

Machine Learning Notes

1. What is Machine Learning?

Machine Learning is a branch of Artificial Intelligence (AI) that allows computers to learn from data and make predictions or decisions without being explicitly programmed.

2. Types of Machine Learning

a) Supervised Learning:

- Uses labeled data
- Examples: Classification, Regression

b) Unsupervised Learning:

- Uses unlabeled data
- Examples: Clustering, Dimensionality Reduction

c) Reinforcement Learning:

- Learns by interacting with environment and receiving rewards

3. Common Algorithms

- Linear Regression
- Logistic Regression
- Decision Tree
- Random Forest
- K-Nearest Neighbors (KNN)
- Support Vector Machine (SVM)
- Neural Networks

4. Machine Learning Workflow

- Data Collection
- Data Preprocessing
- Feature Selection
- Model Training
- Model Evaluation
- Deployment

5. Applications of Machine Learning

- Image Recognition
- Speech Recognition
- Recommendation Systems
- Fraud Detection
- Medical Diagnosis

6. Advantages

- Automation
- Accurate Predictions
- Handles Large Data

7. Disadvantages

- Requires Large Data
- Can be Biased
- Needs High Computation