## CS 6301 - Machine Learning Lab - Week 4

Date: 25.08.23

**SPOT QUESTION**

Train a simple single layer Perceptron Model (785 inputs, 10 outputs) for recognizing the hand-written digits in the MNIST data set. Pre-process MNIST data and Scale each feature to a fraction between 0 and 1.

Show the results for the following three experiments. In each experiment, train the 10 perceptrons with the following given learning rates:

Experiment 1: $\eta = 0.01$

Experiment 2: $\eta = 0.1$

Experiment 3: $\eta = 1.0$

For each learning rate:

a) Initialize perceptrons with small random weights $w_i \in [-0.05, 0.05]$ (chosen independently for each connection in each perceptron)
b) Run perceptron learning for 50 epochs. At each epoch (including epoch 0), compute accuracy on training and test data. (Don't change the weights while computing accuracy.)
c) For each experiment, plot training and test accuracy over epochs