Assignment No 9

SVM

Link to download dataset: https://www.kaggle.com/datasets/uciml/iris

1. Write your SVM function for implementing binary SVM algorithm with linear kernel.

(2) Consider the IRIS dataset 150 ×4 . It has three class and each data points contain four features. Find below the head of dataset.

Sepal.Length Sepal.Width Petal.Length Petal.Width Species

1 5.1 3.5 1.4 0.2 setosa (1)

2 4.9 3.0 1.4 0.2 setosa (1)

51 7.0 3.2 4.7 1.4 versicolor(2)

101 6.3 3.3 6.0 2.5 virginica (3)

103 7.1 3.0 5.9 2.1 virginica (3)

Consider the Sepal. Length and Sepal Width of the Setosa and Versicolor flowers only. It would be 100 ×3 dataset. Train an SVM classifier with a linear kernel. Find the separating hyperplane. Plot the separating hyperplane along with the data points. (Use different colors for different classes).

1. Consider the any two flowers from three (e.g. Setosa and Versicolor flowers) (100× 5 dataset) . Separate the first 80 data points as the training set, the next 10 data points as the validation set and the last 10 data points as the testing set. Find the testing accuracy of your SVM model with a linear kernel