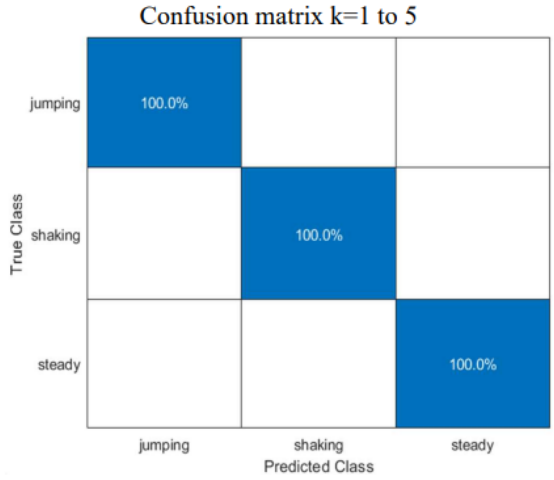
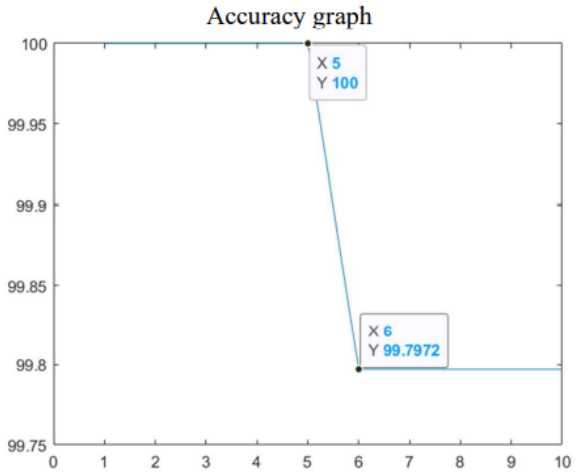
Project Name: Classification of MATLAB Acceleration sensor data into different activities.

Description: Based on the Acceleration co-ordinate data we can try to classify the data into different activities like shaking, jumping and steady. In this project we have used the MATLAB to label, train and test the dataset then we have merged all the dataset and used it as an input for the training models. The result is as follows below.

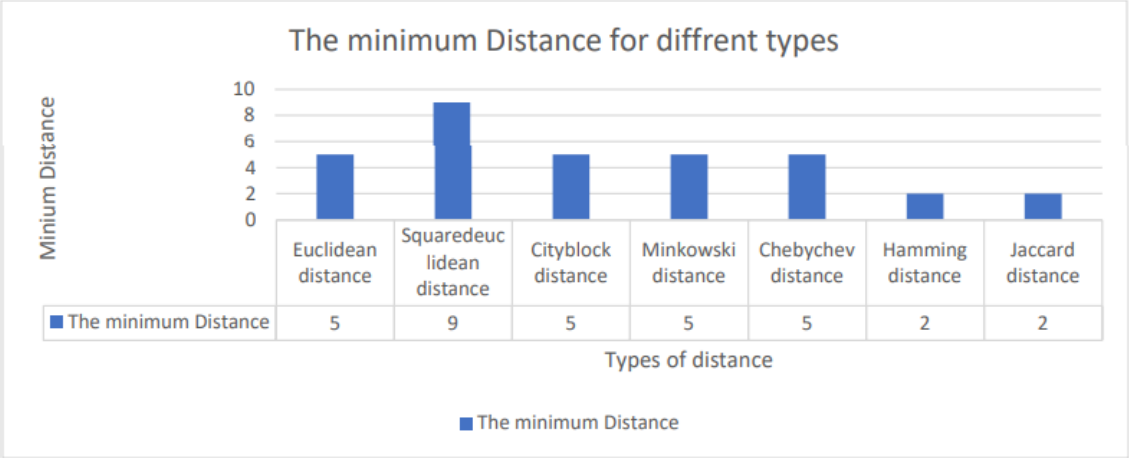
Using KNN supervised learning model: Labelled manually then used the dataset for training and testing. The accuracy was till 100% till k=5 and then it starts to reduce. Below is the Confusion chart and accuracy for the same.





Using DBSCAN for semi-supervised learning model: The data is first labeled using DBSCAN and then trained and tested using KNN

The same 3 input data are taken to cluster the data using DBSCAN. For Euclidean the best results were obtained for distance 5 and above. Next, I took the squared Euclidean and the best results were obtained for distance 9 and above. Tried with various methods and details are given as in the graph.



By the above image it is obvious that hamming and Jaccard distance gives the best result for with a smaller number of near distances.

KNN train and test result: The maximum accuracy with for the range of k from 1-10 was 99.79 which is pretty good since it was a semi-supervised learning it did pretty good for the values. The results are as follows.