Machine Learning :

Machine Learning is a type of learning in which the agent learns from the experience with respect to a class of tasks and a performance measure P. The agent's performance and accuracy must increase with the experience.

Basic Requirements To build a machine learning model:

- Class of tasks
- Performance Measure
- Some well-defined Experience

Types of Machine Learning:

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning

Supervised Learning:

Is a type of machine learning in which we map the input with the output by providing a training set of data which is provided as the input to the agent.

Types of Supervised Learning:

- Classification :
  A type of supervised learning in which the output obtained is categorical. The output mapped to each input falls under the given categories.
- Regression :
  A type of supervised learning in which the output obtained is continuous. The output obtained is continuous in the input range.

Unsupervised Learning:

Is a type of machine learning is which no real desired output can be obtained. The aim of this type of learning is to find patterns in the given input data set.

Types of Unsupervised Learning:

- Clustering :
  Known as cohesive grouping which means the input data is grouped into different category which shares some patterns in it.
- Association:
  In this type of unsupervised learning, we identify cooccurrence of events. Correlation between different events will be spotted and the correctness of the relation will be evaluated.

Reinforcement Learning:

A type a machine learning in which the agent directly interacts with the environment and learns from the feedback either positive or negative.

Applications of Machine Learning:

Supervised Learning:

- Credit Card fraud detection
- Sentiment Analysis
- Churn prediction
- Medical diagnoses

Unsupervised Learning:

- Customer Data – Discover different classes of customers
- Image pixels – to discover region with some particular characteristics.
- Words – To find the synonyms of words.
- Documents

Reinforcement Learning:

- Game playing – Backgammon, Atari games
- Autonomous agents – Robot navigation
- Adaptive control – Pilot (helicopters)
- Combinational optimization
- Intelligent Tutoring systems.