

Date: 22.09.2023

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.

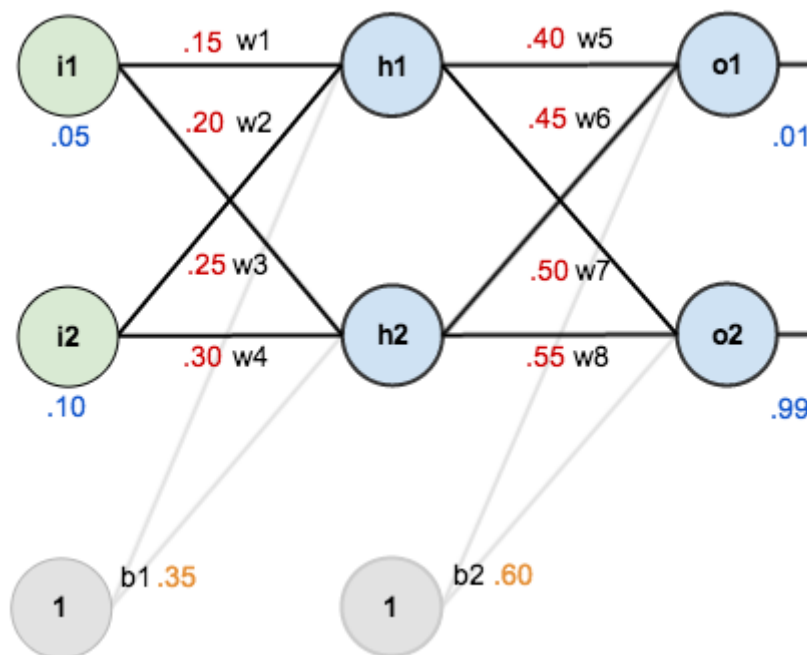


Figure: Neural Network with two Inputs/Hidden Neurons/Output Neurons

Answer the following:

- Manually derive the Forward Pass, Backward Pass and the Updating of weights with Iteration 1.
- Which activation did you choose and why?
- What is the total error after the first round of Back propagation?
- Verify the result obtained in (c) with an implementation carried out in Python.
- How many iterations would you require to reach the target? How minimum was the error then?
- Repeat the implementation and tabulate the results for different activation functions.