Studies on AI in medical operations would include those that examine its use in diagnosis, treatment planning, and surgical procedures. The literature review would analyze these studies to determine the potential benefits and limitations of AI in medical operations. This could include an evaluation of its accuracy, reliability, and potential impact on patient outcomes.

In addition, the review would discuss the ethical and safety concerns associated with the use of AI in medical operations. This could include issues related to data privacy and security, potential for errors and biases, and the need for human oversight and accountability.

The review would also examine the current state of AI in medical operations and its potential for future development. This could include an evaluation of ongoing research and development in the field and the potential for further advancements in AI technology.

In conclusion, a literature review on AI in medical operations would provide an overview of the existing research and studies on the topic. It would analyze the current state of AI in medical operations, its benefits and limitations, and its impact on patient outcomes. The review would also discuss the ethical and safety concerns associated with the use of AI in medical procedures and provide insight into its potential for future development.

CONCLUSION

Artificial Intelligence (AI) has the potential to revolutionize the medical field, including surgical operations. AI can help to improve patient outcomes and provide more efficient and precise surgeries. The use of AI in surgery can help to reduce human error, improve diagnostic accuracy, and provide real-time data analysis during procedures. AI can also assist with planning and preparation for surgeries, reducing the need for multiple procedures and improving patient outcomes.

However, the use of AI in surgery is still in its early stages and there are concerns about its reliability and potential for errors. It is important for healthcare providers to thoroughly evaluate the potential benefits and risks of AI in surgery before implementing these technologies in the operating room. Ongoing research and development is needed to further understand the full potential of AI in surgery and ensure that it is used in a safe and effective manner.

In conclusion, AI has the potential to transform the field of surgery, but its impact will depend on the responsible and ethical integration of these technologies into the medical field.

RESEARCH METHODOLOGY

Primary Data- It is collected through questionnaires.

Secondary Data- It is collected through different websites, e-notes, research papers, journals etc.

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E-Waste and it's Management: A Step towards Green Computing

Asst. Prof. Mrs Sayma Natekar[1], Mr Anukesh Pandey[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

KLE Society's Science and Commerce College, Kalamboli,
Navi Mumbai

ABSTRACT

E-Waste, or electronic waste, has been produced in enormous quantities as a result of recent urbanization trends and increased usage of electronic devices. This e-waste pollutes the air, water, and soil. E-Waste includes harmful compounds that are bad for both the environment and living things, such as CPU, monitor, etc. The cell phone is one of the most widely utilized technological devices among people in today's world. The toxic materials included in mobile phones, including lead, mercury, arsenic, cadmium, chlorine, and bromine, can seriously injure both people and animals if they escape into groundwater. Therefore, it has become urgently necessary to manage these electronic wastes properly. In this paper, we discuss various sources of e-waste, their effects, and the proper steps for the management of these toxic, harmful, and hazardous wastes to make the development process sustainable and green.

Keywords: *E-waste, Recycling, Separation, Reduction, Eco friendly.*

INTRODUCTION

The use of electronic devices and gadgets has increased dramatically devices has raised the dangers of high power consumption, global warming, and e-waste, which pollutes the environment and poses a threat to human health. Different business sectors, both public and private, have stepped up to control electronic waste and safeguard the environment. Numerous international initiatives have been put in place to ensure environmentally friendly computing in an effort to overcome this problem. Out of the 44.7 million tonnes of e-waste produced worldwide in 2017, India produced 2 million tonnes, or 20 lakhs, of it.in this age of information, communication, and technology. The widespread use of all electronic

GREEN COMPUTING

Green IT is another name for green computing. The US Environmental Protection Agency (EPA) began to implement this idea in 1992. This organization introduced the Energy Star program (ESP). Utilizing less energy and hazardous materials are the two main objectives of green computing. This lowers the carbon footprint while simultaneously lowering energy expenses for businesses. Recycling used computer parts is a further objective of green computing. This is how e-waste is recycled in the modern world. 250 billion dollars are being spent annually on computer powering across the globe. Only 15% of that power is really utilized; the remaining 75% is wasted. This 75% energy is useless but when to it is turned on this is the primary reason for carbon dioxide (CO_2) emission that results in global warming. Another goal of green computing is to reduce global warming.

E-Waste

E-waste is any abandoned electrical or electronic equipment. This covers both functional and damaged things that are discarded in the trash or given to a charity retailer like Goodwill. If an item isn't purchased in the store, it's frequently thrown away. The hazardous compounds that naturally leak from the metals in e-waste when it is buried make it extremely risky. One of the fastest-expanding waste streams in the world is e-waste. It makes up, on average, more than 2% of all solid waste in wealthy nations. A significant amount of e-waste is produced as a result of the increased demand for and use of computers and other electronic devices brought on by rapid growth in development.

E-Waste Management

Waste is any material that is thrown away. These wastes come in a variety of forms and can be divided into hazardous and non-hazardous categories. Municipal wastes, electronic wastes, bio-medical wastes, and industrial wastes are further split into these categories. If left untreated, electronic wastes including monitors, CPUs, and other devices contain substances like cyanides, mercury, and polychlorinated biphenyls, which are extremely poisonous and can cause fatal illnesses. According to certain research, residents who were exposed to hazardous garbage had a higher than average prevalence of cancer.

LIST OF COMMON E-WASTE ITEMS:

Home Appliances
- Microwaves
- Home Entertainment Devices
- Electric cookers
- Heaters
- Fans
- Communications and Information Technology Devices
- Cell phones
- Smartphones
- Desktop Computers
- Computer Monitors
- Laptops
- Circuit boards
- Hard Drives
- Home Entertainment Devices
- DVDs
- Televisions
- Video Game Systems
- Fax machines
- Printers

- Massage Chairs
- Heating Pads
- Remote Controls
- Television Remotes
- Electrical Cords
- Lamps
- Smart Lights
- Night Lights
- Smart Watches
- Heart Monitors
- Diabetic Testing Equipment
- IT Servers
- Wifi Dongles
- Dialysis Machines

Each year, enormous amounts of these wastes are wasted, and because they include hazardous and carcinogenic substances, they can be extremely dangerous to the environment. Circuit boards for computers are made of lead and cadmium, cathode ray tube displays are made of lead oxide and cadmium, and switches and flat-screen monitors are made of mercury. Indians currently utilize over 14 million PCs, over 16 million mobile phones, and over 80 million televisions. Therefore, there is pressure to handle e-waste management, especially in developing nations, which draws informal and unorganized sectors to it but whose practices are dangerous and environmentally problematic, endangering human health and the environment.

RECYCLING

To handle the above-mentioned issues related to the excessive use of electronic equipment and their effect on the environment, environmental scientists emphasize on 3R (Reduce, Recycle, and reuse) process as an alternative to the present e-waste management practice. For a developing society like ours, reduced use of electronic equipment is not a feasible option, we, therefore, have to emphasize reuse and recycling processes. This is the process of e-waste recycling.

A. COLLECTION

The collecting of electronic items through recycling bins, collection sites, take-back program, or on-demand collection services is the first step in the recycling process for e-waste. To specialized electronics recyclers, the combined e-waste is subsequently delivered.

B. STORAGE

Although secure storage might not seem essential, it might be crucial. For instance, lead is heavily present in the glass screens of Cathode Ray Tube (CRT) TVs and monitors. The majority of this glass is currently being merely held forever due to the development of new technologies and the ensuing drop in demand for CRT devices. Previously, they were recycled into new computer monitors.

C. MANUAL SORTING, DISMANTLING, SHREDDING

After the initial manual sorting stage, different components (such batteries and lights) are taken out of the e-waste for processing. Some things can also be manually disassembled at this point in order to recover precious materials, reuse the components, or create new products.

After that, the e-waste is shred into tiny bits, which enables precise material sorting, an essential step in the procedure. Since most electronics are made of a variety of materials, it is possible to mechanically separate them by disassembling them into parts that are only a few millimeter long.

D. MECHANICAL SEPARATION

A massive magnet is used to extract ferrous metals like iron and steel from the mixture of garbage after the shredded e-waste has been passed under it. Additionally, the

nonferrous metals could be separated using an eddy current. After that, these materials might be directed to special recycling facilities for smelting. Circuit boards and other materials with metal contained in them are also separated at this stage.

E. RECOVERY

The materials, now separated, are prepared for sale and reuse. For some materials, such as plastics or steel, this means joining another recycling stream. Others may be processed onsite and sold directly alongside usable components separated in the early stages.

CONCLUSION

Up until now, we consumers have primarily given consideration to the speed, price, and performance aspects of electronic devices, paying little attention to how those factors may affect the environment. Acquiring them however, as environmental preservation and sustainable development have become more important, individuals have begun to choose safer and more environmentally friendly versions.

It is necessary to utilize proper trash disposal techniques to make sure that it won't harm the local ecosystem or put the residents' health at risk. At the time of collection, separating e-waste into a single, clearly defined stream is unquestionably an effective strategy for supporting later efficient recycling and reuse.

However, the creation of highly mixed waste streams does not promote the recycling of materials with added value or the reuse of component parts. Currently, a number of businesses have created ULTRA HIGH SHEARING (UHS) technology since it can recycle a variety of wastes without utilizing chemical additives. It is based on the idea of ultra-shearing, which creates an extremely high mechanical stress to break chemical connections between various polymers and create a copolymer as a bridge between them. The finished result is a high-quality stabilized compound. In January 2003, some nations passed a regulation restricting the use of some hazardous materials in electronics products. The eco design part of the law mandates that producers evaluate the ecological profile of the machinery and take into account the whole lifecycle of particular product groupings.

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Data Mining Techniques And Applications

Asst. Prof. Kuldeep Prabhu[1] , Kunal Dharmendra Rathore[2]

[1]Assistant Professor, [2]F.Y.BSc(IT) Department of Information Technology

K.L.E Society's Science And Commerce College Kalamboli, Navi Mumbai

Abstract

Data mining is a process which finds useful patterns from large amount of data. The paper discusses few of the data mining techniques, algorithms and some of the organizations which have adapted data mining technology to improve their businesses and found excellent results.

Data mining is a process of extraction of useful information and patterns from huge data.The development of Information Technology has generated large amount of databases and huge data in various areas. The research in databases and information technology has given rise to an approach to store and manipulate this precious data for further decision making. It is also called as knowledge discovery process, knowledge mining from data, knowledge extraction or data /pattern analysis.

Keywords: Data mining Techniques ; Data mining applications ; Data mining algorithms.
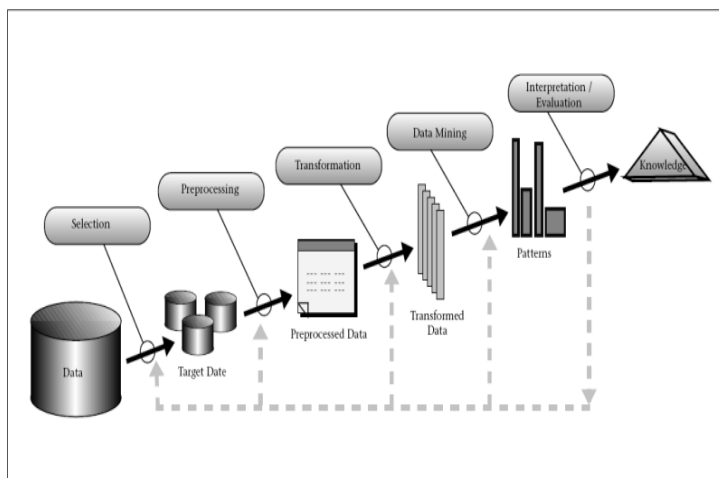
Overview of Data Mining

   Figure 1.Data Mining Discovery Process

Data mining is one of the logical process that is used to search large amount of data in proper sequence or order to find useful data. The goal of data mining is a technique is to find patterns that were previously unknown. Once these patterns are found they can further be used to make certain decisions for development of their businesses by the data mining .

There are three steps involved are:

- Exploration
- Pattern identification
- Deployment

Exploration: Exploration is the first step in data exploration is to be data is cleaned and well transformed into any another form and the required important variables and then nature of data based on the problem are determined.

Pattern Identification: Once data exploration is takes place the refined and defined for the specific variables the second step of data mining is to form pattern identification and then identify are choose the patterns which make the prediction.

Deployment: Patterns are deployed for desired outcome.

DATA MINING ALGORITHMS AND TECHNIQUES

Various algorithms and techniques like Classification, Clustering, Regression, Artificial Intelligence, Neural Networks, Association Rules, Decision Trees, Genetic Algorithm, Nearest Neighbor method etc., are used for knowledge discovery from databases.

CLASSIFICATION

Classification is the most commonly applied data mining technique, which employs a set of pre-classified examples to develop a model that can classify the population of records at large. Fraud detection and credit- risk applications are particularly well suited to this type of analysis. This approach frequently employs decision tree or neural network-based classification algorithms. The data classification process involves learning and classification. . For a fraud detection application, this would include complete records of both fraudulent and valid activities determined on a record-by-record basis. In Learning the training data are analyzed by classification algorithm. In classification test data are used to estimate the accuracy of the classification rules. If the accuracy is acceptable the rules can be applied to the new data tuplesThe classifier-training algorithm uses these pre-classified examples to determine the set of parameters required for proper discrimination. The algorithm then encodes these parameters into a model called a classifier.

Types of classification models:

- Classification by decision tree induction
- Bayesian Classification
- Neural Networks
- Support Vector Machines (SVM)
- Classification Based on Associations

CLUSTERING

Clustering can be said as identification of similar classes of objects. By using clustering techniques we can identify futher dense and sparse regions in object space and can discover overall distribution pattern and correlations among data attributes. Classification approach can also be used for effective means of distinguishing groups or classes of object but it becomes costly so clustering can be used as preprocessing approach for attribute subset selection and classification. For example, to form group of customers based on purchasing patterns, to categories genes with similar functionality.

Types of clustering methods

- Partitioning Methods
- Hierarchical Agglomerative (divisive) methods
- Density based methods
- Grid-based methods
- Model-based methods

PREDICATION

Regression technique can be adapted for predication. Regression analysis can be used to model the relationship between one or more independent variables and dependent variables. In data mining independent variables are attributes already known and response variables are what we want to predict. Unfortunately, many real-world problems are not simply prediction. For instance, sales volumes, stock prices, and product failure rates are all very difficult to predict because they may depend on complex interactions of multiple predictor variables. Therefore, more complex techniques (e.g., logistic regression, decision trees, or neural nets) may be necessary to forecast future values. The same model types can often be used for both regression and classification. For example, the CART (Classification and Regression Trees) decision tree algorithm can be used to build both classification trees (to classify categorical response variables) and regression trees (to forecast continuous response variables). Neural networks too can create both classification and regression models.

Types of regression methods

- Linear Regression

- Multivariate Linear Regression
- Nonlinear Regression
- Multivariate Nonlinear Regression

ASSOCIATION RULE

Association and correlation is usually to find frequent item set findings among large data sets. This type of finding helps businesses to make certain decisions, such as catalogue design, cross marketing and customer shopping behavior analysis. Association Rule algorithms need to be able to generate rules with confidence values less than one. However the number of possible Association Rules for a given dataset is generally very large and a high proportion of the rules are usually of little (if any) value.

Types of association rule

- Multilevel association rule
- Multidimensional association rule
- Quantitative association rule

NEURAL NETWORKS

Neural network is a set of connected input/output units and each connection has a weight present with it. During the learning phase, network learns by adjusting weights so as to be able to predict the correct class labels of the input tuples. Neural networks have the remarkable ability to derive meaning from complicated or imprecise data and can be used to extract patterns and detect trends that are too complex to be noticed by either humans or other computer techniques. These are well suited for continuous valued inputs and outputs. For example handwritten character reorganization, for training a computer to pronounce English text and many real world business problems and have already been successfully applied in many industries. Neural networks are best at identifying patterns or trends in data and well suited for prediction or forecasting needs.

Types of neural networks

- Back Propagation

DATA MINING APPLICATIONS

Data mining is a relatively new technology that has not fully matured. Despite this, there are a number of industries that are already using it on a regular basis. Some of these organizations include retail stores, hospitals, banks, and insurance companies. Many of these organizations are combining data mining with such things as statistics, pattern recognition, and other important tools. Data mining can be used to find patterns and connections that would otherwise be difficult to find. This technology is popular with many businesses because it allows them to learn more about their customers and make smart marketing decisions. Here is overview of business problems and solutions found using data mining technology.

FBTO Dutch Insurance Company

Challenges

- To reduce direct mail costs.

- Increase efficiency of marketing campaigns.

- Increase cross-selling to existing customers, using inbound channels such as the company's sell center and the internet a one year test of the solution's effectiveness.

Results

- Provided the marketing team with the ability to predict the effectiveness of its campaigns.

- Increased the efficiency of marketing campaign creation, optimization, and execution.

- Decreased mailing costs by 35 percent.

- Increased conversion rates by 40 percent.

ECtel Ltd., Israel

Challenges

- Fraudulent activity in telecommunication services. Results
- Significantly reduced telecommunications fraud for more than 150 telecommunication companies worldwide.

- Saved money by enabling real-time fraud detection.

Provident Financial's Home credit Division, United Kingdom

Challenges

- No system to detect and prevent fraud. Results
    - Reduced frequency and magnitude of agent and customer fraud.

    - Saved money through early fraud detection.

    - Saved investigator's time and increased prosecution rate.

Standard Life Mutual Financial Services Companies

Challenges

- Identify the key attributes of clients attracted to their mortgage offer.

- Cross sell Standard Life Bank products to the clients of other Standard Life companies.

- Develop a remortgage model which could be deployed on the group Web site to examine the profitability of the mortgage business being accepted by Standard Life

Bank.

Results

- Built a propensity model for the Standard Life Bank mortgage offer identifying key customer types that can be applied across the whole group prospect pool.

- Discovered the key drivers for purchasing a remortgage product.

- Achieved, with the model, a nine times greater response than that achieved by the control group.

- Secured £33million (approx. $47 million) worth of mortgage application revenue.

Shenandoah Life insurance company United States.

Challenges

- Policy approval process was paper based and cumbersome.

- Routing of these paper copies to various departments, there was delays in approval. Results

- Empowered management with current information on pending policies.

- Reduced the time required to issue certain policies by 20 percent.

- Improved underwriting and employee performance review processes.

Soft map Company Ltd., Tokyo

Challenges

- Customers had difficulty making hardware and software purchasing decisions, which was hindering online sales.

Results

- Page views increased 67 percent per month after the recommendation engine went live.

- Profits tripled in 2001, as sales increased 18 percent versus the same period in the previous year.

CONCLUSION

Data mining has importance regarding finding the patterns, forecasting, discovery of knowledge etc., in different business domains. Data mining techniques and algorithms such as classification, clustering etc., helps in finding the patterns to decide upon the future trends in businesses to grow. Data mining has wide application domain almost in every industry where the data is generated that's why data mining is considered one of the most important frontiers in database and information systems and one of the most promising interdisciplinary developments in Information Technology.

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Blockchain for New India's Agriculture and Consumers : A Review

Asst. Prof. Sayali Karmode - Yelpale

sayalis.karmode@gmail.com

MGM College of Engineering & Technology, Kamothe - Navi Mumbai

Abstract :

Blockchain is a most secure way to store your transactions/information by adapting a distributed technology in a distributed ledger. As we know centralised information can be manipulated any time, it's not trustworthy.

Agricultural technology in our country is progressing day by day, there are so many things that we can do by using blockchain to make agriculture more advanced and secure from all perspectives.

In this paper we will see the proposed model for crop and food production and food supply chain.

Keywords : Blockchain, Distributed Technology ,IoT, Smart Contracts, Crop and Food Production, Food Supply Chain

1. Introduction

To provide a high tech experience and make a life better for agriculture community technology is playing an vital role. With the help of iot, agriculture occupation is progressing day by day. ICT(Information Communication Technology) is also playing a major role by collecting and analysing the data which is important for decision making[1],[2].

Example: Measuring the moisture of soil, checking the water level etc. this type of different projects helping the community to make occupation easier than earlier.

1.1 Blockchain for Agriculture :

Blockchain is the technology which does not rely on any centralised system, this works on the basis of a peer to peer system. Whatever the data stored in blocks is secure and trustworthy as it is maintained by distributed systems[3]. It's very difficult to alter the data of blocks because of the consensus algorithm used in blockchain technology.

Nowadays everyone is looking for healthy and organic food. Market is also full to satisfy the needs of consumers. There are thousands of products available in the marketplace but no product is trusted with transparent quality information and food supply chain.

Farmers are also facing challenges in production of crops with minimum resources. Again with that food or crop quality also matters. If they want more benefits then they have to adapt the technology to ensure the quality of food[4].

Because of a decentralised system its possible to implement the farmer-consumer relationship directly instead of the third party, which is the need of today's era. There are a number of problems that can be solved using blockchain technology.

Blockchain helps in the food supply chain process to minimise the problems like issues in quality of food and safety.

Blockchain technology provides transparency among all entities involved in the agricultural process. As we know, agricultural data is most important and plays a major role in different processes, so by implementing the blockchain in agriculture we can make the agricultural community smarter and faster than earlier it used to be[5].

In this paper we will review two proposed models.
1. Crop and food production model
2. Food supply chain model

2. Literature Review

Blockchain technology proposed by Satoshi Nakamoto in 2009 with bitcoin application in real life. Blockchain works on the basis of a distributed system, where no centralised control exists. There are different types of Blockchain like public, private etc with there own advantages and disadvantages.

In healthcare blockchain is playing an important role, to maintain privacy and security of records[6].

Mathew stated that Blockchain and artificial intelligence can be very useful to solve most of the healthcare problems.

Tejmang R claims in digital media blockchain is playing a major role by smart contracts.
SK Chinamg stated that copyright protection can be implemented in a more secure way by using blockchain components to maintain more security and privacy.

InsureX claims that the insurance industry problems can be solved by blockchain in the industry[7].

X Hitacomi stated that in crowd funding blockchain and smart contracts can play a major role.

Hitachomi Denis stated blockchain played an major role in voting system in U.S

XunXun Ching stated IoT is playing a major role in healthcare and agriculture industry.

Xomo Tmex claims in future the smart City blockchain will play a major role in collaboration with cloud and iot.

Tingpee Zeen claims in the future smart City blockchain can be used with artificial intelligence, iot and edge computing to implement security and privacy along with performance[8].

3. Proposed Work

3.1 Crop and Food Production Model:

There are so many challenges in the agricultural field, most of the problems got solved by using iot. Here again we are going to club iot with blockchain.

Step 1 : IoT clubs with Blockchain

Already we have started implementation of iot in farming, but now we are going to club iot with blockchain.
We are going to use sensors or few implemented projects to track the condition of the overall farm. Example soil moisture, condition of crops, temperature, humidity, light.
After collecting data now it's time to store this data.

Step 2: Cleansing of data

Whatever the data we have collected now should be stored somewhere, but before storing the data it should be structured properly. Overall we want to improve the quality of data.To achieve this objective the following has to be done.
a.   Metadata for the collected data is added.
b.   Timestamp to be added.
c.   Type and demography has to be added.

After this process, the data should be ready in machine learning format.

Step 3:Use of ML algorithm.

Machine learning algorithms have to be implemented to derive the model which will help farmers and other entities also in the agricultural field.

- Crop identification
- Health of crops
- Disease and weed identification in crops.
- Crop quality recommendation.

This data is stored in the blockchain, and it will be available to all participants of the agricultural process.

Data transparency will be maintained here by accessing the data generated by implementing the machine learning algorithms.

Step 4: Data is ready for blockchain

Whatever the data is generated and collected in the previous step, it has to be stored now in IPFS. This is a distributed storage platform with hash addresses stored in blockchain.

This system is not centralised so whatever the data stored here is available for all the participants or entities of agriculture with transparency.

With the help of smart contracts this data can be communicated with the few stakeholders of the agricultural process with transparency.

3.2 Food Supply Chain Model:

Food safety is more important factor nowadays, it's difficult to track the food supply chain for producer(farmer) and consumer also. Food frauds are very common nowadays, in this situation it's important that every entity should be able to track the food supply chain with transparency.

Step 1 : As discussed in the previous proposed model with the help iot sensors we will collect the data related to crops like quality of crop, quality of soil, weather, quality of water used for farming etc.

This gathered data will be stored in IPFS with hash key and address in blockchain.

Step 2 : Further processing of crops.

Once crops are grown, crops are sent for the next processing step like bidding.

for example, grown groundnuts will be sent to the oil company.

Here we will use an iot enabled vehicle, which will track the condition where, when and how crops are transported or delivered.

After the validation process of bid by smart contracts, crops sent for further processing will record the information of every process in block chain[9][10][11].

The information gathered from the retailer from company/refineries will help to check the quality of oil/food is good or not.

Step 3 : Supply to retailers

Now the processed food is transported to the retailers and can be checked easily for the quality.

Again all the data where it is stored(place at retailers side), how it is transported, when it is transported all the relevant information will be kept on blockchain[12].

Step 4: Consumer can backtrack the process

Now consumer can trace the all required details of food supply chain example;
- Fertiliser used
- Crop month
- Soil quality
- Storage information
- Date of packaging

And many more.

5. Future Work

In this paper, proposed work is given. With the help of proposed work, a real time model will be implemented to solve the all stated problems in the agricultural field.

6. Conclusion

By implementing the IoT and blockchain together we can implement the agriculture friendly model for the future. It will help to create a healthy and wealthy relation between farmer and consumer. Proposed model will help farmer to monitor the condition of crops and it will help to consumers to backtrack the food supply chain.

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Review Of Combination Of Cloud Computing With Internet Of Things

Asst. Prof. Swapnali Kadge[1] , Shivani Santosh Bisure[2]

[1]Assistant Professor Email id: swapnali.k@klessccmumbai.edu.in,

[2]T.Y.BSc(IT) Email id:shivanibisure860@gmail.com

Department of Information Technology

K.L.E Society's Science And Commerce College Kalamboli, Navi Mumbai

Abstract :-

Today's world is the information superhighway. In normal word combination of hardware, software and the internet with mesh computing combine to provide a very huge connection in the world. The connection or services provided with mesh computing is more effective. because now the requirement of humans is very huge that's why mesh computing also takes the next step with the internet of things. Cloud Computing is the provision of computing services such as servers, repository , information processing, meshing of devices, software, surveys, intelligence, and more, over the Cloud (Internet).it just like mesh topology that's why mesh computing is also called "mesh computing". nowadays the requirements and importance of technology is very huge so in the future the mesh computing and IoT combine comes front of the peoples they very interesting topic for the society. The computing is provides virtualization view means virtual view of object. In this paper, we try to focus on combining the study of IoT and mesh computing and the importance of both in future .

keywords: information superhighway, Cloud Computing ,mesh computing, virtualization

Introduction:-

The information superhighway is auto-configured and smartly interconnected in an effective manner and extensive infrastructure. The field has evolved due to the convergence of multiple technologies, including pervasive computing, every ware and ambient intelligence, sensors, increasingly powerful encapsulated systems, as well as new technology. nowadays no more uses

of wired technology so IoT gets expanded and it has evolved from the merging of wireless

mechanization, microsystems technology systems, microelectronic systems and the information

superhighway. The first information superhighway that is IoT concept invented by Kevin Ashton

as co-founder of Auto-Id center in MIT and he presenting this concepts in 1999.the Iot is made

of two main words that is information and technology .the information is collected from different

different parts, fields and other platforms they connected through the technology and create a

network in shortly we can say information technology (information superhighway).this

technology is day by day get expanded .some examples like existing Iot are self-driving cars for
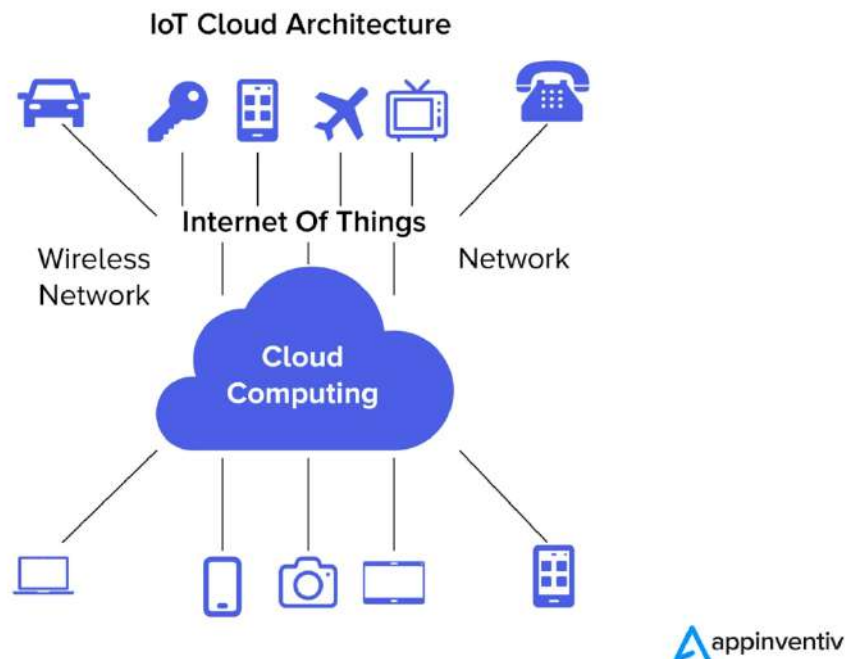
automated driving system.

fig 1 :IoT Cloud Architecture

Cloud computing is the required availability of any physical or virtual component of limited

availability within a computer system, especially data processing and processing capability ,

without direct active handling by the customer. In 1993 the mesh for use refers to platform

distributing computing. Cloud computing provides services which make it possible to share data-processing devices across the information superhighway.Cloud computing is the distribution of different services through the Internet.Cloud computing is named as such because the information being approached is found remotely in themesh or a virtual space.mesh computing contains the data in private and public services.
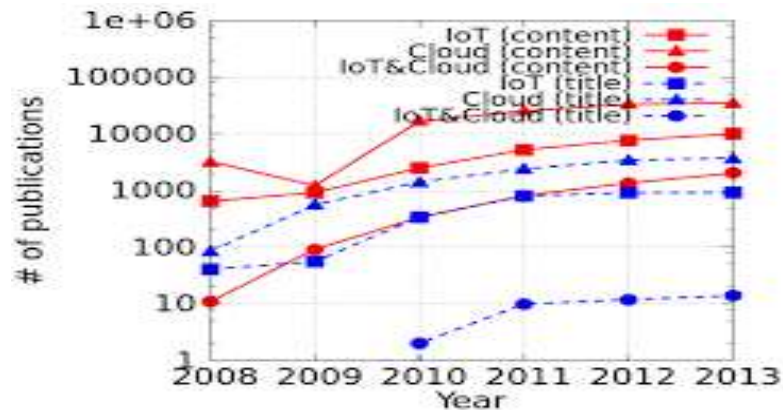

fig 2: Analysis and Interest Trends About Cloud and IoT.

information superhighway andmesh computing has a supportive relationship. While IoT creates large amounts of information, manymesh providers allow data transfer via the internet, which facilitates a way to handle the data. Cloud computing helps to advance analysis and observation of IoT devices.IoT devices which use common APIs and back-end framework can receive important security updates as fast as through Cloud as soon as any security contravention happens in the framework. This IoT and Cloud computing combined feature is an essential limit for user safety and privacy.
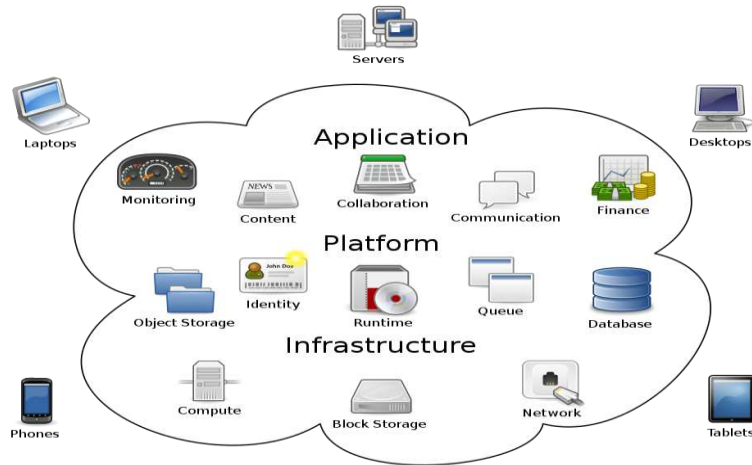
fig 3: Integration Of Cloud Computing And IoT

Internet Of Things	Cloud Computing
Iot is a network of interrelated devices that are capable of switching data over a mesh.	Cloud computing is the requested transport of IT assets and requests via the internet.
limited component capabilities.	unlimited component capabilities.
limited storage area or not storing capabilities.	unlimited storage area or not storing capabilities.

Literature Review :

key provocations that have to be faced with the integration of Cloud computing and information superhighway. Both mechanizations are distant from each other in some outline but Both technologies are in the latest trend and develop some special attributes. The writer expressed the Cloud information superhighway structure - the combination of mesh computing and

information superhighway. Discussion about the applications available at that time based on CloudIoT, their implementation, difficulties while running is presented in the research paper. The research intensifies the future need of distribution of these two latest technologies. Analysis of limitations drawbacks . On the other hand mesh computing receives an award from information superhighway to build up its own capabilities with the dealing of world's resources. With the entrance of mesh Computing in the Internet of Things the mesh acts as an integral part between applications and smart objects that are used to store data and records that are generated due to communication of these objects. Both technologies can give advantage to one another highly because sharing some common features can magnify the powers of each other. his paper discusses materialize technology trends coming with full speed. programmed and computerized. technologies are conducted about extraordinary revolutions and affect our daily routines in an intelligent way.

Conclusions:-

The proposed paper provides a comparative study what the simulations use of cloud computing with internet of things cloud computing will be the edge writing technology by 2025 because of its various benefits like security flexibility mobility insight and many more this paper present the future scope of this upcoming technology and their use. The integration of mesh computing and IoT is representative of the future in the world of the internet. New applications crowded from this combination known as IoT Cloud are opening newer directions for business as well as research. Let us hope that this combination discovers a new prototype for the future of multi-networking and an open service platform for users. The new motto given to the next generation from the cloud IoT is making an intelligent and smart society .

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