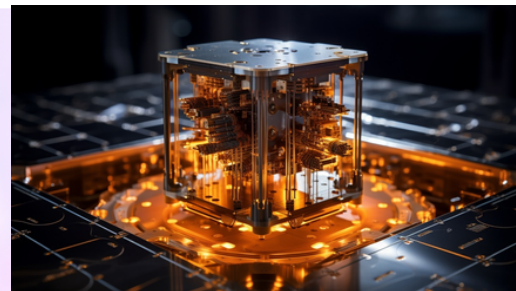# Byte Quest

Department of
CSE

AI & ML

BLOCKCHAIN

CYBERSECURITY

QUANTUM COMPUTING

Department Vision

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals.

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

FACULTY COORDINATORS

KOMAL KAUR
ASSISTANT PROFESSOR
DR. BHARGAVI PEDDIREDDY
ASSOCIATE PROFESSOR

STUDENT COORDINATORS

TALLURI CHANDRA KIRAN (3/4) CSE C
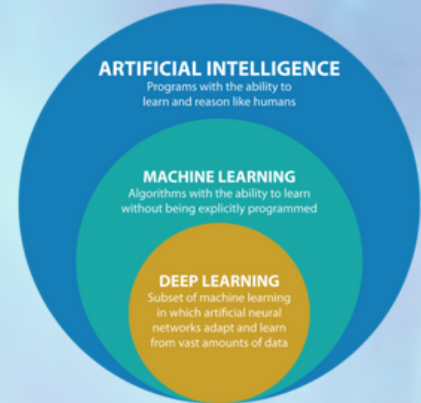AMOGHA KANDURI (3/4) CSE C

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AI & ML

Artificial intelligence (AI) and machine learning are often used interchangeably, but machine learning is a subset of the broader category of AI.

Put in context, artificial intelligence refers to the general ability of computers to emulate human thought and perform tasks in real-world environments, while machine learning refers to the technologies and algorithms that enable systems to identify patterns, make decisions, and improve themselves through experience and data.

ARTIFICIAL INTELLIGENCE
Programs with the ability to learn and reason like humans

MACHINE LEARNING
Algorithms with the ability to learn without being explicitly programmed

DEEP LEARNING
Subset of machine learning in which artificial neural networks adapt and learn from vast amounts of data

Artificial intelligence is a broad field, which refers to the use of technologies to build machines and computers that have the ability to mimic cognitive functions associated with human intelligence, such as being able to see, understand, and respond to spoken or written language, analyze data, make recommendations, and more.

Machine learning is a subset of artificial intelligence that automatically enables a machine or system to learn and improve from experience. Instead of explicit programming, machine learning uses algorithms to analyze large amounts of data, learn from the insights, and then make informed decisions.

BLOCKCHAIN

A blockchain is a distributed database or ledger shared among a computer network's nodes. They are best known for their crucial role in cryptocurrency systems for maintaining a secure and decentralized record of transactions, but they are not limited to cryptocurrency uses. Blockchains can be used to make data in any industry immutable—the term used to describe the inability to be altered.
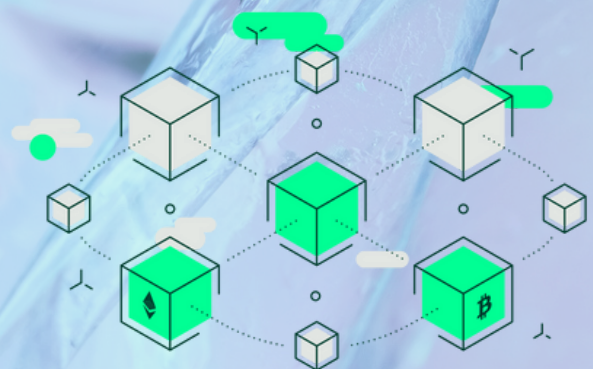
Blockchain is a type of shared database that differs from a typical database in the way it stores information; blockchains store data in blocks linked together via cryptography. Different types of information can be stored on a blockchain, but the most common use for transactions has been as a ledger.

In Bitcoin's case, blockchain is decentralized so that no single person or group has control—instead, all users collectively retain control.

Decentralized blockchains are immutable, which means that the data entered is irreversible. For Bitcoin, transactions are permanently recorded and viewable to anyone.

CYBERSECURITY

Cybersecurity is the practice of protecting systems, networks, and programs from digital attacks. These cyberattacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users via ransomware; or interrupting normal business processes.
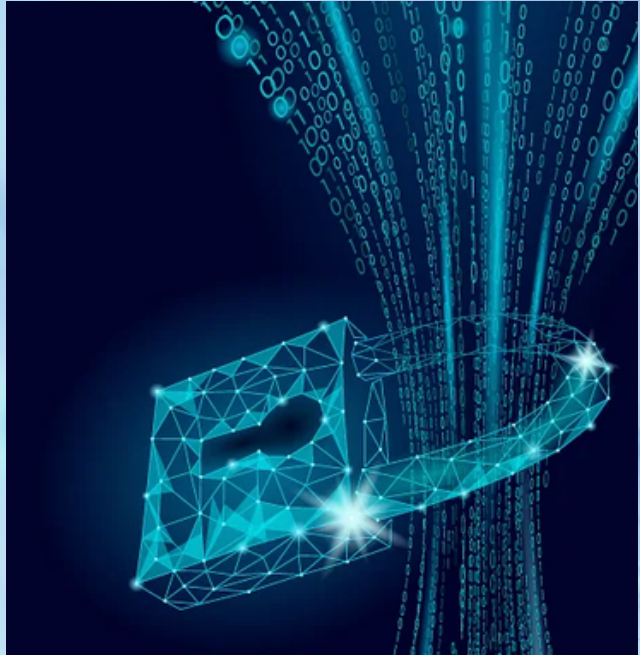
A successful cybersecurity approach has multiple layers of protection spread across the computers, networks, programs, or data that one intends to keep safe. In an organization, the people, processes, and technology must all complement one another to create an effective defense from cyber attacks. A unified threat management system can automate integrations across select Cisco Security products and accelerate key security operations functions: detection, investigation, and remediation.

In today's connected world, everyone benefits from advanced cyberdefense programs. At an individual level, a cybersecurity attack can result in everything from identity theft, to extortion attempts, to the loss of important data like family photos. Everyone relies on critical infrastructure like power plants, hospitals, and financial service companies. Securing these and other organizations is essential to keeping our society functioning.

Everyone also benefits from the work of cyberthreat researchers, like the team of 250 threat researchers at Talos, who investigate new and emerging threats and cyber attack strategies. They reveal new vulnerabilities, educate the public on the importance of cybersecurity, and strengthen open source tools. Their work makes the Internet safer for everyone.

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QUATUM COMPUTING

Quantum computing is a multidisciplinary field comprising aspects of computer science, physics, and mathematics that utilizes quantum mechanics to solve complex problems faster than on classical computers
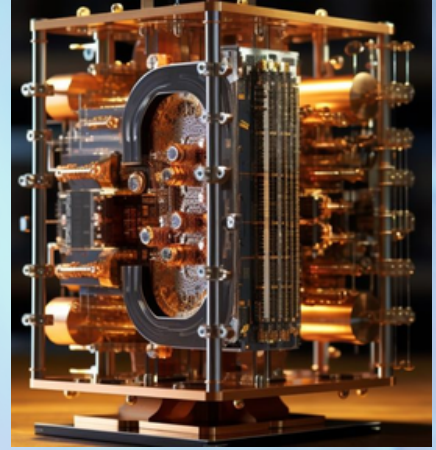
Quantum computers are able to solve certain types of problems faster than classical computers by taking advantage of quantum mechanical effects, such as superposition and quantum interference. Some applications where quantum computers can provide such a speed boost include machine learning (ML), optimization, and simulation of physical systems. Eventual use cases could be portfolio optimization in finance or the simulation of chemical systems, solving problems that are currently impossible for even the most powerful supercomputers on the market.

Currently, no quantum computer can perform a useful task faster, cheaper, or more efficiently than a classical computer. Quantum advantage is the threshold where we have built a quantum system that can perform operations that the best possible classical computer cannot simulate in any kind of reasonable time

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