



DRONTECHCONNECT

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SE EDITION

Vol. II Issue II (Jan -Jun) 2022





DRONTECHCONNECT

EDITORIAL MESSAGE



Dr. Ashima Mehta
(HOD CSE)

Dear Readers,

Welcome to the latest edition of DronTechConnect - source of inspiration, knowledge, and innovation in the world of Computer Science and Technology. This magazine serves as a platform for knowledge sharing, collaboration and celebrating achievements of our budding technocrats.

In this issue, we delve into a captivating array of topics and developments, all tailored to the inquisitive minds of the future engineers. As an engineering college community, we stand at the forefront of technological breakthroughs, and it is our mission to empower you with the knowledge and insights to not only keep pace but to lead in this ever-accelerating race of innovation.

Importance of AI and Cyber Security: Our cover story this month takes a deep dive into the rapidly advancing field of Artificial Intelligence and Cyber Security. From understanding the basics to exploring real-world applications, we aim to equip you with the tools to harness the power of AI for transformative solutions and Cyber Security need to protect our sensitive information, infrastructure, and privacy from cyber threats

As we navigate through this issue, I encourage you to embrace every article with an open and curious mind. Technology is a vehicle for change, and it's up to you, the next generation of engineers, to drive this change.

Thank you for being part of our vibrant and forward-thinking community. We hope this issue sparks new ideas, ignites your passion for technology, and serves as a valuable resource in your educational journey.

We're thrilled to have you with us on this journey. Stay curious, stay innovative!!!!

Warm regards,
Dr. Ashima Mehta
Editor-in-Chief, DronTechConnect

EDITORIAL BOARD



Dr. Ashima Mehta
(HOD CSE)

Editor in Chief

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VISION

Steering the future of computer science through innovative advancements, fostering ethical values and principles through technical education.

Directing future innovations in computer science through revolutionary progress.

Instilling a foundation of ethical values & principles in every technologist.

Offering a comprehensive technical education to equip individuals for a meaningful and influential future.

MISSION

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

- **Apply the technical competence in Computer Science and Engineering for solving problems in the real world.**
- **Carry out research and develop solutions on problems of social applications.**
- **Work in a corporate environment, demonstrating team skills, work morals, flexibility and lifelong learning.**

PROGRAM SPECIFIC OUTCOME (PSO)

- **Exhibit design and programming skills to develop and mechanize business solutions using revolutionary technologies.**
- **Learn strong theoretical foundation leading to brilliance and enthusiasm towards research, to provide well-designed solutions to complicated problems.**
- **Work effectively with diverse Engineering fields as a team to design, build and develop system applications.**

PROGRAMME OUTCOME (PO)

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Po4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Po5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

Po6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Po7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Po8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities & norms of the engineering practice.

Po9. Individual & team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Po10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give & receive clear instructions.

Po11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Importance of AI and Cyber Security and why one should know about it



Ishita Sehgal
(22067; CSE)

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of current time. AI has the potential to reshape society, economics, and our daily lives. AI holds immense importance in today's world, impacting areas such as healthcare, education, finance, transportation, entertainment and more.

AI has the ability to enhance efficiency and productivity across a wide range of fields. It is now easier to analyze complex data which was very difficult for humans before. In healthcare, AI assists in diagnosing diseases, recommending treatment options, and managing patient records. This not only saves lives but also reduces medical costs. Similarly, in finance, AI-driven algorithms help detect fraudulent transactions and optimize investment portfolios. These applications streamline processes and increase productivity.

AI also assists in better decision-making. In sectors such as meteorology, AI models process real-time data to provide accurate weather forecasts. In autonomous vehicles, AI makes split-second decisions to ensure safety.

AI's importance is also evident in its ability to personalize user experiences. Online platforms use recommendation systems based on AI to suggest content, products, and services tailored to individual preferences. AI also powers virtual assistants like Siri and Alexa, which understand and respond to user queries, making technology more user-friendly. AI-driven chatbots offer support to students and answer their queries, making education more accessible and engaging.

While the importance of AI is undeniable, it also presents challenges and ethical considerations. The potential for job displacement due to automation, concerns about bias in AI algorithms, and the need for responsible AI development are just a few examples. Addressing these issues is crucial to ensure that AI continues to bring benefits to society.



Importance of Cyber Security

In today's digitally connected world, Cyber Security is crucial. As our lives become increasingly dependent on digital, the need to protect our sensitive information, infrastructure, & privacy from cyber threats is more critical than ever.

With the proliferation of online services, we store an immense amount of personal data on the internet. This includes our financial information, healthcare records, and even personal communication. Without proper Cyber Security measures, this information is vulnerable to theft, identity fraud, and other malicious activities. A Cyber Security breach can have catastrophic consequences, ranging from financial loss to damage of reputation. It can disrupt operations, result in data loss, and even lead to legal consequences.

The common types of Cyber Attacks are Malware, Denial-of-service (DoS) attacks, Phishing, Ransomware, Password attacks, URL Interpretation, Spoofing, DNS Tunneling, Insider threats, supply chain attacks, code injection attacks, identity based attacks, etc. These attacks can disrupt energy grids, transportation systems, and even national defense. Therefore, Government must prioritize Cyber Security to protect their citizens and maintain sovereignty.

People are becoming increasingly wary of sharing their personal information online, and this can hinder the growth of digital services and e-commerce. Strong Cyber Security measures can help rebuild trust in the digital landscape. Cyber-attacks have a significant economic impact. The cost of data breaches, lost revenue, and recovery efforts can be very high. Investing in Cyber Security is a smart economic decision in the long run, as it can prevent potentially devastating financial losses. Businesses and organizations must invest in Cyber Security to avoid legal troubles and protect their reputation.

Cyber security is not just a matter of protecting information; it's about safeguarding our way of life. As individuals, businesses, and governments, we must take proactive measures to defend against cyber threats. Cyber Security is imperative for our security, privacy, and prosperity in the digital age. Therefore, it becomes important for everyone present on the internet to have adequate safety measures before succumbing to any losses.



Google: Interesting Facts



Prerna Gupta
(22118; CSE)

- § On September 15, 1997 the domain Google.com was registered.
- § Google Was Inspired by the Number Googol, which is the number one followed by 100 zeros.
- § Google's first office was a rented garage.
- § Google is the dominant search engine with a 92.82% market share.
- § Google holds an astonishing index of over 40 billion web pages.
Google scrutinizes through this gigantic collection of websites in less than half a second.
- § Google has 8.5 Billion searches per day worldwide.
- § The original name of Google was Backrub.
- § The Google search technology is called PageRank.
- § Google wanted in 1997 to sell their search engine system to Yahoo for \$ 2 million. Yahoo regrets their decision till now!
- § The first tweet from Google was: "I'm feeling lucky" in binary code.
- § The Google homepage is available in 80 languages.
- § At present, Google generates the highest revenue through SEA (Search Engine Advertising).
- § Nearly 60% of all searches on Google come from mobile devices.
- § The Word "Google" Was Officially Recognized as a Verb in 2006.

IoT Applications



Pratyush Atri
(22115; CSE)

The Internet of Things (IoT) is a concept that refers to the network of physical objects or "things" embedded with sensors, software and other technologies which enables them to collect and exchange data with other connected devices or systems over the internet. IoT has impacted our lives. Some of the major characteristics of IoT Includes:

Connectivity, Data Collection, Data Processing, Automation & Control, Interoperability, Remote Monitoring and Management.

Here some of the important aspects of IoT adoption and deployment id discussed. Let's get down to understanding all the ways in which IoT can be implemented across various industry verticals and other examples of IoT applications in daily life.

1.IoT Application in Agriculture:

IoT applications in agriculture, often referred to as "Smart Agriculture" or "Precision Agriculture," have significantly improve farming practices, increase crop yields, and reduce resource wastage. Using IoT farmers today can get insights on temperature, humidity level, soil conditions and tips for watering plants at the proper moment by using sensors placed in the fields. All the data can easily be managed through smart phones. In Agriculture, IoT finds application in spraying crops, irrigation management, livestock monitoring, farm surveillance with drones, field mapping and many more.



2. IoT Application in Healthcare:

The IoT applications in healthcare have the potential to revolutionize the medical industry by improving patient care, increasing efficiency & reducing costs. The Internet of Things also improves the current devices in power, precision, and availability. IoT focuses on creating systems rather than just equipment

Here's how an IoT-enabled care device works.



3. IoT Application in Environmental Monitoring:

IoT plays an important role in environmental monitoring by providing real-time data collection and analysis of various environmental parameters. These IoT applications help in better understanding and managing our environment, tracking pollution, and mitigating the impact of climate change.

Use Cases of IoT-based Environmental Monitoring System



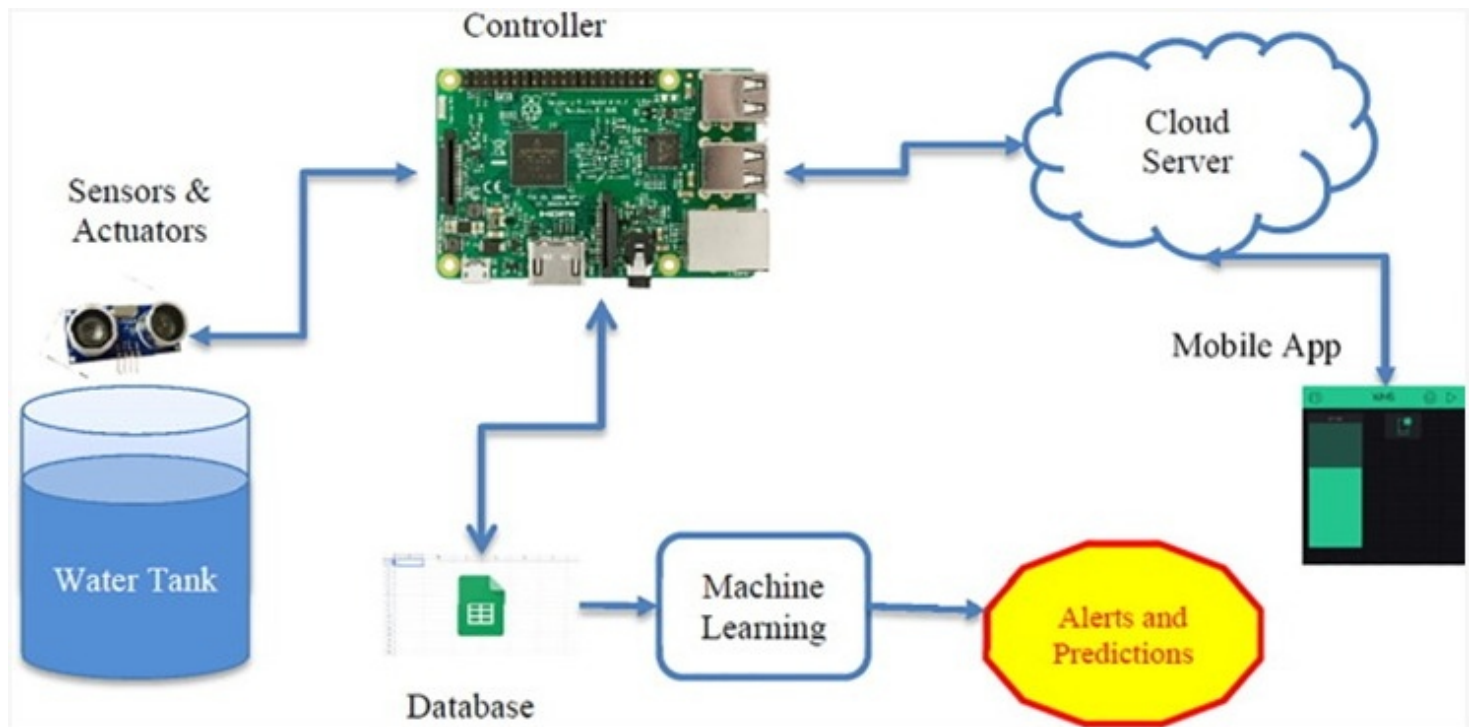
4.IoT Application in Wearables:

IoT applications in wearables have transformed the way one monitor and manage health, stay connected, and lead more convenient lives. Wearables are small, often wearable devices equipped with sensors, connectivity features, and data processing capabilities. Fitness trackers, smartwatches, and health monitors use IoT to collect and transmit health and fitness data for personal well-being and healthcare applications. IoT applications in wearables have improved personal health management, provided real-time information, and added convenience to everyday life. As technology continues to advance, wearables are becoming more integrated into our daily routines, offering valuable insights and support for a wide range of applications.



5.IoT Application in Water Management:

IoT applications in water management play a crucial role in efficiently monitoring, conserving, and managing water resources. These applications help in addressing water scarcity, reducing waste, and improving the quality of water supply and distribution.



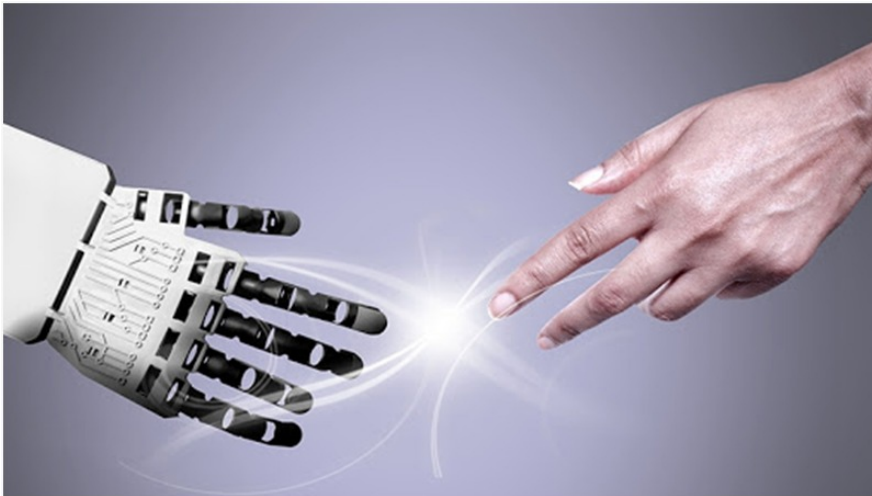
5.IoT Application in Manufacturing:

IoT applications in manufacturing, often referred to as "Industrial IoT" have revolutionized the manufacturing industry by enhancing productivity, improving efficiency, and reducing operational costs. These are transforming traditional production processes into smarter, more efficient, and data-driven operations. These technologies lead to cost savings, increased productivity, improved product quality, and overall competitiveness in the manufacturing sector



These are just a few examples of IoT applications, and the list continues to grow as technology evolves. IoT has the potential to transform various industries by providing real-time data, automation, and connectivity to improve efficiency, sustainability, and quality of life.

Web 3.0 and its Future Impacts



Yatin Madan
(22183; CSE)

The idea of embracing intelligent machines and collaborating with them is not a call to surrender to technology but an invitation to adapt and evolve alongside it. The technology has grown very rapidly in current times and we must not have fear of losing anything. We must not worry of our replacement by the machines; rather we must focus on making machines more productive by using our brain; which machines don't have. Machines can do fast calculations and we have the knowledge to give them command to do so. In today's rapidly evolving technological landscape, the integration of intelligent machines into our daily lives is inevitable.

Rather than fearing this transformation, we should actively embrace it and seek opportunities to collaborate with these advanced technologies.

Here, I would like to quote a very famous example of renowned chess player Garry Kasparov who defeated 22 of the world's best chess playing machines in the year 1985. But, later in the year 1997, he lost his match to the IBM's super computer 'The Deep Blue'. He lost the match because he was afraid of his match and was pretty sure of the fact that his opponent had no such fears. After losing the match he thought of collaborating with the machine and played chess games with machines on his side. This example could be understood as the collaboration of brain and machine.

Intelligent machines have the potential to significantly improve efficiency in both personal & professional tasks. By collaborating with these machines, we can harness their analytical capabilities to our advantage. Collaborating with intelligent machines can lead to the development of innovative solutions to complex problems. The future of work lies in the collaboration between humans and machines. Through this partnership, we can unlock new possibilities & achieve unprecedented levels of productivity. These machines can also be used for protecting our environment in case of alarming situations like flood, cyclone and tsunamis. By continuously engaging with the machines, we can upgrade our learning and skills as well as pave way for a brighter and more efficient future.



Web 3.0 and its Future Impacts



Pallavi Singh
(22103; CSE)

Web 3.0 refers to the next version of the internet that focuses on decentralization and ownership by users. While the Web 1.0 was primarily a static information repository and Web 2.0 introduced user-generated content and social interaction, Web 3.0 is characterized by a focus on machine understanding and reasoning, enabling more intelligent and context-aware applications.

Refer to the table to find the difference:

| | Web 1.0 | Web 2.0 | Web 3.0 |
|---------------------|----------------------------------|--|---|
| Content | Static or passive | User generated content & community platforms | User ownership for content. Eg. <u>NFT</u> , digital art |
| Technology | Basic HTML, CSS | Dynamic HTML, <u>Javascript</u> , Java etc. | <u>Blockchain</u> , Artificial Intelligence, Machine Learning |
| Data Storage | Stored on single website servers | Owned by large tech giants | Distributed servers owned by none |
| Virtual environment | None | Basic 3D use | 3D, Augmented Reality, Virtual Reality, <u>Metaverse</u> |

Here are some of the potential future impacts of Web 3.0:

Semantic Understanding: Web 3.0 is designed to understand the meaning of web content. This means machines can better interpret and contextualize information, making it easier to find relevant data.

Data Integration: Web 3.0 aims to seamlessly integrate data from various sources and platforms. This will enable more comprehensive and accurate information retrieval.

Artificial Intelligence (AI) Integration: Web 3.0 will incorporate AI technologies, allowing for more intelligent, personalized, and adaptive web experiences. AI-driven chatbots, virtual assistants, and recommendation systems will become more sophisticated.

Blockchain and Decentralization: Web 3.0 will leverage blockchain technology to enable decentralized applications (DApps) and smart contracts. This has the potential to disrupt traditional industries and make data more secure and transparent.

Enhanced Privacy and Security: With the use of blockchain and advanced encryption techniques, Web 3.0 promises improved security and privacy, giving users more control over their personal data.

Interoperability: Web 3.0 aims to ensure that different platforms, devices, and applications can communicate and work together seamlessly. This will reduce silos and improve user experiences.

Augmented Reality (AR) and Virtual Reality (VR): Web 3.0 can enhance AR and VR experiences by providing a more comprehensive understanding of the environment and enabling richer, more interactive content.

The impact of Web 3.0 is still unfolding, and its full realization may take years. Challenges related to data privacy, standardization, and regulatory frameworks will need to be addressed. However, Web 3.0 has the potential to revolutionize how we interact with information, services, and each other, creating a more intelligent, decentralized and user-centric web ecosystem.