MACHINE LEARNING (ML)

Machine Learning is a subset of Artificial Intelligence that focuses on enabling machines to learn from data without being explicitly programmed. Instead of following fixed rules, ML systems identify patterns in data and use those patterns to make predictions or decisions.

HOW MACHINE LEARNING WORKS

Machine Learning models are trained using data. During training, the model learns relationships between inputs and outputs. Once trained, the model can make predictions on new, unseen data. The performance of an ML model improves as it is exposed to more data.

TYPES OF MACHINE LEARNING

Supervised Learning uses labeled data to train models. Examples include spam detection and price prediction. Unsupervised Learning works with unlabeled data and finds hidden patterns, such as clustering customers based on behavior. Reinforcement Learning involves learning through rewards and penalties, commonly used in robotics and gaming.

APPLICATIONS OF MACHINE LEARNING

Machine Learning is widely used across industries. In healthcare, it supports disease diagnosis, medical imaging, and patient risk analysis. In banking and finance, ML is used for fraud detection, credit scoring, and stock market analysis. In e-commerce, ML powers recommendation systems and personalized marketing.

In cybersecurity, ML detects unusual behavior and prevents cyberattacks. In agriculture, ML helps in crop prediction, soil analysis, and smart irrigation. In human resources, ML assists in resume screening and employee performance analysis.

ADVANTAGES OF MACHINE LEARNING

ML enables systems to automatically improve with experience. It handles large volumes of data efficiently and provides accurate predictions. ML reduces manual effort and supports real-time decision-making.

LIMITATIONS OF MACHINE LEARNING

ML models require large datasets and significant computational resources. They may produce biased results if trained on biased data. Model interpretability can be difficult, making it hard to understand decisions.

FUTURE SCOPE OF ML

Machine Learning continues to evolve with advancements in algorithms and computing power. It will play a crucial role in automation, smart systems, and intelligent decision-making across industries.