

Week 5 Spot – SLP-MLP

1. 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