DRONTECHCONNECT

DRON TECH CONNECT

SIT EDITION

Vol I Issue I (Jul - Dec 2020)

DRONTECHCONNECT

EDITORIAL MESSAGE

Dr. Megha Goel

Dear Readers,

Welcome to the latest edition of DronTechConnect!

Our Computer Science and Information Technology (CSIT) Department stands as an exemplary hub of innovation and learning. With cutting-edge curricula and state-of-the-art facilities, we offer an unparalleled academic experience. Our esteemed faculty comprises industry experts and dedicated researchers, fostering an environment that encourages critical thinking, creativity, and problem-solving skills. Through robust industry connections and internships, students gain practical exposure and hands-on experience in diverse technological domains. Our CSIT department prides itself on producing graduates equipped with the expertise and adaptability to thrive in the ever-evolving tech landscape, making a significant impact in the world of technology.

Throughout these pages, you'll discover insightful articles, thought-provoking research, and inspiring stories from our students. From groundbreaking projects to perspectives on emerging technologies, this magazine showcases the diverse talents and accomplishments that make the department truly exceptional.

We hope this edition sparks your curiosity, ignites your passion for technology, and provides a glimpse into the exciting advancements happening within department. Thank you to all the contributors for sharing your expertise and experiences. We invite you to explore, learn, and be inspired by the incredible work showcased in this edition of our CSIT department magazine.

Happy Reading!

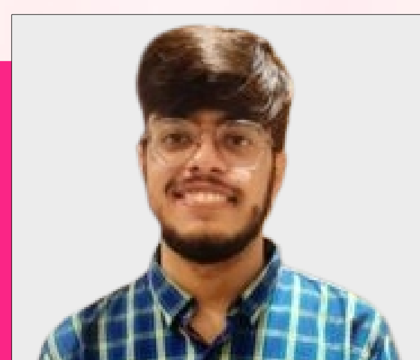
Warm Regards
Dr. Megha Goel
Editor-in-Chief, DronTechConnect

EDITORIAL BOARD

Dr. Megha Goel

Editor in Chief

It gives me immense pleasure to present our college magazine, a culmination of creativity, innovation, and academic excellence. Within these pages, you'll witness the remarkable dedication and hard work of our Computer Science and Information Technology (CSIT) department. In this issue, I encourage you to explore the diverse perspectives and accomplishments featured here.



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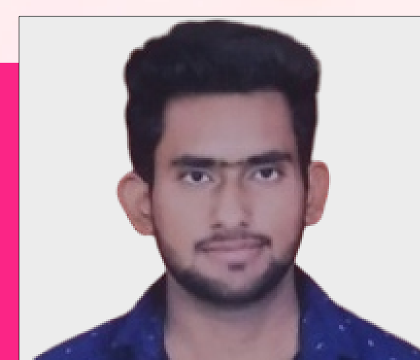

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(20670; CSIT)

Editor- Text

DRONTECHCONNECT

CSIT EDITION

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VISION

Preparing technologists with in-depth insights into information technology, and embedding ethics via focused technical training.

MISSION

Empower technologists to excel in information technology through rigorous training and hands -on experience.

Foster a culture of integrity and responsibility by instilling ethical principles in every aspect of technical education.

Encourage technologists with new ideas and good leadership in the tech world, training to possess strong values.

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

- Demonstrate technical competence with analytical and critical thinking to understand and meet the requirements of Industry, academia and research.
- Exhibit leadership, team skills and entrepreneurship skills to provide solutions to real world problems.
- Work in multi-disciplinary industries with social and environmental responsibility, work ethics and adaptability to address engineering and social problems.

PSOS (PROGRAM SPECIFIC OUTCOME)

- Have proficiency in programming skills to design, develop and apply appropriate techniques, for solving engineering problems.
- Have knowledge to build, automate and manage business solutions using advanced technologies.
- Have pleasure towards research in applied computer technologies.

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 oneâ€™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.

The Convergence of Computer Science and Information Technology in Space Exploration

STUDENTS ARTICLES

In the vast expanse of outer space, the marriage of computer science and information technology has become instrumental in propelling humanity into new frontiers. Space exploration relies heavily on cutting-edge technologies to navigate the complexities of the cosmos and gather valuable data.

Computer science plays a pivotal role in spacecraft design and operation. Advanced algorithms govern navigation systems, ensuring precise trajectory calculations and orbital maneuvers. Autonomous systems, driven by artificial intelligence, enable spacecraft to adapt to unforeseen challenges and make split-second decisions, reducing reliance on ground control.

Information technology facilitates seamless communication between spacecraft and mission control. High-performance computing allows for the swift analysis of vast datasets collected by space probes and telescopes. Cloud computing enables real-time collaboration among scientists and engineers spread across the globe, fostering a collaborative approach to problem-solving.

Moreover, the burgeoning field of quantum computing holds promise for revolutionizing space-related computations. Quantum computers have the potential to exponentially increase processing speeds, addressing complex calculations at a pace previously deemed impossible.

Satellite technology, a subset of information technology, has become indispensable for Earth observation, weather monitoring, and global communication. Miniaturized satellites and constellations, powered by advancements in computer science, enable cost-effective solutions for space-based applications.

As humanity sets its sights on Mars and beyond, the synergy between computer science and information technology will continue to push the boundaries of space exploration. The fusion of these disciplines not only propels scientific discovery but also opens up new possibilities for human habitation and resource utilization in the cosmos.

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Rover Mission Using JAVA Technology

STUDENTS ARTICLES

In the dynamic world of space exploration, Java technology has emerged as a driving force behind the success of rover missions. Java, known for its portability, scalability, and reliability, plays a pivotal role in developing the software that controls and orchestrates the intricate operations of planetary rovers.

One of the key advantages of using Java in rover missions is its platform independence. Java's "write once, run anywhere" philosophy allows the development of software that can seamlessly run on different hardware platforms, a critical feature when designing systems for space exploration where diverse components may be involved.

Java's object-oriented programming (OOP) paradigm facilitates the creation of modular and maintainable code, enhancing the flexibility of rover software. This is crucial for adapting to the unpredictable challenges presented by extraterrestrial environments. The robust error-handling mechanisms in Java contribute to the resilience of the software, ensuring that rovers can autonomously navigate and address issues they may encounter during their missions.

Furthermore, Java's support for concurrent programming is invaluable in managing the simultaneous execution of tasks on rovers. This capability allows rovers to perform various operations concurrently, such as capturing images, analyzing soil samples, and communicating with mission control.

The open-source nature of Java fosters collaboration and innovation in the development community, leading to the creation of sophisticated software solutions for rover missions. From the Mars rovers to future missions exploring the lunar surface or other planets, Java technology continues to be a driving force in enabling the success of these ambitious endeavors, expanding our understanding of the cosmos.

Ajay Kundu
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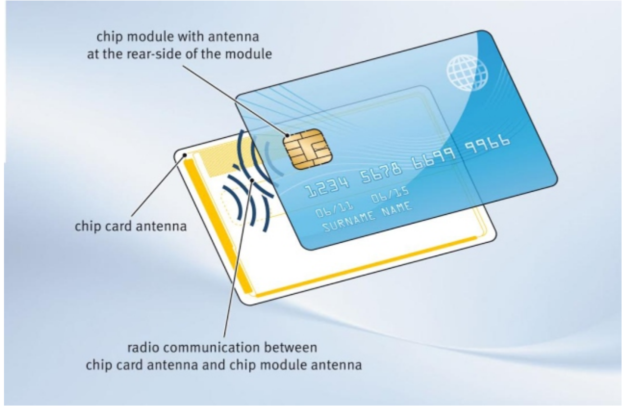
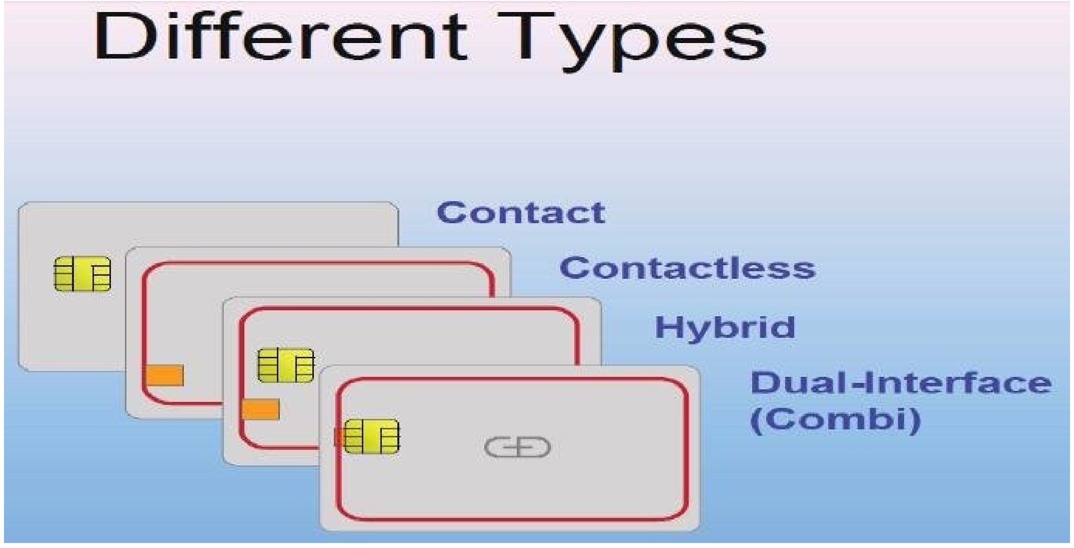
Smart Cards: The Intelligent Guardians of Modern Security

In an era dominated by digital interactions and the constant evolution of technology, smart cards have emerged as powerful tools, seamlessly blending convenience and security. These small, plastic cards, embedded with integrated circuits, have become ubiquitous in various aspects of our daily lives, offering a multifaceted solution to authentication, identification, and transaction needs.

At the heart of smart cards lies a microprocessor or memory chip, transforming them into intelligent devices capable of storing and processing information. Commonly used in applications like credit and debit cards, identification badges, and access control systems, smart cards enhance security by requiring a user to authenticate their identity through a personal identification number (PIN) or biometric data.

The versatility of smart cards extends beyond financial transactions. They play a crucial role in secure access control, whether for physical spaces or digital systems. Smart cards grant authorized individuals entry to restricted areas, networks, or systems, acting as a reliable gatekeeper against unauthorized access.





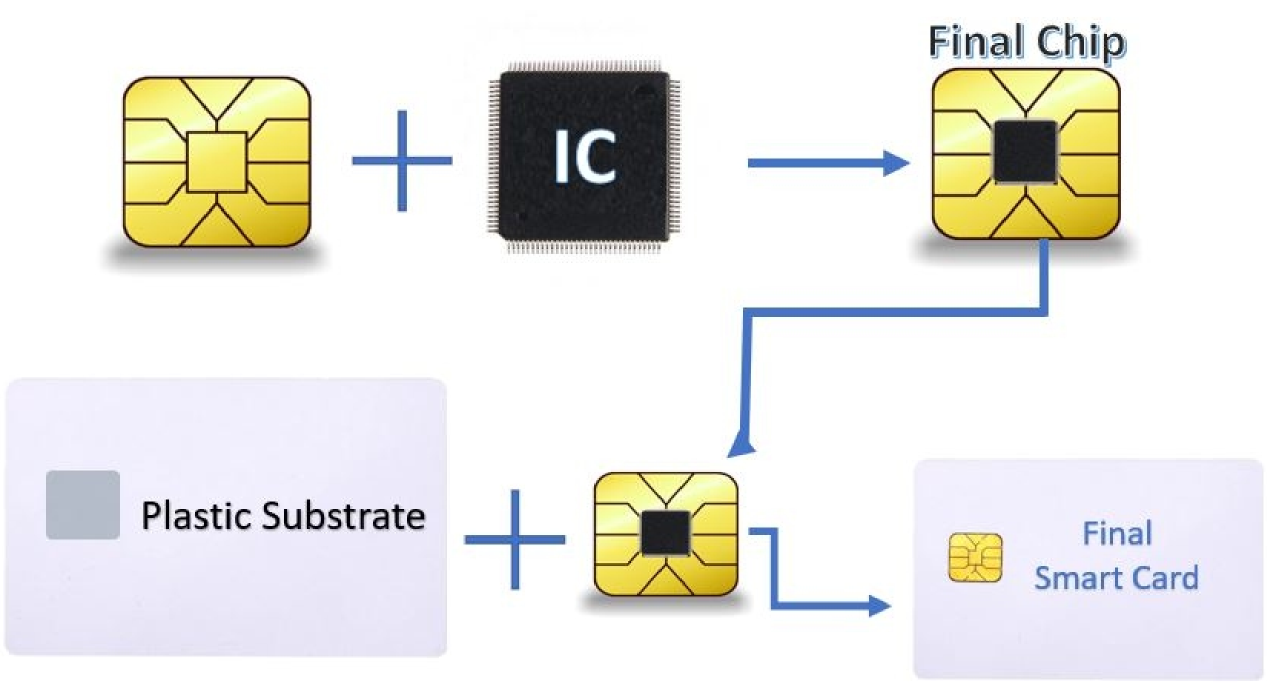
Smart Cards: The Intelligent Guardians of Modern Security

STUDENTS ARTICLES

Contactless smart cards, equipped with radio-frequency identification (RFID) or near-field communication (NFC) technology, have gained popularity due to their convenience and speed. They allow users to make transactions or access secured areas with a simple tap, eliminating the need for physical contact.

Moreover, the integration of smart cards into public transportation systems has revolutionized commuting experiences. These cards streamline fare payment processes, reducing queues and enhancing the efficiency of transportation networks.

As technology continues to advance, smart cards evolve to meet emerging challenges. Whether safeguarding financial transactions, securing sensitive information, or simplifying daily routines, smart cards remain at the forefront of the digital transformation, serving as intelligent guardians of modern security and convenience.



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