CS 250 Spring 2025

Homework Assignment 3

Due on Moodle: <u>Before the class</u> on Friday, February 14. Mail submissions will not be accepted. Submit one single Jupyter Notebook for all questions. **<u>Each student must submit their own work.</u>**

1) Write code in Python that eliminates all data except the classes '0', '1' and '5' from the MNIST dataset. This was part of HW Assignment 2, so no points.

2) Using the 0-1-5 data created above, write code in Python that
   a) Uses PCA to reduce the dimensionality of the digits data (from these three classes) to 2 dimensions.   [5 points]
   b) Plots a scatter plot of this two-dimensional data, with the points representing the three digits in three different colors.   [5 points]
   c) Also plot a T-SNE scatter plot of the same data in three colors, so that we can compare the dimensionality reduction of PCA and T-SNE.   [5 points]