Homework 2

Goals

In this assignment you will practice putting together a simple image classification pipeline based on the k-Nearest Neighbor or the SVM classifier. The goals of this assignment are as follows:

- Understand the basic Image Classification pipeline and the data-driven approach (train/predict stages).
- Understand the train/val/test splits and the use of validation data for hyperparameter tuning.
- Develop proficiency in writing efficient vectorized code with numpy.
- Implement and apply a k-Nearest Neighbor (kNN) classifier.
- Implement and apply a Multiclass Support Vector Machine (SVM) classifier.

(a) k-Nearest Neighbor classifier [50pts]

The notebook **knn.ipynb** will walk you through implementing the kNN classifier. Fill the blanks in knn.ipynb and utils\classifiers\k_nearest_neighbor.py.

(b) Training a Support Vector Machine [50pts]

The notebook **svm.ipynb** will walk you through implementing the SVM classifier. Fill the blanks in svm.ipynb and utils\classifiers\linear_svm.py.