Natasha Mandal
UF ID 79475372

BIG DATA ECOSYSTEMS
Programming Assignment - 1

The goal of this assignment was to create a model for recognizing digits based on the MNIST dataset, in Tensorflow.

Number of training records - 32000
Number of test records - 10000

Model:

I built a convolutional neural network -

- An Adam Optimizer was used for training
- 2 convolutional layers with a filter size of 5*5 and stride 1 were used
- Batch normalization was used after each convolutional layer
- Relu activations were used after each batch normalized convolutional layer
- Max pooling layers over 2*2 blocks were used after each activation
- A fully connected layer was used with Dropout

Analysis:

This worked quite well when the number of training records was 55000 (the original MNIST data set) and gave an accuracy of around 99.22% over the test data [when trained for around 18 epochs].
When I tried to change the filter size to 3*3 for the convolutional layer, the accuracy reduced by around 1.5%, so I increased the filter size back to 5*5.
To make this work for the given training set I had to increase the number of epochs.

Number of epochs	Accuracy (based on Public Leaderboard)
25	0.98620
30	0.98880
35	0.98820
40	0.98760
32	0.98940
33	0.98900

References:

https://www.tensorflow.org/get_started/mnist/pros