Neural Networks

Neural Networks : connection of neurons

Input layer, Hidden layer & output layer

Input layer

- consists of input neurons

- each input neuron will collect the data & pass the data

- no.of input layer = 1

- No.of input neurons = no.of input variables

= x\_train. shape[1]

output layer

- consists of output neurons

- each o/p neuron will collect data, process the data & final o/p

- no.of output layer = 1

- no.of o/p neurons = 1 (regression)

= 1 (binary classification)

= n (binary classification projects & multiclass classification projects) where n= no.of categories of o/p variable

for binary classification project, if u consider no.of o/p neurons = 1 (u have to use Sigmoid Function)

if u consider no.of o/p neurons = 2 (u have to use Softmax Function)

Hidden layer

- consists of hidden neurons

each hidden neuron will collect the data , process the data & pass the data

- no.of hidden layers = 0 to inf

- No.of hidden neurons in each layer : no fixed value

: 1 to 2(in) [in= no.of input neurons]

if a neural network consists of 0 hidden layers : Perceptron Model

: Input layer is connected directly to output layer

if a neural network consists of 1 or 2 hidden layers Artificial Neural Networks

if a neural network consists of >2 hidden layers : Deep Neural Networks

w = weights : random assigned

no.of weights = no.of connections

activation functions

1. Step Function or Thresold Function

2. Sigmoid Function

3. ReLU (Rectifier Linear Unit)

4. Leaky ReLU

5. tanh

6. Softmax

Process of each hidden & output Neuron

step-1 :

step-2 : value will send into activation function

o/p of activation function == o/p of the neuron

for hidden neurons : no fixed activation function

: 99% we will use ReLU

for o/p neuron : activation function is ReLU (for regression)

activation function is sigmoid (for binary classification)

activation function is softmax (for multiclass classification)

NLP

1. Business problem Understanding

2. Data understanding

3. Data Preprocessing

Text Cleaning

Tokenization

remove punctuation marks

remove stopwords

stemming/Lemmatization

For Naive bayes bo need to apply balancing on data but for regreession you have to apply