

Homework 5  
Due: 11:59pm March 27

Use the MNIST dataset.

1. (30 pts) Based on the previous homework, replace the first convolutional layer with autoencoder layers. Train the new network and report the result.
2. (30 pts) Based on the previous homework, replace the first convolutional layer with Restricted Boltzmann Machine layers (convert the pixels to black/white first). Train the new network and report the result.
3. (40 pts) Write one page final project proposal. It should include the problem you want to solve, why it is important, what you need deep learning to solve it, what kind of deep structure you plan to construct, how to train it, how to obtain training data, and how to validate your trained deep network.