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Undergraduate
Machine Leaning
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Neural Network

As usual, just run the JAR file and follow the instructions. There are no special requirements, but be sure to give this one time. It can take a good chunk of time, on my computer it takes about 35 seconds from the time I double click the data file to the time the results GUI pops up for the 3,3,3 configuration. I have it set to run 10,000 epochs for each of the 10 folds.

Pretty much just followed the algorithm exactly. I wrote FeedForward, CalculateDeltas, and UpdateWeights methods. When training I use a FeedIris method that calls the three previous methods in turn. Then I have a GetClass method that returns the classified class of the last Iris fed through the network. As far as structure, a Network has Layers, and Layers have Nodes.

Now for results:(All results are with 10,000 epochs run for each of the 10 folds, with a learning rate of .001)

(3,3,3):

Average Accuracy: 96%

Fold 1: 15/15 classified correctly
Fold 2: 15/15 classified correctly
Fold 3: 15/15 classified correctly
Fold 4: 11/15 classified correctly
Fold 5: 14/15 classified correctly
Fold 6: 14/15 classified correctly
Fold 7: 15/15 classified correctly
Fold 8: 15/15 classified correctly
Fold 9: 15/15 classified correctly
Fold 10: 15/15 classified correctly

Confusion Matrix:
55,0,0
0,36,0
0,6,53

(4,4,3):

Average Accuracy: 96%

Fold 1: 13/15 classified correctly
Fold 2: 15/15 classified correctly
Fold 3: 15/15 classified correctly
Fold 4: 14/15 classified correctly
Fold 5: 14/15 classified correctly
Fold 6: 15/15 classified correctly

Fold 7: 14/15 classified correctly
Fold 8: 14/15 classified correctly
Fold 9: 15/15 classified correctly
Fold 10: 15/15 classified correctly

Confusion Matrix:
49,0,0
0,37,1
0,5,58

(3,3,3,3):

Average Accuracy: 38.6%  (You were right, it takes a LOT longer to train a 4-layer network)

Fold 1: 8/15 classified correctly
Fold 2: 13/15 classified correctly
Fold 3: 3/15 classified correctly
Fold 4: 3/15 classified correctly
Fold 5: 1/15 classified correctly
Fold 6: 2/15 classified correctly
Fold 7: 7/15 classified correctly
Fold 8: 4/15 classified correctly
Fold 9: 6/15 classified correctly
Fold 10: 11/15 classified correctly

Confusion Matrix:
18,6,0
18,17,28
13,27,23

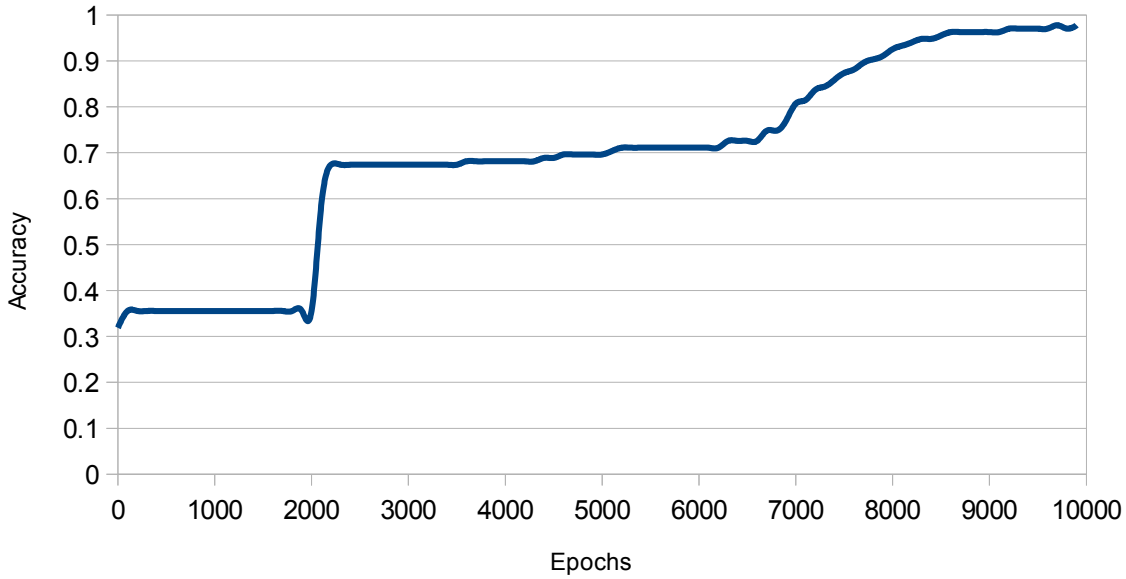
(4,12,3):

Average Accuracy: 96%

Fold 1: 13/15 classified correctly
Fold 2: 15/15 classified correctly
Fold 3: 15/15 classified correctly
Fold 4: 14/15 classified correctly
Fold 5: 14/15 classified correctly
Fold 6: 15/15 classified correctly
Fold 7: 14/15 classified correctly
Fold 8: 14/15 classified correctly
Fold 9: 15/15 classified correctly
Fold 10: 15/15 classified correctly

Confusion Matrix:
49,0,0
0,45,0
0,6,50

Since three of the networks performed with the same average accuracy on these particular runs, I will just use the (3,3,3) network to generate the scatter plot since that is the network that will be in the JAR I submit to you(picking that one because it's the fastest). Also, this is the scatter plot from 1 of the folds of the (3,3,3) network rather than the full data set.




And that's it, I didn't have any unresolved issues and I am very pleased with the performance.