

CSD361: Introduction to Machine Learning

Assignment #3: SVMs

Due on: 19-3-2022, 23.59

10-3-2022

MM: 145

- *Pl. do not copy. If copying is established you will get zero marks in the assignment. For repeat offences you can be given a failing grade in the course.*

1. Use the binary classification data generated in assignment 2 for this assignment. You generated two data sets in assignment 2: a) a separable data set and b) a non-separable data set obtained by switching the labels of some data items in a).
 - (a) Run the C-SVM algorithm without the C parameter (that is set C to 0) on both data sets and report the accuracies that you get.
 - (b) Run the SVM algorithm with non-zero values for C . Report accuracies for different values of C for both data sets.
 - (c) Based on part (b) tune the value of C on both data sets to get the best performance. Report the best performance. How does it compare with the performance in (a).
 - (d) Run the kernel C-SVM algorithm for the following kernels a) polynomial kernel of degrees 2 and 3 b) exponential kernel. Report accuracies on both data sets. How does it compare with the results in (c).
 - (e) Using the binary C-SVM classifier in one-versus-one mode and in one-versus-all mode classify the IRIS data set (choose suitable values for C by tuning). Report accuracies and compare with the values you got in assignment 2.

[20,25,20,30,50=145]