

CS5597: Directed Reading
Distributed Classification for Deep Learning
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Objective:

To implement training of one class in MNIST dataset so the model can learn only one class. (The MNIST database (Mixed National Institute of Standards and Technology database) is a large database of handwritten digits that is commonly used for training various image processing systems. The database is also widely used for training and testing in the field of machine learning.)

Implementation:

The designed approach is to input 784 pixels of image to model and these images should be separated out per classes. The SOFTMAX model is created having defined two classes from the MNIST dataset. The same weight and biases of the class size provided to the model. Train the model and feed in test data and record the accuracy and loss at every 10 steps

Results:

After 1000 iterations the accuracy of model in different runs:

```
Run try1
Accuracy at step 680: 0.7092 - loss: 0.000116
Accuracy at step 690: 0.7109 - loss: 0.000113
Accuracy at step 700: 0.7029 - loss: 0.000120
Accuracy at step 710: 0.5805 - loss: 0.000313
Accuracy at step 720: 0.6829 - loss: 0.000158
Accuracy at step 730: 0.6777 - loss: 0.000161
Accuracy at step 740: 0.6188 - loss: 0.000298
Accuracy at step 750: 0.868 - loss: 0.000499
Accuracy at step 760: 0.7508 - loss: 0.000097
Accuracy at step 770: 0.6431 - loss: 0.000160
Accuracy at step 780: 0.7728 - loss: 0.000244
Accuracy at step 790: 0.7583 - loss: 0.000184
Accuracy at step 800: 0.7869 - loss: 0.000239
Accuracy at step 810: 0.7758 - loss: 0.000196
Accuracy at step 820: 0.701 - loss: 0.000143
Accuracy at step 830: 0.7475 - loss: 0.000179
Accuracy at step 840: 0.7403 - loss: 0.000163
Accuracy at step 850: 0.7318 - loss: 0.000147
Accuracy at step 860: 0.7703 - loss: 0.000239
Accuracy at step 870: 0.7515 - loss: 0.000178
Accuracy at step 880: 0.7406 - loss: 0.000153
Accuracy at step 890: 0.7385 - loss: 0.000145
Accuracy at step 900: 0.7335 - loss: 0.000136
Accuracy at step 910: 0.7763 - loss: 0.000173
Accuracy at step 920: 0.7659 - loss: 0.000153
Accuracy at step 930: 0.6726 - loss: 0.000145
Accuracy at step 940: 0.6735 - loss: 0.000143
Accuracy at step 950: 0.6734 - loss: 0.000141
Accuracy at step 960: 0.7124 - loss: 0.000123
Accuracy at step 970: 0.7122 - loss: 0.000121
Accuracy at step 980: 0.6879 - loss: 0.000133
Accuracy at step 990: 0.6826 - loss: 0.000140
Process finished with exit code 0
```

Weakness of Model:

The labels need to be defined properly to achieved desired results

Future Approaches:

Learn how to implement visualization in Tensorflow and Python. Observe weight distribution between actual global model and combined model.