< CSE 302 Assignment 3 >

(1) Run the code below and arrange the results.

https://scikit-learn.org/stable/auto_examples/cluster/plot_cluster_comparison.html#sphx-glr-auto-examples-cluster-plot-cluster-comparison-py

(2) Sample 100 images randomly for each class (total 1000 images) from the MNIST training data set.

(3) For 1000 images, perform Agglomerative clustering, *k*-means clustering, Gaussian mixture model, Spectral clustering. (i.e., $k = 10$)

(4) Based on the clustering results and the labels we know, compute “Rand index” and “mutual information based score”. Explain your findings.

(5) Based on the clustering results, you can get the center of each cluster. Classify the MNIST test data set using 1-NN classifier and provide accuracy. Explain your findings.