

Slide 1: Introduction to Machine Learning (ML)

- * ML is a type of artificial intelligence that allows software applications to become more accurate in predicting outcomes without being explicitly programmed.
- * ML algorithms use computational methods to "learn" information directly from data without relying on a predetermined equation as a model.
- * ML can be categorized as supervised, unsupervised, semi-supervised, and reinforcement learning.

Slide 2: Supervised Learning

- * In supervised learning, the algorithm is trained using labeled data, i.e., a dataset that has been classified or categorized.
- * The goal is to approximate the mapping function that maps input variables to output variables.
- * Common supervised learning tasks include classification, regression, and prediction.
- * Examples of supervised learning algorithms include linear regression, logistic regression, and support vector machines.

Slide 3: Unsupervised Learning

- * In unsupervised learning, the algorithm is trained using unlabeled data, i.e., a dataset that has not been classified or categorized.
- * The goal is to model the underlying structure or distribution in the data in order to learn more about the data.
- * Common unsupervised learning tasks include clustering, association, and dimensionality reduction.
- * Examples of unsupervised learning algorithms include k-means clustering, hierarchical clustering, and principal component analysis.

Slide 4: Semi-Supervised Learning

- * In semi-supervised learning, the algorithm is trained using a combination of labeled and unlabeled data.
- * The goal is to make use of the limited amount of labeled data to improve the performance of the model on the unlabeled data.
- * Semi-supervised learning is useful when labeled data is scarce, expensive, or time-consuming to obtain.
- * Examples of semi-supervised learning algorithms include self-training, multi-view training, and co-training.

Slide 5: Reinforcement Learning

- * In reinforcement learning, the algorithm learns to perform actions based on reward feedback.
- * The goal is to learn a series of actions that maximizes the reward or minimizes the cost.
- * Reinforcement learning is often used in robotics, gaming, and navigation.
- * Examples of reinforcement learning algorithms include Q-learning, SARSA, and Deep Q Network.