MAGAZINE

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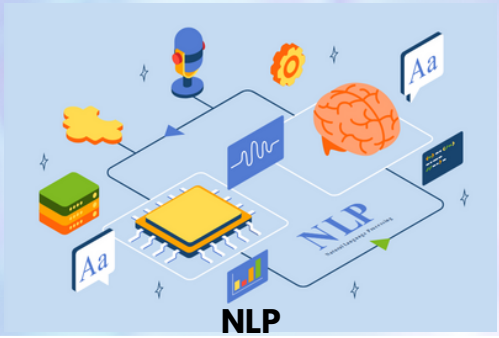
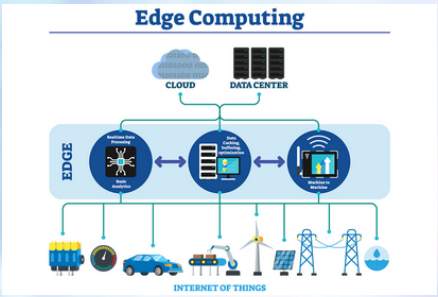
Byte Quest

Department of CSE

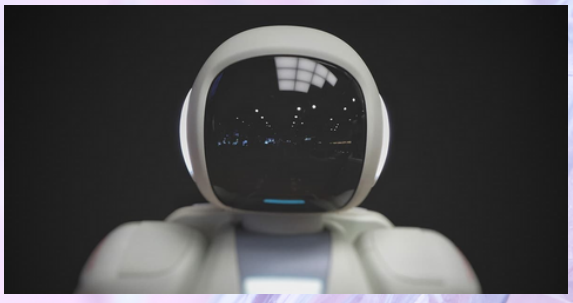


NLP

COMPUTER VISION



EDGE COMPUTING



ROBOTICS

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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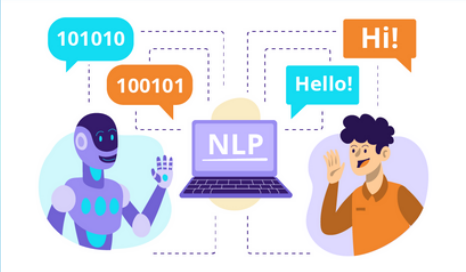
NATURAL LANGUAGE PROCESSING



Natural language processing (NLP) combines computational linguistics, machine learning, and deep learning models to process human language. Computational linguistics. Computational linguistics is the science of understanding and constructing human language models with computers and software tools.

Deep learning

Deep learning is a specific field of machine learning which teaches computers to learn and think like humans. It involves a neural network that consists of data processing nodes structured to resemble the human brain. With deep learning, computers recognize, classify, and co-relate complex patterns in the input data.

NLP implementation steps

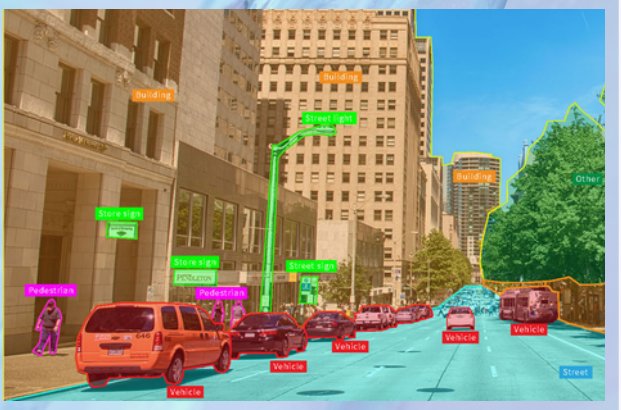
Typically, NLP implementation begins by gathering and preparing unstructured text or speech data from sources like cloud data warehouses, surveys, emails, or internal business process applications.

Pre-processing

The NLP software uses pre-processing techniques such as tokenization, stemming, lemmatization, and stop word removal to prepare the data for various applications.

COMPUTER VISION

Computer vision is a field of computer science that focuses on enabling computers to identify and understand objects and people in images and videos. Like other types of AI, computer vision seeks to perform and automate tasks that replicate human capabilities. These can be simply considered as eyes for machines to see the world and interact with them.



Computer vision trains machines to perform these functions, but it has to do it in much less time with cameras, data and algorithms rather than retinas, optic nerves and a visual cortex. Because a system trained to inspect products or watch a production asset can analyze thousands of products or processes a minute, noticing imperceptible defects or issues, it can quickly surpass human capabilities.

Computer vision works much the same as human vision, except humans have a head start. Human sight has the advantage of lifetimes of context to train how to tell objects apart, how far away they are, whether they are moving and whether there is something wrong in an image.

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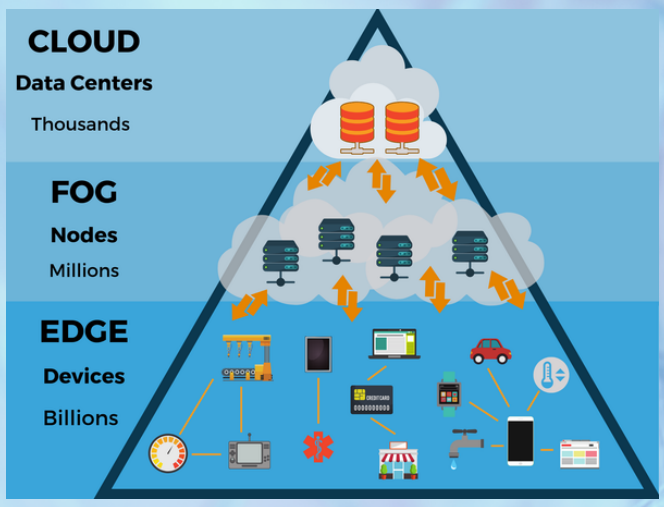
EDGE COMPUTING

Edge computing is an emerging computing paradigm that refers to a range of networks and devices at or near the user. Edge is about processing data closer to where it's being generated, enabling processing at greater speeds and volumes, leading to greater action-led results in real time.



It offers some unique advantages over traditional models, where computing power is centralized at an on-premise data center. Putting compute at the edge allows companies to improve how they manage and use physical assets and create new interactive, human experiences. Some examples of edge use cases include self-driving cars, autonomous robots, smart equipment data and automated retail.Possible components of edge include:

Edge devices: We already use devices that do edge computing every day—like smart speakers, watches and phones – devices which are locally collecting and processing data while touching the physical world. Internet of Things (IoT) devices, point of sales (POS) systems, robots, vehicles and sensors can all be edge devices—if they compute locally and talk to the cloud.

Network edge: Edge computing doesn't require a separate "edge network" to exist (it could be located on individual edge devices or a router, for example). When a separate network is involved, this is just another location in the continuum between users and the cloud and this is where 5G can come into play. 5G brings extremely powerful wireless connectivity to edge computing with low latency and high cellular speed, which brings exciting opportunities like autonomous drones, remote telesurgery, smart city projects and much more. The network edge can be particularly useful in cases where it is too costly and complicated to put compute on premises and yet high responsiveness is required (meaning the cloud is too distant).

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ROBOTICS AND AUTOMATION

This is the automation of tasks usually performed by humans using computer programs. Giving these automations to robots makes them do humane work.

This area of engineering uses multiple disciplines to design, build, program and use robots. Robots are programmable machines that use sensors and actuators to interact with the physical world and perform actions autonomously or semi-autonomously. Because they can be reprogrammed, robots are more flexible than single-function machines. Collaborative robots are designed to complete tasks in a similar manner to humans, while traditional industrial robots tend to complete tasks more efficiently than humans.
Automation and robotics have areas where they cross, such as the use of robots to automate physical tasks, as with car assembly lines. However, not all automation uses physical robots and not all areas of robotics are associated with automation.

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