CS 6301 - Machine Learning Lab - Week 10

Date: 04.04.2024

TITLE: EXPLORING BACK PROPAGATION ALGORITHM IN NEURAL NETWORKS

TASK

1. Consider a neural network shown in Figure with two inputs, two hidden neurons, two output neurons. Additionally, the hidden and output neurons will include a bias. To work with use the initial weights, the biases and the training inputs/outputs as shown in the Figure.
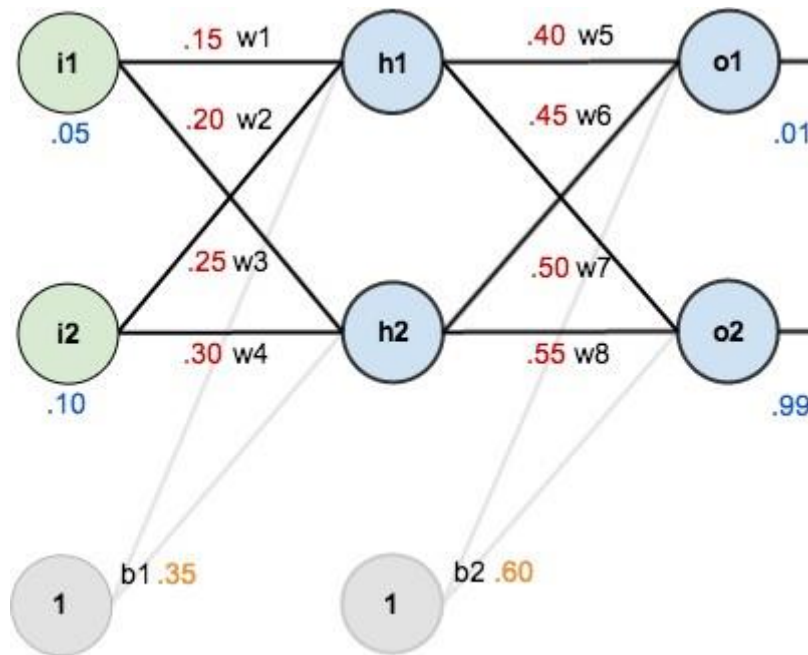

Figure: Neural Network with two Inputs/Hidden Neurons/Output Neurons

Answer the following:

(a) Manually derive the Forward Pass, Backward Pass and the Updating of weights with Iteration 1.

(b) Which activation did you choose and why?

(c) What is the total error after the first round of Back propagation?

(d) Verify the result obtained in (c) with an implementation carried out in Python.

(e) How many iterations would you require to reach the target? How minimum was the error then?

(f) Repeat the implementation and tabulate the results for different activation functions.