

ML-CSE-543 – Machine Learning

Assignment 3 Readme

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SVM_class.py contains the class, methods corresponding to SVM.

Multiclass cases for OVO and OVR is handled by creating separate classes for each case. Each class inherits the base class SVM. The training, prediction is used from super / parent class i.e. SVM and the post processing part for the final predictions and accuracy calculation is done in the child class i.e. OVO or OVR. Inheritance approach is preferred to increase readability of code as populating the SVM with everything makes things complicated.

The code for this assignment is prepared in a manner that each question has individual .py named as **q1.py**, **q2.py** and **q3.py** in the root directory

Functions common across files are kept in **util.py** in root folder which is imported in each question .py file. This approach follows modularity which increases code readability and reusability.

All the datasets being used in the same directory of code.

Steps to run code:

1. python q1.py

Analysis report first discusses the assumptions, pre-processing and approach per question and later the analysis with respect to assignment questions is given.

For Question 1.

All the py files are converted from jupyter script. It can be executed directly.

1-1 HOG.py - for part 1) b)

1-1 PCA.py - for part 1) a)

1-2 PCA TSNE.py - for part 2 with PCA

1-2 TSNE_HOG+Color.py - for part 2 with HOG and color histogram

1-3 HOG_rbr10_GridSearchCV_scaled.py - for part 3 with HOG and color histogram

1-3 PCA rbf c = 10.py - for part 3 with PCA

1-4 HOG.py - for part 4 with HOG and color histogram

1-4 PCA.py - for part 4 with PCA