

## **Chapter 1: What is Machine Learning?**

Machine Learning (ML) is a subset of artificial intelligence (AI) that gives computers the ability to learn from data without being explicitly programmed. In essence, machine learning algorithms use data to make predictions or decisions without human intervention. These algorithms identify patterns in data and can improve their performance over time as they are exposed to more data.

## **Chapter 2: Types of Machine Learning**

There are three main types of machine learning:

1. **Supervised Learning:** In supervised learning, the model is trained on labeled data. The model makes predictions based on the data and is corrected when those predictions are wrong.
2. **Unsupervised Learning:** Unsupervised learning involves training on data that is not labeled, allowing the model to identify patterns on its own.
3. **Reinforcement Learning:** Reinforcement learning is a type of machine learning where an agent learns to make decisions by interacting with its environment and receiving feedback in the form of rewards or penalties.

## **Chapter 3: Applications of Machine Learning**

Machine learning is used in a wide variety of fields, such as healthcare, finance, autonomous driving, and more. Some common applications include:

- Predicting diseases based on patient data.
- Fraud detection in financial transactions.
- Optimizing routes for autonomous vehicles.