

Introduction to Machine Learning

Machine Learning is a field of Artificial Intelligence that enables systems to learn from data without being explicitly programmed. Instead of writing rules manually, models identify patterns in data and make predictions or decisions.

Types of Machine Learning

There are three main types of Machine Learning: Supervised Learning, Unsupervised Learning, and Reinforcement Learning. Supervised learning uses labeled data, while unsupervised learning works with unlabeled data.

Supervised Learning

Supervised learning involves training a model on input-output pairs. Common algorithms include Linear Regression, Logistic Regression, Decision Trees, and Support Vector Machines.

Unsupervised Learning

Unsupervised learning focuses on discovering hidden patterns in data. Popular techniques include clustering (K-Means) and dimensionality reduction (PCA).

Model Evaluation

Machine learning models are evaluated using metrics such as accuracy, precision, recall, and F1-score. Proper evaluation ensures the model generalizes well to unseen data.