**MACHINE LEARNING**

Machine learning can be supervised or unsupervised. Supervised learning algorithms are trained using labelled data. Unsupervised learning algorithms are trained using unlabelled data.

**CLASSIFICATION**

Classification is a sub-category of supervised learning.

It basically recognise, understands and categorize group of object into different categories. Classification algorithms used in machine learning utilize input training data for the purpose of predicting the likelihood or probability that the data that follows will fall into one of the predetermined categories.

**CLUSTERING**

Clustering is unsupervised learning. It groups the data that has not been labelled, classified or categorized. Algorithm learns the pattern from this unlabelled data.

**NEURAL NETWORK (NN)**

Neural network form the base of deep learning where the algorithms are inspired by the structure of the human brain. NN takes in data and trains itself to recognise pattern in this data and then predict the outputs for a new set of similar data. It mimics the human brain.

NN is based on number of mathematical equations/

NN are made up of layers of neuron. These neurons are the core processing units of the network -

1)Input layer – receives the input

2)Hidden layers – performs most of the computations required by our network

3)Output layer – predicts our final output.

Neurons of one layer are connected to next layer through channels and each of these channels is assigned a numerical value known as weight.

**HOW NEURAL NETWORK WORKS?**

Each node in the NN composed of linear function and activation function.

Input image is sent to the linear function of each node.

Result of this is sent to the activation function which determines if the image is a match or not and which node in the next layer will be activated.

**TYPES OF NEURAL NETWORK**

Artificial, Convolutional and Recurrent

**APPLICATION OF NEURAL NETWORK**

* Facial Recognition – age estimation
* Forecasting
* Music composition