**MACHINE LANGUAGE**

**What is Machine Learning?**

Machine learning helps computer systems learn and improve from experience by developing computer programs that can automatically access data and perform tasks via predictions and detections. As you input more data into a machine, this helps the algorithms teach the computer, thus improving the delivered results.

ML applications learn from experience (or to be accurate, data) like humans do without direct programming. When exposed to new data, these applications learn, grow, change, and develop by themselves. In other words, machine learning involves computers finding insightful information without being told where to look. Instead, they do this by leveraging algorithms that learn from data in an iterative process.

At a high level, machine learning is the ability to adapt to new data independently and through iterations.  Applications learn from previous computations and transactions and use “pattern recognition” to produce reliable and informed results.

**Types of ML**

There are primarily three types of machine learning: Supervised, Unsupervised, and Reinforcement Learning.

**1) Supervised Learning**

Supervised learning is a type of machine learning that uses labelled data to train machine learning models. In labelled data, the output is already known. The model just needs to map the inputs to the respective outputs.

An example of supervised learning is to train a system that identifies the image of an animal.

**Applications:**

Supervised learning algorithms are generally used for solving classification and regression problems.

Few of the top supervised learning applications are weather prediction, sales forecasting, stock price analysis.

**2) Unsupervised Learning**

Unsupervised learning is a type of machine learning that uses unlabelled data to train machines. Unlabelled data doesn’t have a fixed output variable. The model learns from the data, discovers the patterns and features in the data, and returns the output

**Applications**

Unsupervised learning is used for solving clustering and association problems.

One of the applications of unsupervised learning is customer segmentation. Based on customer behaviour, likes, dislikes, and interests, you can segment and cluster similar customers into a group. Another example where unsupervised learning algorithms are used is used churn rate analysis.

**3) Reinforcement Learning**

Reinforcement Learning trains a machine to take suitable actions and maximize its rewards in a particular situation. It uses an agent and an environment to produce actions and rewards. The agent has a start and an end state. But, there might be different paths for reaching the end state, like a maze. In this learning technique, there is no predefined target variable

**Applications**

Reinforcement learning algorithms are widely used in the gaming industries to build games. It is also used to train robots to do human tasks.