DRONTECHCONNECT

DRON TECH CONNECT

SE IOT & CYBER SECURITY EDITION

Vol II Issue II (Jan-June 2022)

DRONTECHCONNECT

EDITORIAL MESSAGE

Dr. Megha Goel
(HOD CSIT)

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 CSE 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.

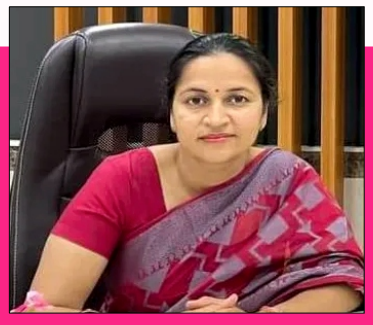
Throughout these pages, you'll discover insightful articles, thought-provoking research, and inspiring stories from our students. From groundbreaking projects to perspectives on emerging technologies, this magazine showcases the diverse talents and accomplishments that make the department truly exceptional.

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 CSE department magazine.

Happy Reading!

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

EDITORIAL BOARD



Dr. Ashima Mehta
(HOD CSE)

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 Engineering (CSE) department. In this issue, I encourage you to explore the diverse perspectives and accomplishments featured here.

Riya Grover
(21699; CSIT)

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Shubham Sharma
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Editor- Text

DRONTECHCONNECT

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CSIT EDITION

VISION

To facilitate high quality education in Information Technology and progressive atmosphere to the students so that they can fit into the competitive atmosphere in the global market.

MISSION

To provide a learning ambience to enhance innovations, problem solving skills, managerial qualities, team-spirit and ethical responsibilities.

To provide exposure to latest tools and technologies in the area of Information Technology.

To support society by participating in & encouraging technology transfer.

To undertake collaborative learning which offers opportunities for long term interaction with academia and industry.

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

- Achieve strong fundamentals, domain knowledge through projects and industrial training and be updated with recent technology to provide the effective solutions for Information Technology problems and meet the industry standards.
- Provide socially responsible, society friendly solutions to Information Technology related broad-based problems adapting professional ethics
- Able to face the challenges in professional practices in consistency with the societal needs, global factors and adherence to professional ethics, which will lead to lifelong learning.
- Solve broad-based problems individually and as a team member effectively in the world of work.

Programme Outcome

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.

Crypto Watermarking: Safeguarding Digital Assets in the Virtual Realm

STUDENTS ARTICLES

Akash Singh
(22641; CSIT)

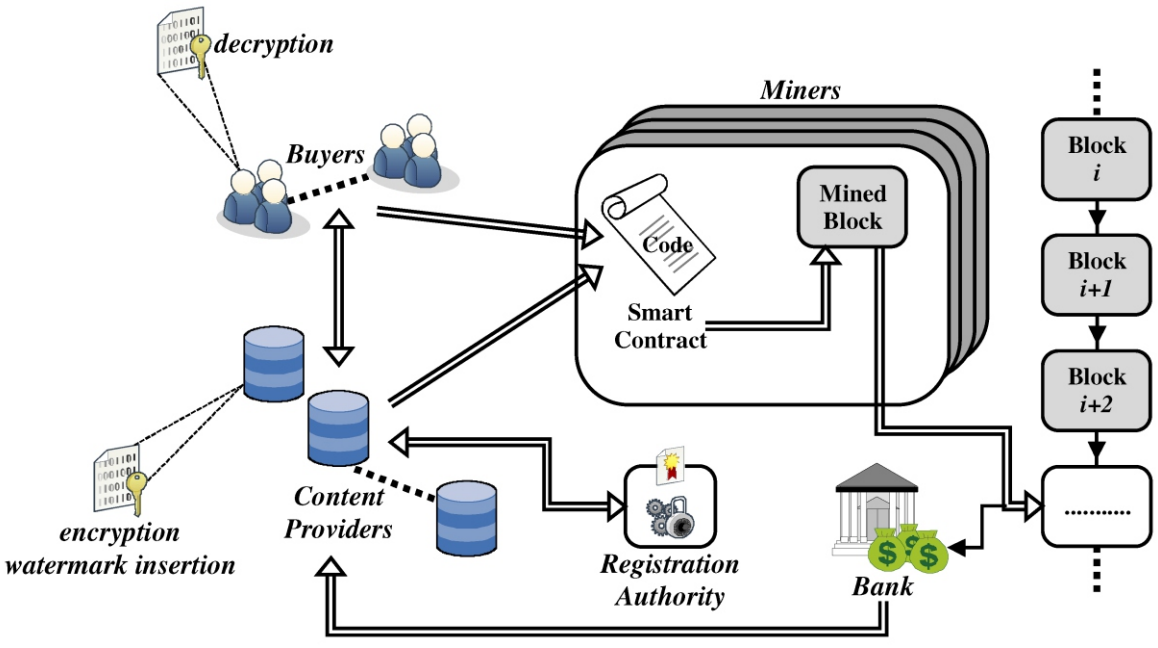
In the expansive landscape of digital content, the need for secure and traceable ownership has given rise to innovative solutions, and crypto watermarking emerges as a powerful tool in this endeavor. Crypto watermarking is a technology that embeds imperceptible digital signatures or watermarks into digital media, providing a robust mechanism for tracking and protecting intellectual property.

The primary objective of crypto watermarking is to deter piracy, unauthorized distribution, and plagiarism by associating a unique identifier with digital assets. This identifier, often an encrypted code or pattern, is seamlessly integrated into the media content, making it imperceptible to the human eye or ear. This digital fingerprint serves as a tamper-evident mark, enabling content creators and owners to prove ownership and trace the origin of unauthorized copies.

Crypto watermarking has found applications across various digital content types, including images, videos, audio files, and documents. Content creators, such as photographers, musicians, and filmmakers, leverage crypto watermarking to protect their work from unauthorized use and distribution.

Blockchain technology often complements crypto watermarking, providing an immutable and decentralized ledger for recording ownership and transactions. This integration enhances the transparency and reliability of the ownership trail, further fortifying the security of digital assets.

As the digital ecosystem continues to expand, crypto watermarking becomes an indispensable tool for content creators and distributors seeking to safeguard their intellectual property. The technology not only acts as a deterrent against piracy but also facilitates fair use, ensuring that creators receive proper recognition and compensation for their contributions in the vast and dynamic landscape of the digital realm.



Akash Singh
(22661; CSIT)

Illuminating the Dark: Night Vision Technology's Evolution

STUDENTS ARTICLES

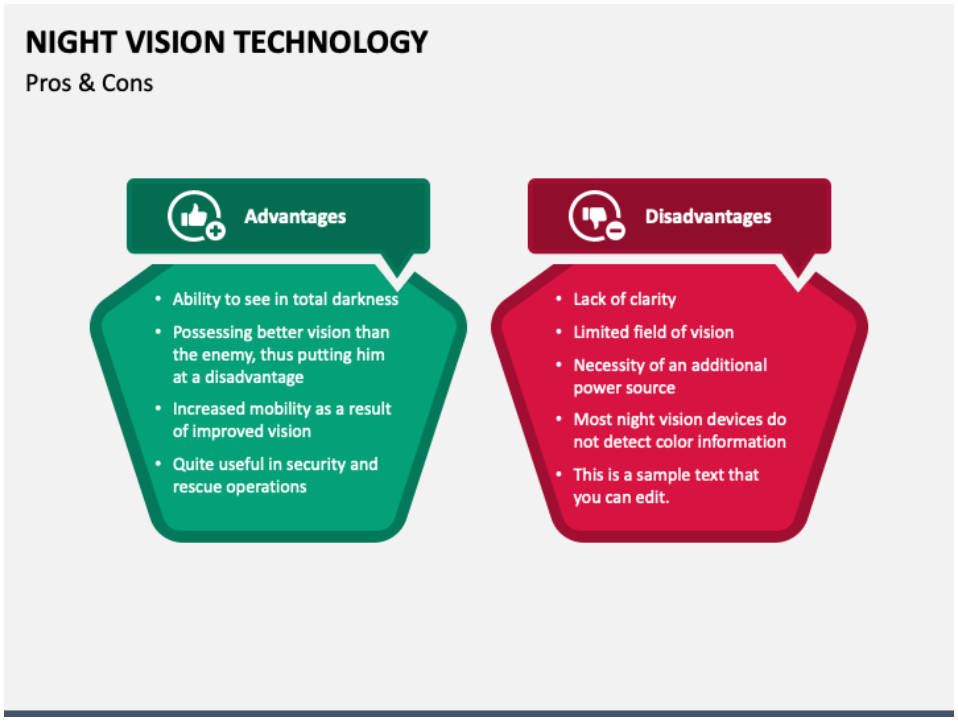
Yash Pannu
(22688; CSIT)

Night vision technology, a cornerstone in enhancing visibility in low-light conditions, has undergone remarkable advancements since its inception. Originally developed for military applications, this technology has found widespread use in diverse fields, including law enforcement, wildlife observation, and consumer electronics.

The fundamental principle behind night vision technology involves amplifying available light or detecting infrared radiation to create a visible image in low-light or complete darkness. Early night vision devices relied on image intensifier tubes to enhance ambient light, providing a green-tinted image familiar in movies and documentaries.

Modern night vision systems have evolved, incorporating thermal imaging technology alongside traditional light amplification. Thermal imaging detects the heat emitted by objects, generating a visual representation of temperature differences. This enables night vision devices to produce clear images regardless of ambient lighting conditions, offering a significant advantage in total darkness or challenging environments.

Applications of night vision technology extend beyond the military, with law enforcement agencies utilizing it for surveillance and search-and-rescue operations. Wildlife researchers leverage night vision to observe nocturnal animals without disrupting their natural behavior. The technology has also become prevalent in consumer gadgets like security cameras, binoculars, and even smartphones.

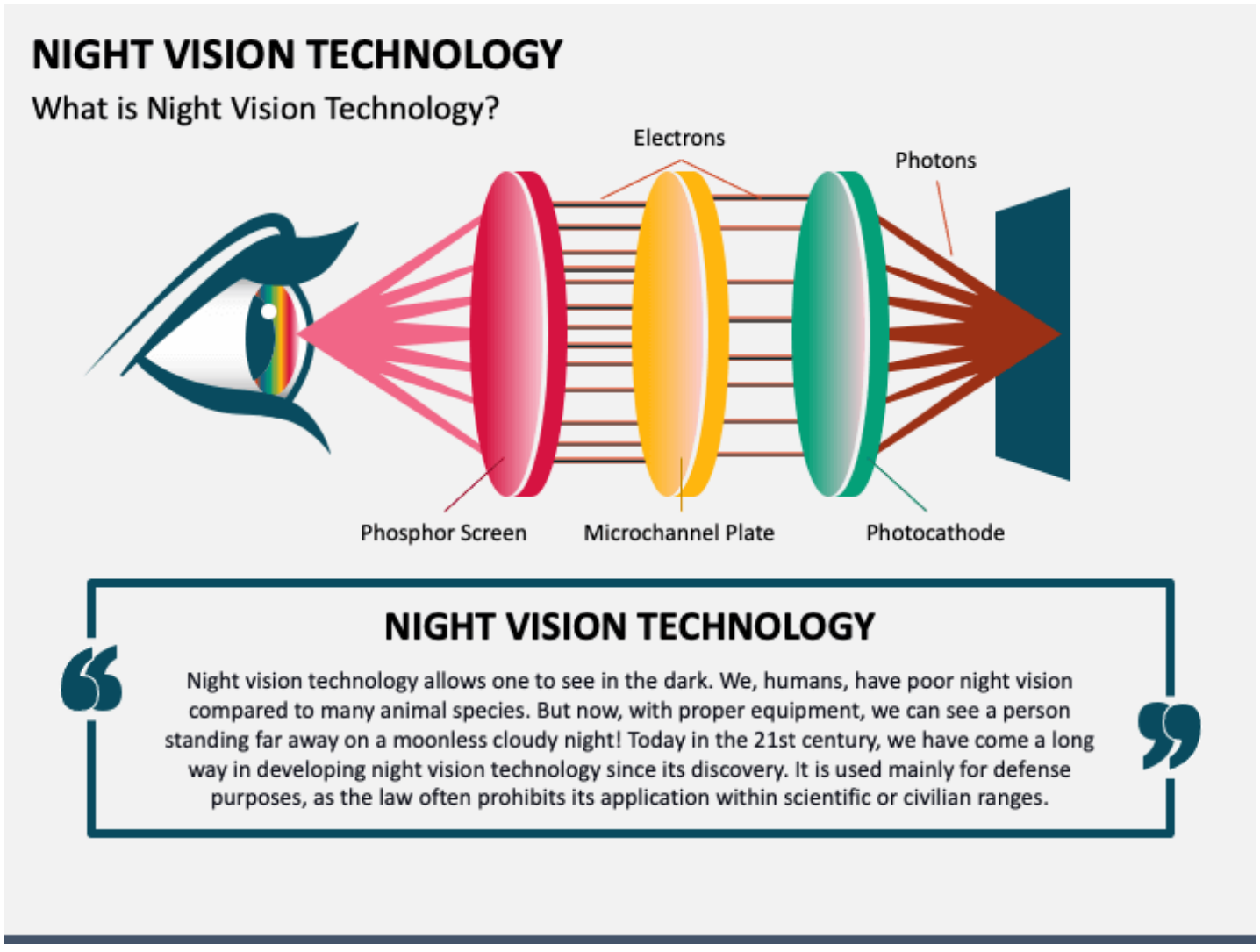


Ensuring Digital Excellence: The Critical Role of Software Testing

STUDENTS ARTICLES

In recent years, the integration of night vision technology into autonomous vehicles and drones has garnered attention. These applications enhance safety and navigation capabilities, particularly in scenarios where conventional headlights or visual cues are insufficient.

As night vision technology continues to advance, its impact on various industries remains profound. From safeguarding national security to facilitating wildlife conservation and enhancing everyday gadgets, night vision technology is an illuminating force in the quest for visibility in the dark.



Yash Pannu
(22688; CSIT)

Blockchain Technology: Revolutionizing Trust in the Digital Age

Prashant Sharma

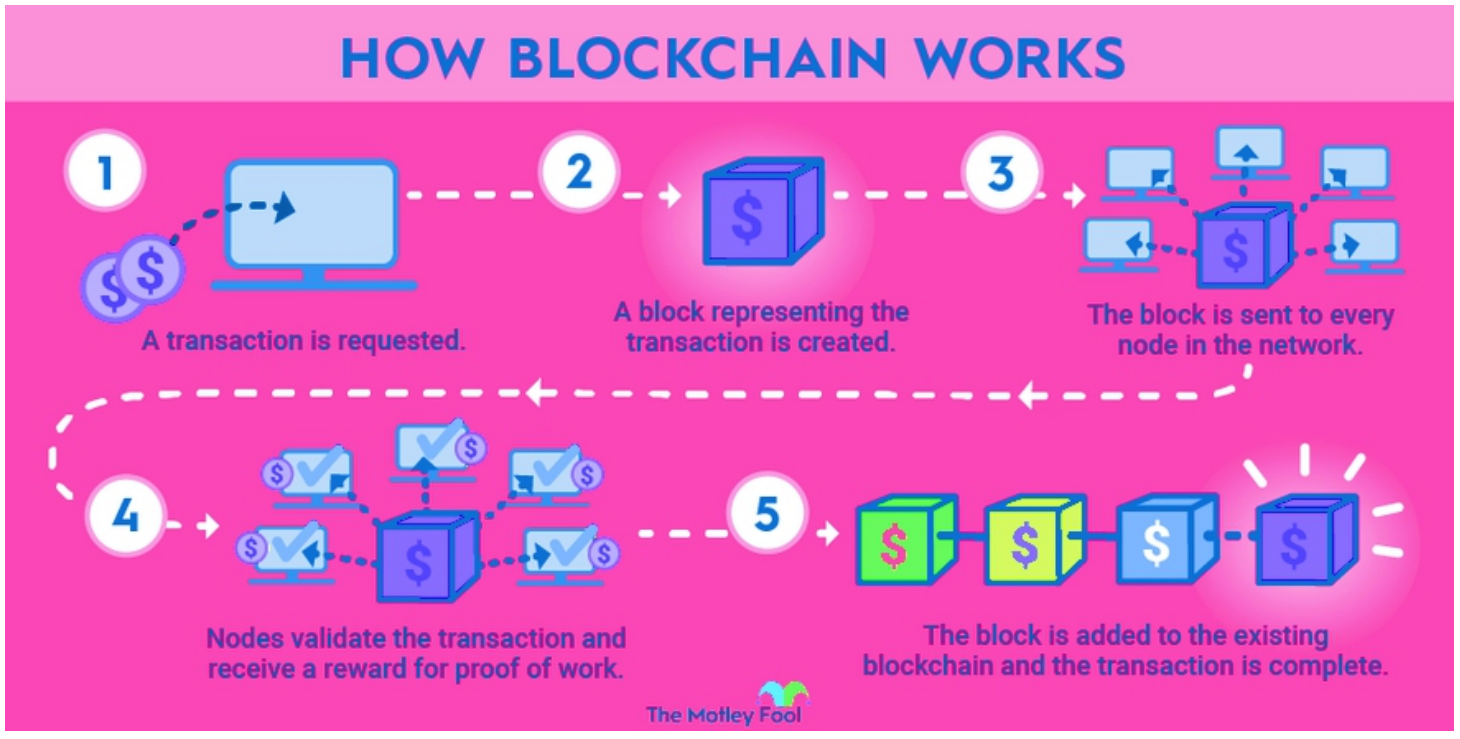
(22670; CSIT)

STUDENTS ARTICLES

Blockchain technology, originally conceived as the underlying framework for cryptocurrencies like Bitcoin, has transcended its origins to become a transformative force across various industries. At its core, a blockchain is a decentralized and distributed ledger that records transactions in a secure and transparent manner, offering unparalleled trust and accountability in the digital realm.

The key feature of blockchain is its decentralized nature. Unlike traditional centralized databases, a blockchain is maintained by a network of nodes, each possessing an identical copy of the entire ledger. This decentralized architecture ensures that no single entity has control over the entire system, making it resistant to manipulation and tampering.

The immutability of data on a blockchain is another critical aspect. Once a block of information is added to the chain through a consensus mechanism, it becomes virtually impossible to alter retroactively. This immutability ensures the integrity of recorded transactions, fostering trust among participants.



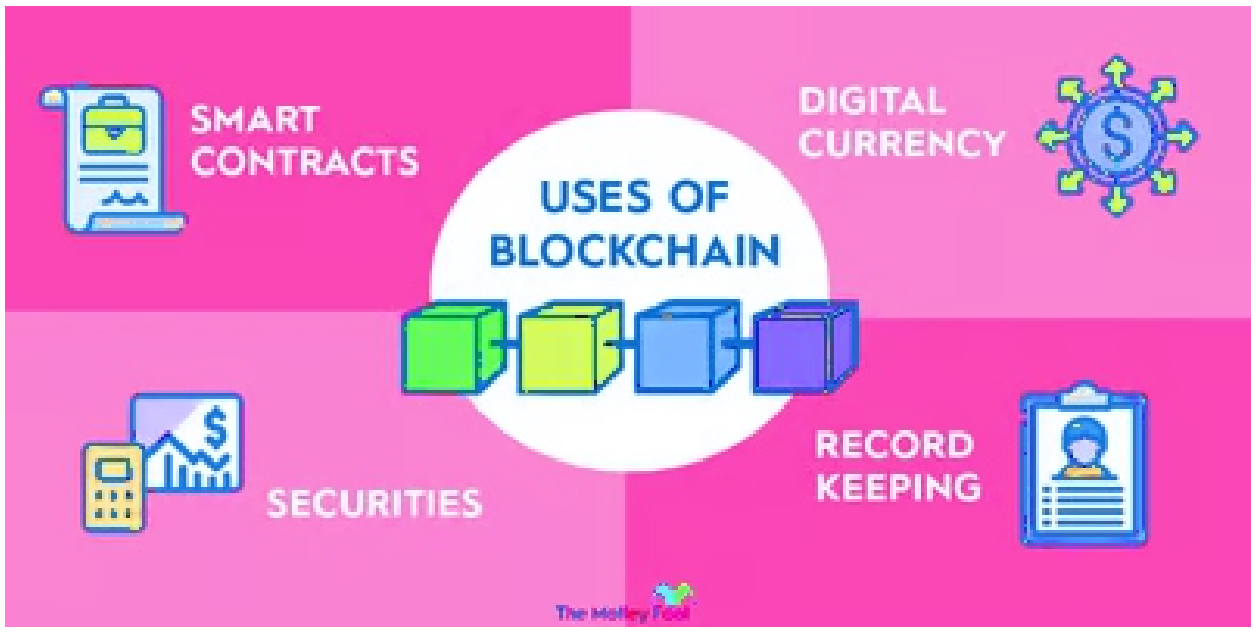
Smart Cards: The Intelligent Guardians of Modern Security

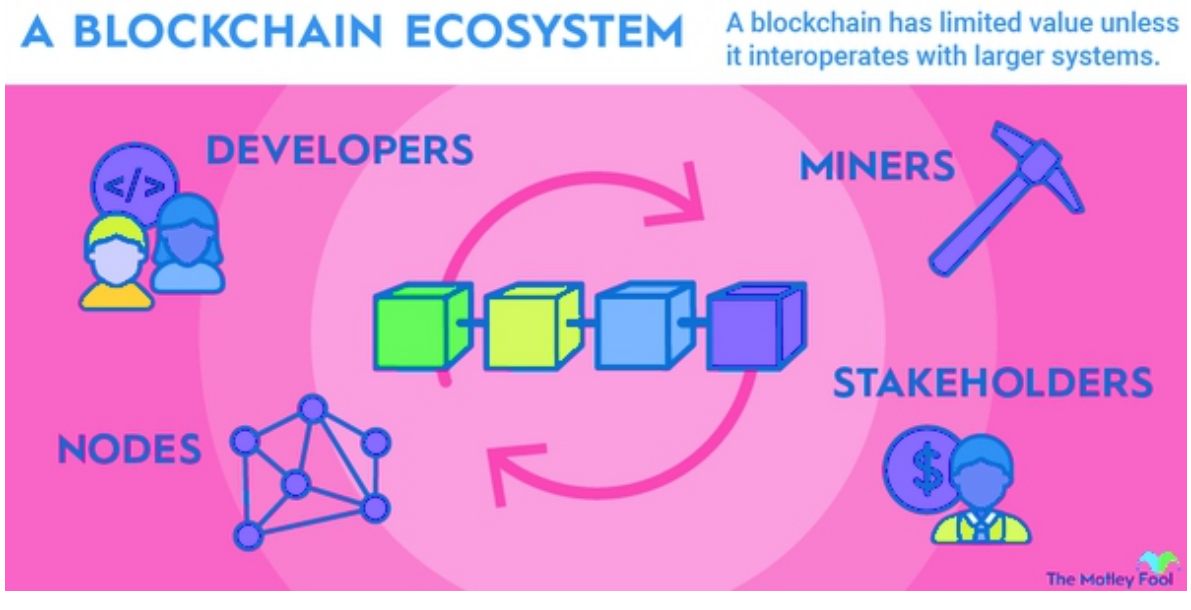
STUDENTS ARTICLES

Blockchain's impact extends beyond finance. In supply chain management, it enables transparent and traceable tracking of products from manufacturer to consumer. In healthcare, it provides a secure and interoperable platform for managing patient records. Smart contracts, self-executing contracts with the terms directly written into code, further enhance the capabilities of blockchain, automating and streamlining various processes.

The technology's potential for financial inclusivity is evident in its ability to provide secure and efficient transactions across borders, reducing the dependency on traditional banking systems.

As blockchain technology continues to mature, its applications diversify, shaping a future where transparency, security, and decentralization are paramount. Whether in finance, healthcare, or supply chain, blockchain is ushering in a new era of digital trust, redefining how we transact and interact in the interconnected world.





Prashant Sharma

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