Name - Vasu Kalariya
RoU - PE29
Sub - AI

Lab Assignment - 5

Aim: Implement Neural Network for any application

Objective:
→ To study and implement neural network for any application

Theory:

→ Neural Networks Architecture
Neural Networks are ~~computer~~ complex structures made of artificial neurons that can take in multiple inputs to produce a single output. This is the primary job of a Neural Network to transform input into a meaningful output. Usually, a neural network consist of an input and output layer with one or multiple hidden layers within. In Neural Networks all the neurons ~~in~~ influence each other, and hence they are all connected. The network can acknowledge and observe every aspect of the dataset at hand and how the different parts of data may or may not relate to each other. This is how neural networks are capable of finding extremely complex pattern in vast volume of data

→ Deep learning framework
Deep learning frameworks offers building blocks for designing, training and validat^n deep neural network, through a high level programming interface. This eliminates the need to manage packages and dependencies or build deep learning framework from source

→ Commonly used activation function
(i) Sigmoid function
(ii) Softmax function
(iii) Hyperbolic function

FAQ's

1 Which algorithm is used to train neural network
→ 1] Gradient descent
2] Newton method
3] Conjugate gradient
4] One dimensional optimization
5] Multi dimensional optimization

2 How to decide number of hidden layers in neural network?
→ For most problems one could probably get descent performance by setting the hidden layer configuration using just two rules ① Number of hidden layers equals one and ② the number of neurons is that layers is the mean of the neurons in the input and output layers.

3 What is the drawback of deep learning?
→ It requires very large amount of data in order to perform better than other techniques. It is extremely expensive to train due to complex data models. Moreover deep learning requires expensive GPUs and hundreds of mechanics. It increases the cost to the users.