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Mini project 2

Question 1:

a) How many hidden layers have you used?

No hidden layer used

b) What are the weights and biases of each node?

Output layer

weight node 1 = 1.0

weight node 2 = 1.0

bias node 1 = -1.5

Question 2:

a) How many hidden layers have you used? And why?

One hidden layer was used. This is because the problem is not too complex and can be solved with a single hidden layer.

b) How many nodes in each hidden layer and why that number of nodes in particular?

Six nodes were used in the hidden layer. This number was chosen somewhat arbitrarily but it was found to work well when testing the model.

c) What is the activation function that you used and why? Did you use the same activation function in all layers? Why?

The sigmoid function was used as the activation function for both layers. This is a common choice for binary classification problems.

d) What learning algorithm did you use to train the neural net and why?

The backpropagation algorithm was used to train the neural network. This is a widely used and effective algorithm for training neural networks.

e) Can you use one hidden layer only to solve this problem? If yes, how many nodes are you going to have in it? And why?

Yes, one hidden layer is sufficient to solve this problem. Six nodes were used in the hidden layer.

f) Can we use 5 hidden layers? Is that a good idea? Justify your answer.

Five hidden layers are probably not necessary and would likely result in overfitting. One hidden layer is sufficient.

g) How did the neural net do in classifying the testing set? Comment on how good or bad it learned the function from the training set.

The neural network did well in classifying the testing set, correctly identifying all outputs based on the inputs. The model learned the function from the training set well. It has a 100% accuracy.