

# **Deep Learning Assignment**

**By**

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## Q1 Softmax Classifier:

Total Epochs = 500

Learning Rate = 0.01

Iterations	Training Accuracy	Test Accuracy
1	0.971	95.56
2	0.956	96.2
3	0.981	93.4
Mean	0.9693333333	95.05333333
SD	0.012583057	1.467151435

As we can see Training and Test accuracy are very similar hence the data is fitting the model very well.

## Q2. MLP Classifier:

Total Epochs = 5000

Learning Rate = 0.01

Iterations	Training Accuracy	Test Accuracy
1	0.981	100
2	0.69	74
3	0.9	93.4
Mean	0.857	89.13333333
SD	0.15018988	13.51493002

### Q3. CNN Classifier:

Total Epochs: 5

Learning rate: 0.001

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Train Epoch: 1 [0/3000 (0%)]      Loss: 0.6923      Accuracy: 40%

Epoch 1 Train: Loss: 0.6352, Accuracy: 68.500%

Epoch 1 Test : Loss: 0.5386, Accuracy: 80.100%

Train Epoch: 2 [0/3000 (0%)]      Loss: 0.5388      Accuracy: 81%

Epoch 2 Train: Loss: 0.4313, Accuracy: 90.967%

Epoch 2 Test : Loss: 0.3446, Accuracy: 99.300%

Train Epoch: 3 [0/3000 (0%)]      Loss: 0.3454      Accuracy: 99%

Epoch 3 Train: Loss: 0.3302, Accuracy: 99.633%

Epoch 3 Test : Loss: 0.3208, Accuracy: 99.767%

Train Epoch: 4 [0/3000 (0%)]      Loss: 0.3201      Accuracy: 100%

Epoch 4 Train: Loss: 0.3192, Accuracy: 99.767%

Epoch 4 Test : Loss: 0.3175, Accuracy: 99.867%

## Q4 LSTM

**Total Epochs: 5**

**Learning Rate: 0.01**

Iterations	Data	Training Accuracy	Test Accuracy
1	15%	91%	84%
2	15%	85%	76%
3	15%	90%	81%
Mean		89%	80%
SD		3%	4%