



MAGAZINE

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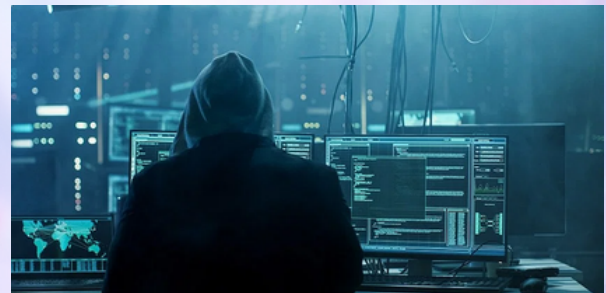
Department of

CSE

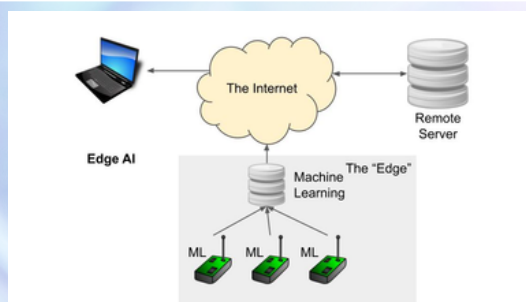
Byte Quest



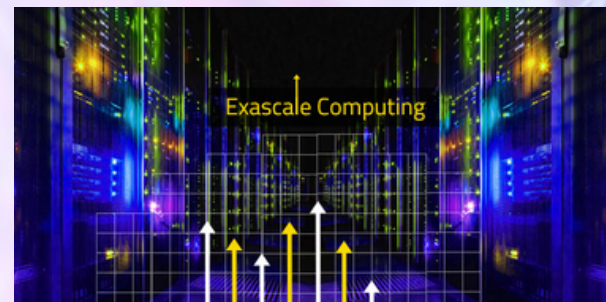
DIGITAL TWINS



ETHICAL HACKING



EDGE AI



EXASCALE 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.

FACULTY COORDINATORS

KOMAL KAUR
ASSISTANT PROFESSOR
DR. BHARGAVI PEDDIREDDY
ASSOCIATE PROFESSOR

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.

STUDENT COORDINATORS

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



Byte Quest

DIGITAL TWINS

A digital twin is a digital representation of a physical object, person, or process, contextualized in a digital version of its environment. Digital twins can help an organization simulate real situations and their outcomes, ultimately allowing it to make better decisions.



Put simply, a digital twin is a virtual replica of a physical object, person, or process that can be used to simulate its behavior to better understand how it works in real life. Digital twins are linked to real data sources from the environment, which means that the twin updates in real time to reflect the original version. Digital twins also comprise a layer of behavioral insights and visualizations derived from data. When interconnected within one system, digital twins can form what's known as an enterprise metaverse: a digital and often immersive environment that replicates and connects every aspect of an organization to optimize simulations, scenario planning, and decision making.

ETHICAL HACKING

Ethical hacking is an authorized practice of detecting vulnerabilities in an application, system, or organization's infrastructure and bypassing system security to identify potential data breaches and threats in a network. Ethical hackers aim to investigate the system or network for weak points that malicious hackers can exploit or destroy.



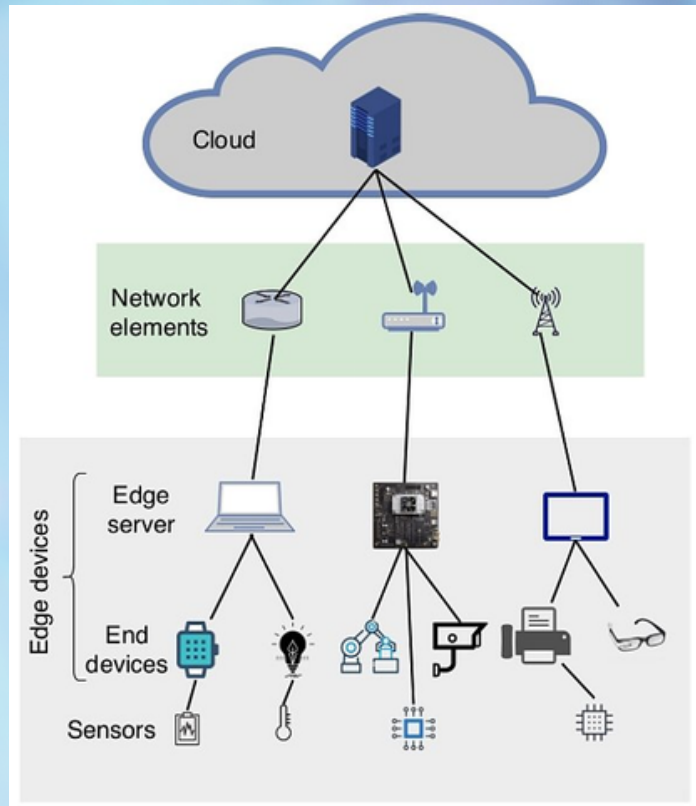
The company that owns the system or network allows Cyber Security engineers to perform such activities in order to test the system's defenses. Thus, unlike malicious hacking, this process is planned, approved, and more importantly, legal. Ethical hackers aim to investigate the system or network for weak points that malicious hackers can exploit or destroy. They collect and analyze the information to figure out ways to strengthen the security of the system/network/applications. By doing so, they can improve the security footprint so that it can better withstand attacks or divert them.



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EDGE AI

Edge artificial intelligence (AI), or AI at the edge, is the implementation of artificial intelligence in an edge computing environment, which allows computations to be done close to where data is actually collected, rather than at a centralized cloud computing facility or an offsite data center



As edge computing brings data storage closer to the location of the device, AI algorithms process the data that are created on the device with or without having any internet connection. This allows data to be processed within milliseconds providing real-time feedback. Edge AI allows responses to be delivered almost instantly. This can be more secure when it means that some sensitive data never actually leaves the edge.

Due to their ability to move data away from overburdened cloud data centers, edge devices such as sensors and IoT devices are on their way to becoming key technologies.

Edge AI is different from the traditional AI application framework where the data generated by connected technologies is transmitted to a backend cloud system. Instead of running AI models at the backend, they are configured onto processors inside the connected devices operating at the network edge. This adds a layer of intelligence at the edge where the edge device not only collects metrics and analytics but is able to act upon them since there is an integrated machine learning (ML) model within the edge device making a true AI at the edge.



Byte Quest

EXASCALE COMPUTING

Exascale computing is a type of ultra-powerful supercomputing, with systems performing billions of computations per second utilizing an infrastructure of CPUs and GPUs to process and analyze data.



Computer systems that are capable of exascale compute generate massive amounts of heat due to the level of processing that occurs. They must have special cooling devices within the systems and racks—or be housed in extremely cold climates—to maintain the highest level of function. They are digital computers with the highest capacity and most powerful hardware, which differentiates them from other supercomputers or quantum computers.

Exascale computers simulate fundamental laws of physics, such as granular interactions between atoms, in order to build our knowledge of the universe and everything in it. Several industries utilize this capability to better understand, predict, and build the future of the world. For example, when researchers at the National Oceanic and Atmospheric Administration (NOAA) attempt to improve their weather predictions.

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