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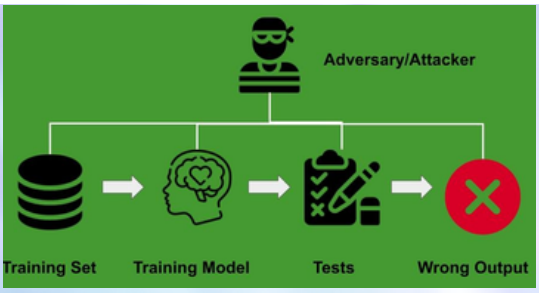
Byte Quest

Department of CSE



ADVERSARIAL MACHINE LEARNING

HUMAN-ROBOT COLLABORATION

BLOCKCHAIN IN SUPPLY CHAIN

SPATIAL 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.

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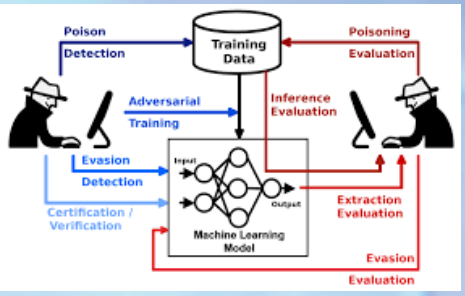
ADVERSARIAL MACHINE LEARNING

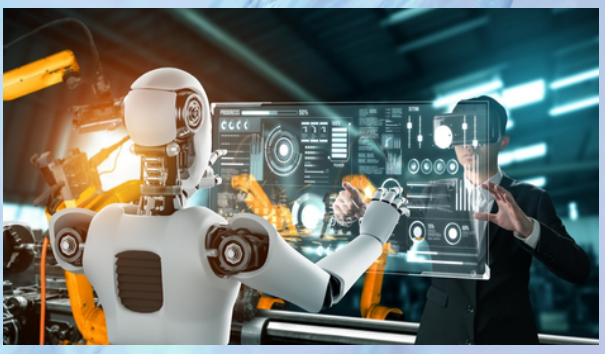
Machine learning (ML), a field within artificial intelligence, focuses on the ability of computers to learn from provided data without being explicitly programmed for a particular task. Adversarial machine learning (AML) is the process of extracting information about the behavior and characteristics of an ML system and/or learning how to manipulate the inputs into an ML system in order to obtain a preferred outcome.



Adversarial machine learning is a machine learning method that aims to trick machine learning models by providing deceptive input. Hence, it includes both the generation and detection of adversarial examples, which are inputs specially created to deceive classifiers. Such attacks, called adversarial machine learning, have been extensively explored in some areas, such as image classification and spam detection.
The most extensive studies of adversarial machine learning have been conducted in the area of image recognition, where modifications are performed on images that cause a classifier to produce incorrect predictions.

HUMAN-ROBOT COLLABORATION

Human-Robot Collaboration is the study of collaborative processes in human and robot agents work together to achieve shared goals. Many new applications for robots require them to work alongside people as capable members of human-robot teams. These include robots for homes, hospitals, and offices, space exploration and manufacturing.



Collaboration is defined as a special type of coordinated activity, one in which two or more agents work jointly with each other, together performing a task or carrying out the activities needed to satisfy a shared goal.[5] The process typically involves shared plans, shared norms and mutually beneficial interactions.[6] Although collaboration and cooperation are often used interchangeably, collaboration differs from cooperation as it involves a shared goal and joint action where the success of both parties depend on each other. For effective human-robot collaboration, it is imperative that the robot is capable of understanding and interpreting several communication mechanisms similar to the mechanisms involved in human-human interaction.

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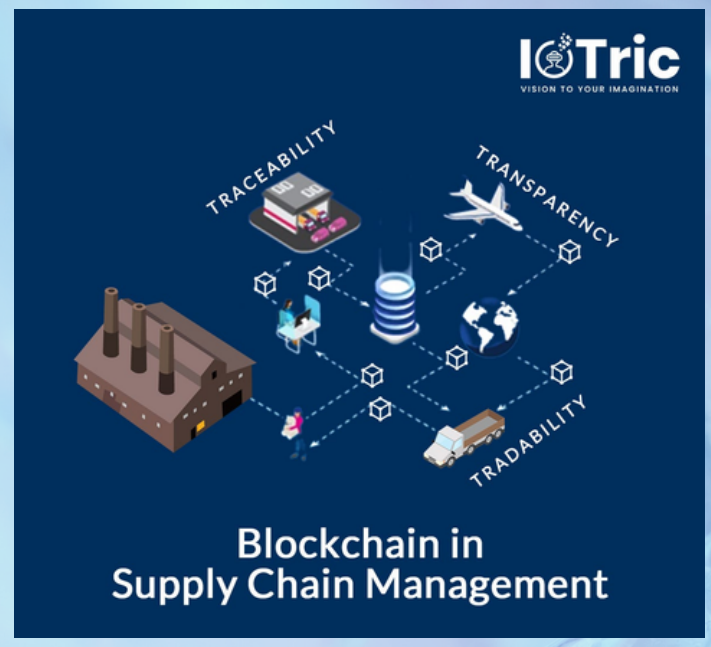
BLOCKCHAIN IN SUPPLY CHAIN

Blockchain, the digital record-keeping technology behind Bitcoin and other cryptocurrency networks, is a potential game changer in the financial world. But another area where it holds great promise is supply chain management.Blockchain can greatly improve supply chains.



To better understand this opportunity, we studied seven major U.S. corporations that are leaders in supply chain management and are trying to figure out how blockchain can help solve the challenges they face. These companies—Corning, Emerson, Hayward, IBM, Mastercard, and two others that wish to remain anonymous—operate in varied industries: manufacturing, retailing, technology, and financial services. Some of them are just beginning to explore blockchain, a few are conducting pilots, and others have moved even further and are working with supply chain partners to develop applications. This article describes what we've learned about the state of play, the advantages that blockchain can provide, and how the use of blockchain in supply chains will differ from its use in cryptocurrencies.A blockchain is a distributed, or decentralized, ledger—a digital system for recording transactions among multiple parties in a verifiable, tamperproof way. The ledger itself can also be programmed to trigger transactions automatically. For cryptocurrency networks that are designed to replace fiat currencies, the main function of blockchain is to enable an unlimited number of anonymous parties to transact privately and securely with one another without a central intermediary. For supply chains, it is to allow a limited number of known parties to protect their business operations against malicious actors while supporting better performance.

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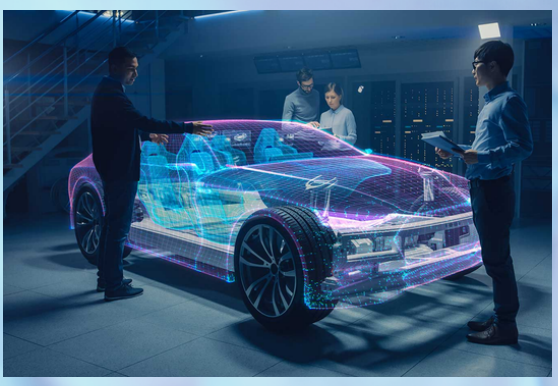
SPATIAL COMPUTING



Spatial computing is the digitization of activities involving machines, people, objects, and the environments in which they take place to enable and optimize actions and interactions.

This technology has the potential to digitally transform how industrial enterprises optimize operations for frontline workers in factories, worksites, and warehouses and to enable digitally augmented dimensional context for enterprise actions and interactions.

MIT Media Lab alumni Simon Greenwold coined the term “spatial computing” in his 2003 thesis paper when it was only a concept and not a reality. Over the past few years, there have been great advancements in the technologies that are making spatial computing possible, such as artificial intelligence (AI), camera sensors, computer vision, Internet of Things (IoT) and augmented reality (AR).

With these improvements, spatial computing is not only possible, but presents a significant opportunity to improve how we work, how we analyze data, and how we optimize processes.

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