Machine Learning

Basically Machine learning is subset of Artificial Inteligence. AI means "The science and engineering of making intelligent machines, especially intelligent computer programs". So Machine Learning uses the AI Techniques that give computers the ability to learn without being programmed to do. So in ML there is no need of explicitly writing a programmed.

In ML we provide input and it undergoes certian process such as Feature extraction, Classification and so on., and gives us Output. Machine Learning is divided into three different categories:

1. Supervised Learning:

In supervised learning supervisor feeds the input values and output vales(labels) generally called as Dataset and apply ML algorithm on that dataset so the model learn about the data that if this is the input than I have to give output as this. For eg: If supervisor provides dataset of Emails in which are some are spam and some are not spam. So model will learn that what are the qualities of emails that are spam and on contrary emails that are not spam. Based on that learning now supervisor will provide a new email and test it as spam or not spam. So model will apply the process whatever it has learnt and give results as spam or not spam. In simple words if we give toy of cat and dog to child and teach him that big one is dog having big nose and small one is cat having small nose and so on. So after learning if we give a new toy of cat and dog then child may able to distinguish between the dog and cat. There are two types of Supervised learning:

a) Regression : This is type of problem in which we have to predict foe continous values as if the price of bedroom of 20sq foot is 50 then what will be the price of bedroom of 40sq foot.

b) Classification: It is used where we need to clasify certain objects. If there are cats and dogs then we need to classify it as tw categories of cats and dogs. So when the test case is provided for predicting then it will check the properties of test case and it will match it with both the categories and it will predict it as cat or dog.

2. Unsupervised Learning:

In unsupervised learning provided data has no output labels. This is used when there is no exaple dataset is given.It is divided into two types:

a) Clustering: In clustering we group similar things together. For eg: if there is music then we will group them according to genres or given a set of tweets then cluster them based on content of tweet.

b) Association: Basically in association we predict based on the previous purchases or searches. It is used by shopping sites that if user is searching for this item or selling of products is more in this month then they will advertise about that item or products for that item for maximum selling of Products.

3. Reinforcement Learning:

In reinforcement learning instead of teaching the model what to do you will reward it whenever it does the right thing. For eg: if child makes right choice than you will make happy face and you make sad face if it makes wrong choice. So after few iterations child learns which toys need to go into which box. Basically systems are trained based on 'rewards' or 'punishment', learning by trial nad error. In this learning machine learns how to act in certain situtaions and how to maximize rewards.