

Artificial Intelligence (AI) refers to systems designed to perform tasks that mimic human intelligence. It encompasses areas such as reasoning, learning, perception, and problem-solving.

AI applications are now embedded in everyday tools like smartphones, virtual assistants, and even smart home devices.

Machine Learning (ML) is a subset of AI that enables systems to learn and improve from experience automatically. It involves feeding algorithms with data to make predictions or decisions without explicit programming.

The three main types of ML are:

1. Supervised Learning
2. Unsupervised Learning
3. Reinforcement Learning

Deep Learning (DL) is a specialized branch of ML that uses neural networks with multiple layers to analyze various levels of data abstraction. DL has enabled breakthroughs in image recognition, speech processing, and autonomous driving.

Popular deep learning frameworks include TensorFlow, PyTorch, and Keras.

NLP allows machines to understand, interpret, and generate human language. It powers applications like chatbots, translation services, and sentiment analysis.

Key techniques include tokenization, stemming, lemmatization, and named entity recognition (NER).

AI is transforming industries through automation and intelligent decision-making. Here are a few examples:

- Healthcare: Disease prediction, medical imaging, and drug discovery.
- Finance: Fraud detection and algorithmic trading.
- Agriculture: Crop monitoring and yield prediction.
- Education: Personalized learning and automated grading.

AI continues to evolve rapidly, shaping the future of technology and society.