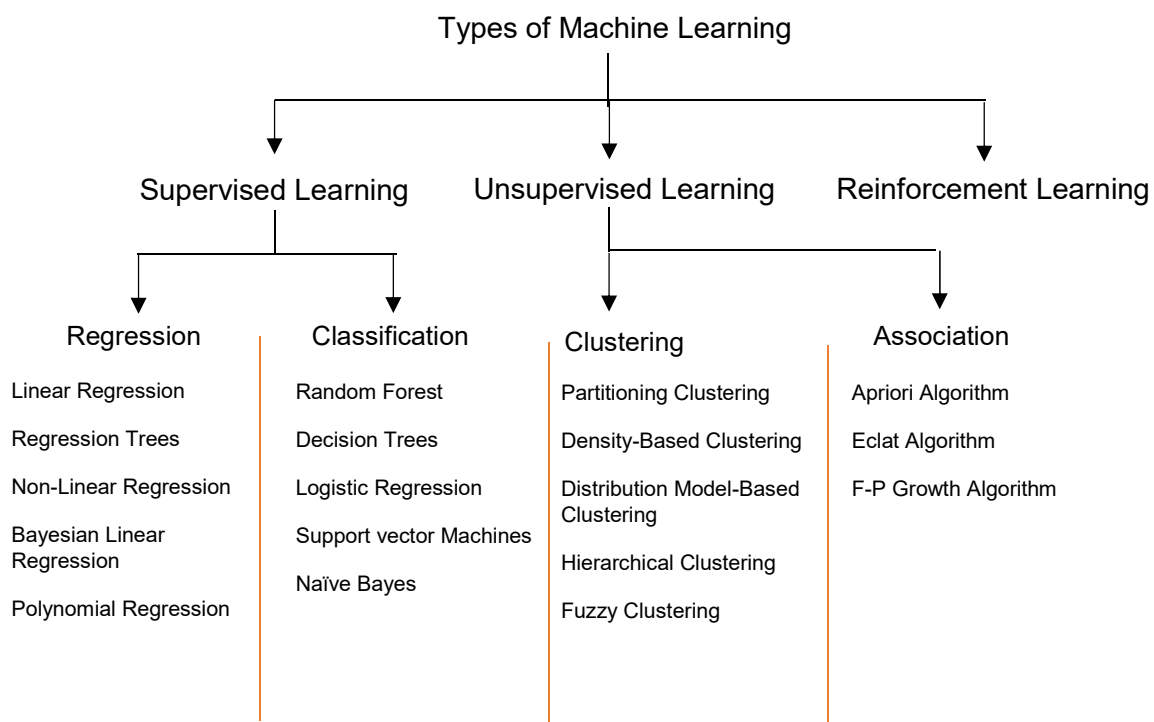## Machine Learning

A subset of artificial intelligence known as machine learning focuses primarily on the creation of algorithms that enable a computer to independently learn from data and previous experiences. Arthur Samuel first used the term "machine learning" in 1959.

A machine learning system builds prediction models, learns from previous data, and predicts the output of new data whenever it receives it. The amount of data helps to build a better model that accurately predicts the output, which in turn affects the accuracy of the predicted output.

Data ⟶ training machine ⟶ building a model ⟶ predicting Data

"Machine Learning is the process involves building a predictive model that can be used to find a solution for problem statement."

Types of Machine Learning

Supervised Learning		Unsupervised Learning	
Regression	**Classification**	**Clustering**	**Association**
Linear Regression	Random Forest	Partitioning Clustering	Apriori Algorithm
Regression Trees	Decision Trees	Density-Based Clustering	Eclat Algorithm
Non-Linear Regression	Logistic Regression	Distribution Model-Based Clustering	F-P Growth Algorithm
Bayesian Linear Regression	Support vector Machines	Hierarchical Clustering	
Polynomial Regression	Naïve Bayes	Fuzzy Clustering	

Types of Machine Learning

1. **Supervised Learning** sample labelled data are provided to the machine learning system for training, and the system then predicts the output based on the training data.
2. **Unsupervised Learning** The training is provided to the machine with the set of data that has not been labelled, classified, or categorized, and the algorithm needs to act on that data without any supervision.
3. **Reinforcement Learning** is a feedback-based learning method, in which a learning agent gets a reward for each right action and gets a penalty for each wrong action. The agent learns automatically with these feedbacks and improves its performance. In reinforcement learning, the agent interacts with the environment and explores it. The goal of an agent is to get the most reward points, and hence, it improves its performance.