CS489/689- HW 4

In HW4, we are going to compare the performance of SVMs with multiple kernels with the MNIST data. Please use the MNIST data for HW4 that includes 100 images on each label of 0 – 9.

Dataset: http://mkang.faculty.unlv.edu/teaching/CS489_689/HW4/MNIST_HW4.csv

Apply SVM with the three kernels ('linear', 'poly', and 'rbf') and compute accuracy using 5-fold CV to compare the performance of the three kernels. You can implement SVM using the python package of "sklean".

Check: https://scikit-learn.org/stable/modules/generated/sklearn.svm.SVC.html

The python package for SVM is implemented for multi-class classification. So, you can just compute accuracy.

Submission:

You must submit the followings to WebCampus:

1. MS word file
   - Describe what you have done for the homework assignment.
   - Must include a table of accuracy of 5-fold CV and the average accuracy of the five experiments. SVM with each kernel will compute accuracy each. So, please compare the accuracies of the three models.
2. Source code file(s)
   - Must be well organized (comments, indentation, …)
   - You need to upload the "original python file (*.py)" after changing to "*.py.txt". For example, "*.py" to "*.py.txt"

You must submit the files SEPERATELY. DO NOT compress into a ZIP file. If you fail to provide all required information or files, you may be given zero score without grading.

Rubric:

- Whether you used appropriate parameters for applying SVM using the python package
- 5-fold CV should be correctly implemented. Should include five accuracies and their average.

Deadline:

You must submit HW4 by **Sunday, April 18, 2021**. Late assignments will not be accepted.