MSBD 6000B Assignment 1
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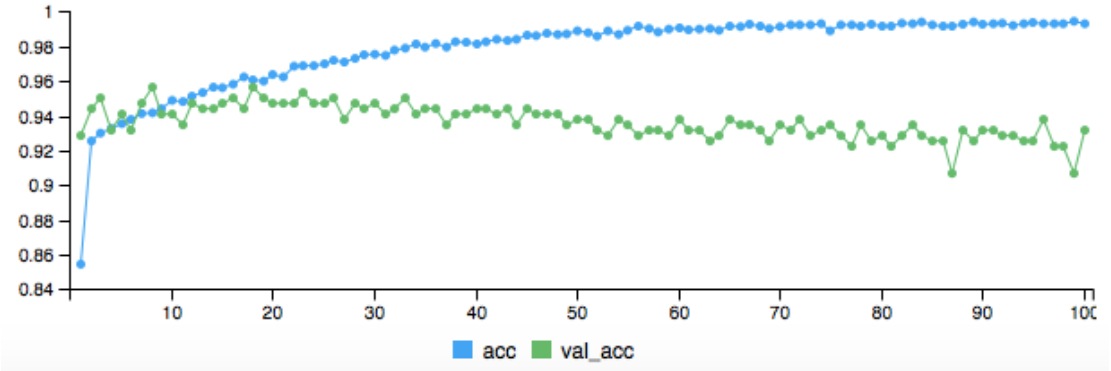
Introduction
I have used the neural network (NN) model in Program R to do this assignment. There are 3 hidden layers in the model.

Pre-Processing
The file "traindata.csv" contains 3220 rows and 57 features and they are using for train the model. The file "testdata.csv" contains 1380 rows and 57 features and they are using for test the model. I have transformed the data and created an array for storing the data for training and testing. The formula for transformation is the current value of data minus the minimum value of all data then divided by the maximum of all data minus the minimum value of all data (i.e. [x –min(x)] / [max(x) – min(x)]). After the calculation, the array will form with 57 data in a row.

Model
The model is neural network model with 3 hidden layers. The first layer would have 128 units, the second layer would have 64 units and the last layer would have 32 units. Three layers are using rectifier as activation. For the output, I chose the softmax function as activation. The cost function for this model is ccross entropy and calculated as the average of computing the neg-log-probability of the correct class in the predicted value. The optimizer function is RmsProp. The batch size is 32 and I have set 100 epochs to run the model.

Result and Conclusion
The accuracy for this model is around 93% with testing 100 epochs (See Appendix 1 and 2).

Appendix 1: Screenshot for the accuracy for the model



Appendix 2: Screenshot for the last 5 epochs

```
Epoch 95/100
 - 0s - loss: 0.0206 - acc: 0.9938 - val_loss: 0.4780 - val_acc: 0.9255
Epoch 96/100
 - 0s - loss: 0.0180 - acc: 0.9931 - val_loss: 0.4801 - val_acc: 0.9379
Epoch 97/100
 - 0s - loss: 0.0190 - acc: 0.9931 - val_loss: 0.5290 - val_acc: 0.9224
Epoch 98/100
 - 1s - loss: 0.0231 - acc: 0.9931 - val_loss: 0.4773 - val_acc: 0.9224
Epoch 99/100
 - 0s - loss: 0.0144 - acc: 0.9945 - val_loss: 0.6049 - val_acc: 0.9068
Epoch 100/100
 - 0s - loss: 0.0202 - acc: 0.9931 - val_loss: 0.4958 - val_acc: 0.9317
```