MAGAZINE

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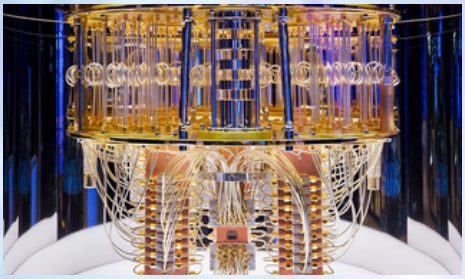
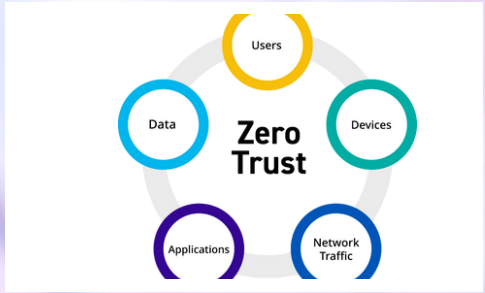
Byte Quest

Department of CSE

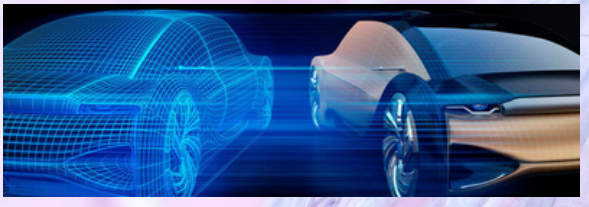


QUANTUM COMPUTING



ZERO TRUST

EDGE COMPUTING



DIGITAL TWIN

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

S. KOMAL KAUR
(ASST. PROFESSOR)
T. NISHITHA
(ASST. PROFESSOR)

STUDENT COORDINATORS

CHANDRASHEKAR (2/4) CSE B
K S P SRIRAM (2/4) CSE A
ANISHA (4/4) CSE B
AKASH (3/4) CSE C

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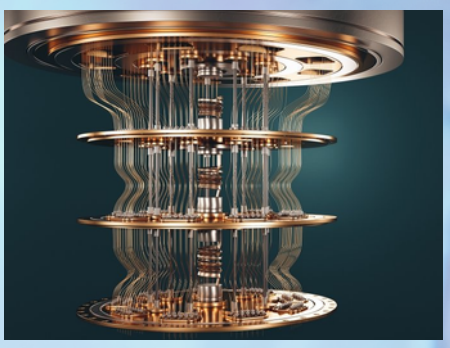
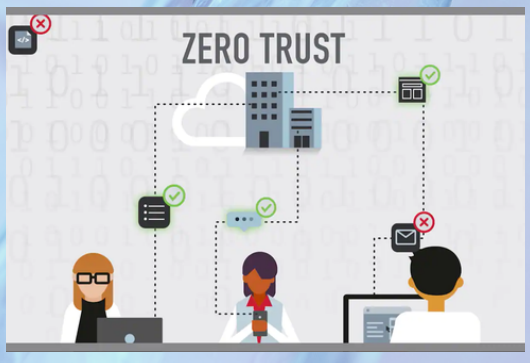
QUANTUM COMPUTING



Quantum computing is a rapidly-emerging technology that harnesses the laws of quantum mechanics to solve problems too complex for classical computers.
These machines are very different from the classical computers that have been around for more than half a century.

Quantum computers are elegant machines, smaller and requiring less energy than supercomputers. An IBM Quantum processor is a wafer not much bigger than the one found in a laptop. And a quantum hardware system is about the size of a car, made up mostly of cooling systems to keep the superconducting processor at its ultra-cold operational temperature.

ZERO TRUST



Zero Trust is a strategic approach to cybersecurity that secures an organization by eliminating implicit trust and continuously validating every stage of a digital interaction. Rooted in the principle of “never trust, always verify,” Zero Trust is designed to protect modern environments and enable digital transformation by using strong authentication methods, leveraging network segmentation, preventing lateral movement, providing Layer 7 threat prevention, and simplifying granular, “least access” policies. Applying Zero Trust to applications removes implicit trust with various components of applications when they talk to each other. A fundamental concept of Zero Trust is that applications cannot be trusted and continuous monitoring at runtime is necessary to validate their behavior.

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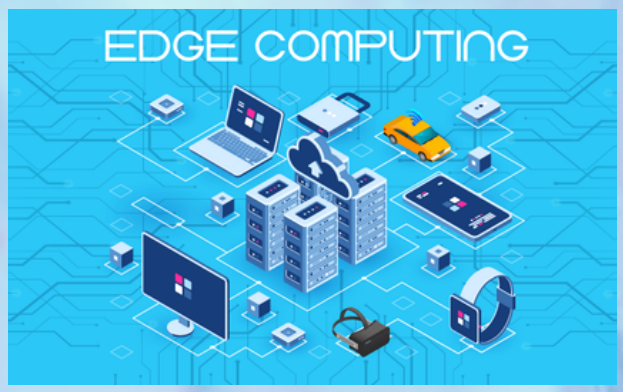
EDGE COMPUTING



Edge computing is a distributed computing framework that brings enterprise applications closer to data sources such as IoT devices or local edge servers. This proximity to data at its source can deliver strong business benefits, including faster insights, improved response times and better bandwidth availability.

Edge computing with 5G creates tremendous opportunities in every industry. It brings computation and data storage closer to where data is generated, enabling better data control and reduced costs, faster insights and actions, and continuous operations. In fact, by 2025, 50% of enterprise data will be processed at the edge, compared to only 10% today.

Edge computing helps you unlock the potential of the vast untapped data that's created by connected devices. You can uncover new business opportunities, increase operational efficiency and provide faster, more reliable and consistent experiences for your customers. The best edge computing models can help you accelerate performance by analyzing data locally. A well-considered approach to edge computing can keep workloads up-to-date according to predefined policies, can help maintain privacy, and will adhere to data residency laws and regulations.

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DIGITAL TWIN

A digital twin is a virtual model designed to accurately reflect a physical object. The object being studied — for example, a wind turbine — is outfitted with various sensors related to vital areas of functionality. These sensors produce data about different aspects of the physical object's performance, such as energy output, temperature, weather conditions and more. This data is then relayed to a processing system and applied to the digital copy.

The idea of digital twin technology was first voiced in 1991, with the publication of *Mirror Worlds*, by David Gelernter. However, Dr. Michael Grieves (then on faculty at the University of Michigan) is credited with first applying the concept of digital twins to manufacturing in 2002 and formally announcing the digital twin software concept. Eventually, NASA's John Vickers introduced a new term — "digital twin"— in 2010.

However, the core idea of using a digital twin as a means of studying a physical object can actually be witnessed much earlier. In fact, it can be rightfully said that NASA pioneered the use of digital twin technology during its space exploration missions of the 1960s, when each voyaging spacecraft was exactly replicated in an earthbound version that was used for study and simulation purposes by NASA personnel serving on flight crews.

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