**NEURAL NETWORKS**

Artificial neural networks **are multi-layer networks of neurons that we use to classify things, make predictions, etc.It models the relationship between a set of input signal and output signal.**

**The artificial neuron have weighted input,threshold values,activation function and an output.**

**Perceptron:- It is single layer Neural Network. The single layer neural network perceptron is applicable for linearly seperable data.It calculated weighted sum of inputs values.The perceptron outputs non zero value only when weighted sum exceeds a certain threshold value.If we consider two inputs as (x,y) on a plane,then perceptron tells us which region on plane to which this points belongs.Such regions are linearly seperable regions.**

**If data is not linearly seperable we need more than one perceptron.**

**The information is constantly fed forward from one layer to the next thus this networks are also called “ feed forward network”.**

**Back propogation:- The goal of back propogation in neural networks is to optimize the weights so weights so that the neural network can learn how to correctly map arbitrary inputs and outputs**

**Options that are empirically determined in Neural network:-**

1. **Number of Hidden Layers.**
2. **Number of neurons in each hidden layer**
3. **Activation Function**
4. **Error/Loss Function**
5. **Gradient descent methods.**

**Convolution Neural Networks:-**

Convolution Neural Network (CNN) are powerful artificial neural network technique.It preserve the spatial structure of the problem and were developed for object recognition task such as handwritten digit recognition.There are three types of layers in convolution neural network:-

1. Convolution layers.
2. Pooling layers.
3. Fully Connected layers.

**Data used :-**

1. Forestfires dataset :- To predict the burned area of forest fires with neural network.

**The Codes regarding Neural Networks with business problem Forestfires** dataset **are present in this Repository in detail.**