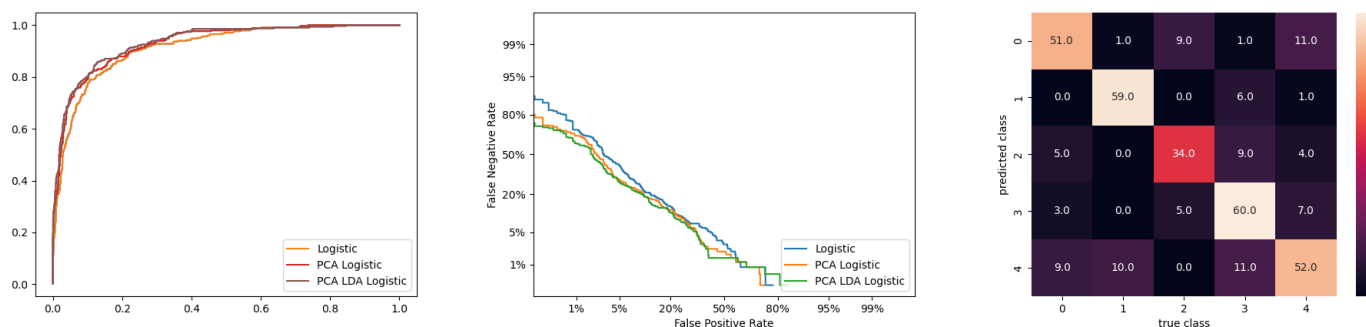


1. Image Data:

Logistic Regression: Here we are drawing the graphs of image data set when applied logistic regression and using the help of PCA and using the help of both PCA and LDA. The graphs are as follows.

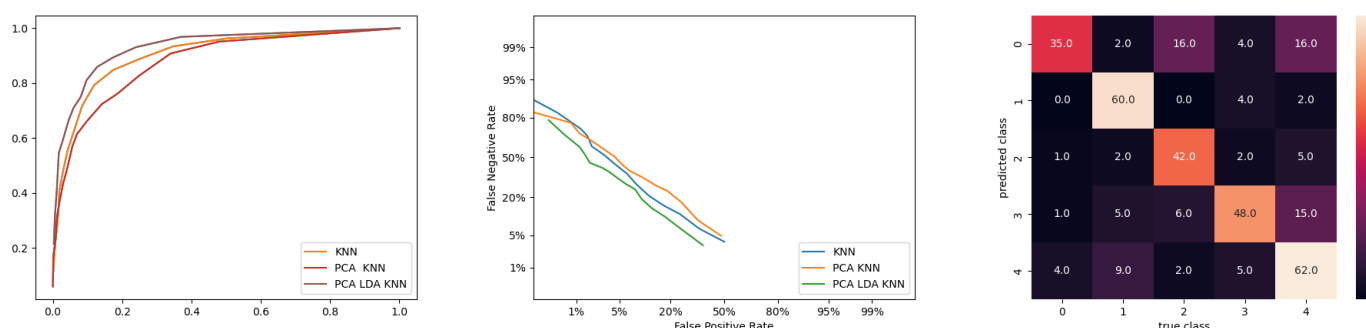


Accuracy for the Logistic Regression 72.12%

Accuracy for Logistic regression after PCA 74.13%

Accuracy of logistic regression after PCA and LDA 74.42%

KNN:



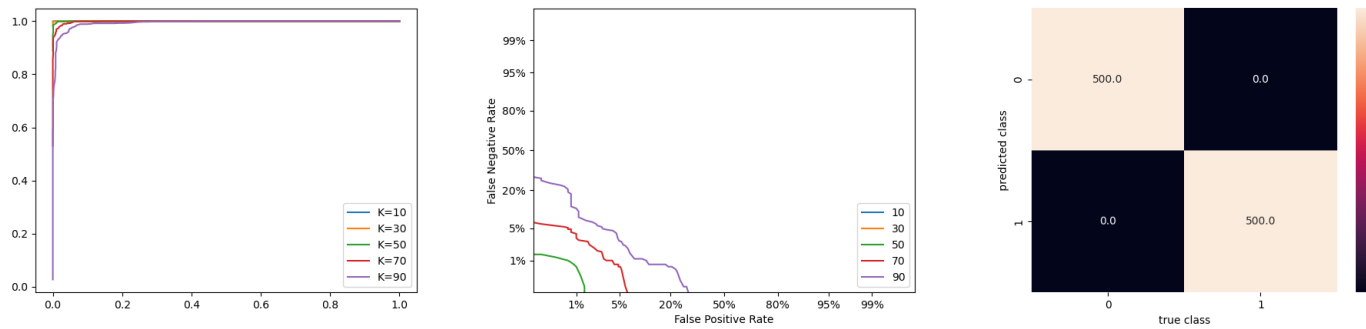
Accuracy for the KNN 70.97%

Accuracy for KNN after PCA 64.65%

Accuracy of KNN after PCA and LDA 72.12%

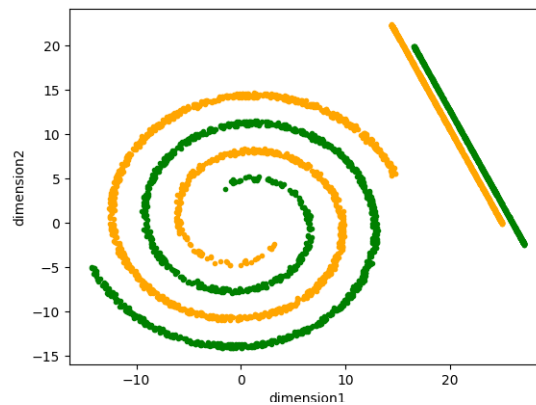
2. Synthetic Data:

KNN: Here we are drawing the graphs for different values of k. For different values of k as K increases the accuracy decreases as we can see from the ROC and DET curves.



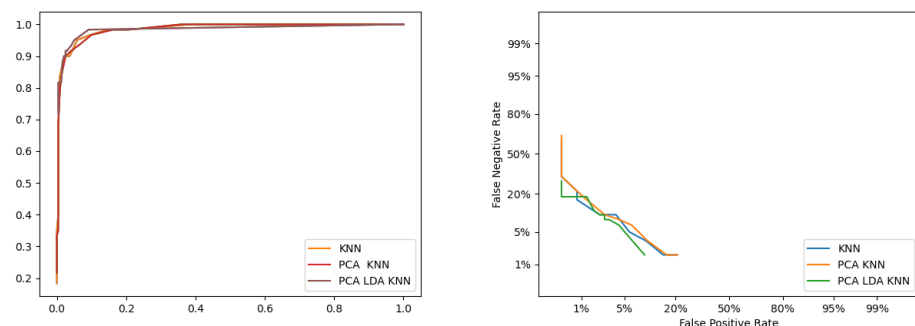
Logistic Regression: The accuracies for the data is as follows for logistic regression are 63.9% and 63.9% respectively

Here we will give how the data looks if it was projected



3.Spoken digits:

KNN: Here we are drwing the ROC and DET curves for spoken digits, the curves

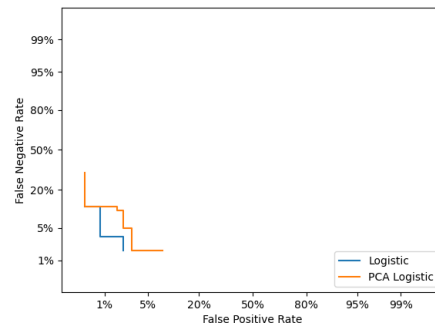
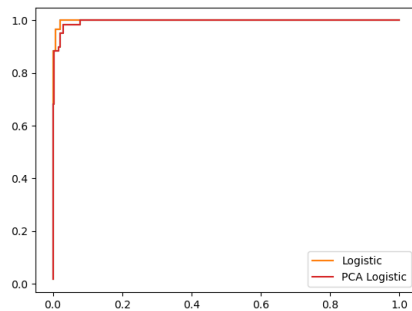


are as follows

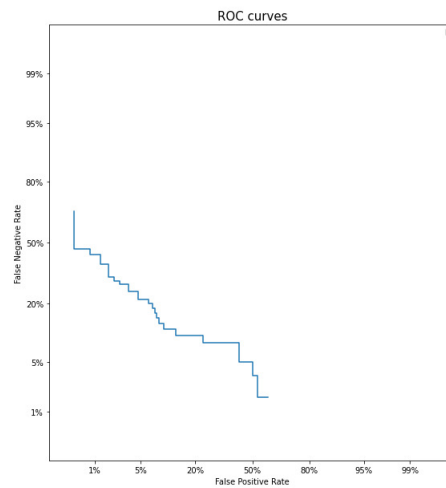
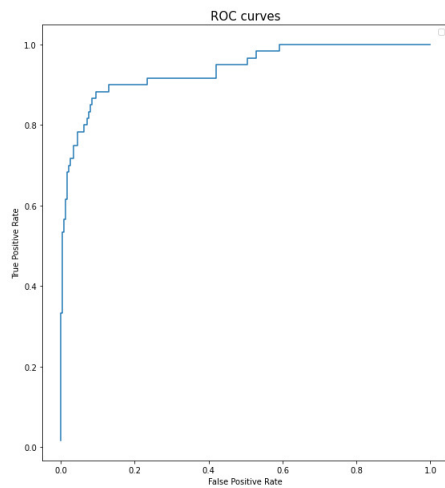
Accuracies:

KNN-86.33%
KNN+PCA-88%
KNN+PCA+LDA-90%

Logistic Regression:



Comparing ROC and DET curves

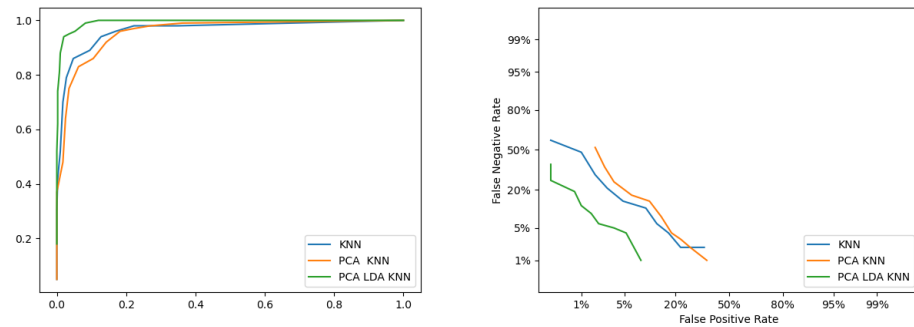


Accuracies:

logistic-95%
logistic+PCA-91.33%
logistic+PCA+LDA-88.35%

4.Hand Written:

KNN: Here we are drwing the ROC and DET curves for spoken digits, the curves



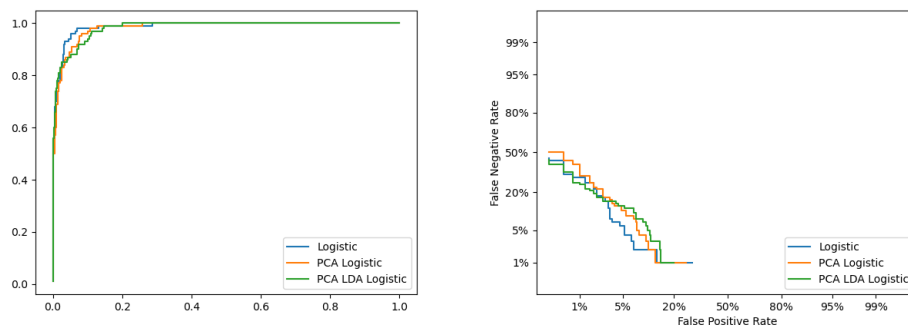
are as follows
Accuracies:

KNN-84%

KNN+PCA-84%

KNN+PCA+LDA-94%

Logistic Regression:



Accuracies:

logistic-88%

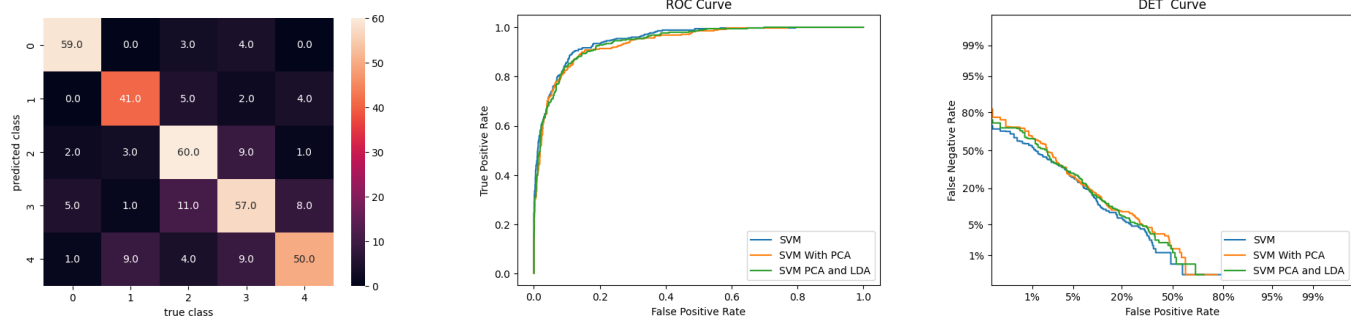
logistic+PCA-86%

logistice+PCA+LDA-91%

SVM :

For each of the datasets we have implemented the SVM, PCA followed by SVM, PCA followed by LDA followed by SVM.

Image Data-Set : The confusion matrix, ROC and DET curves are as follows:

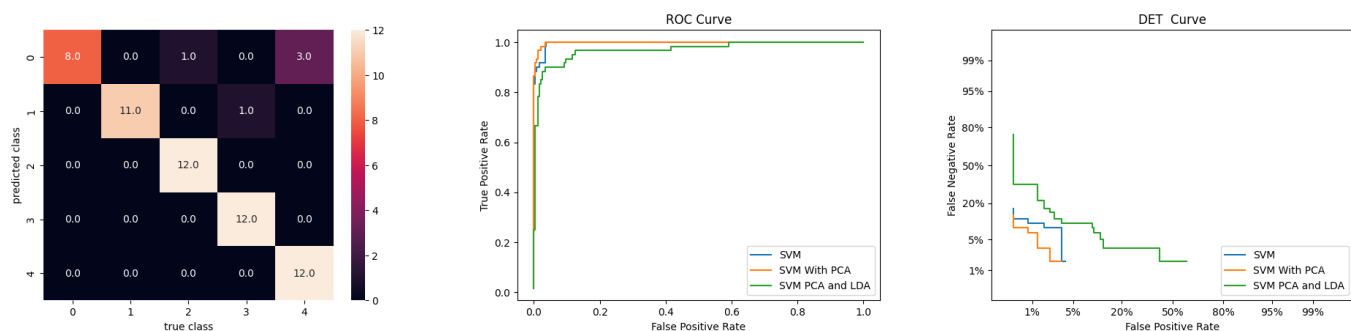


Accuracy for only SVM - 76.7 percent

Accuracy for PCA followed by SVM - 75.5 percent

Accuracy for PCA with LDA followed by SVM - 75.5 percent

Spoken Digit Data-Set : The confusion matrix, ROC and DET curves are as follows:

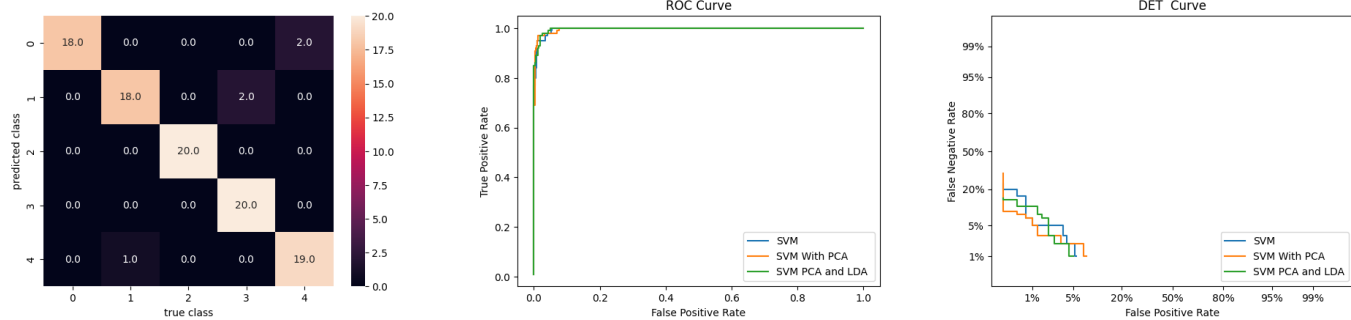


Accuracy for only SVM - 91.66 percent

Accuracy for PCA followed by SVM - 88.33 percent

Accuracy for PCA with LDA followed by SVM - 91.6 percent

Hand-written Data-Set : The confusion matrix, ROC and DET curves are as follows:

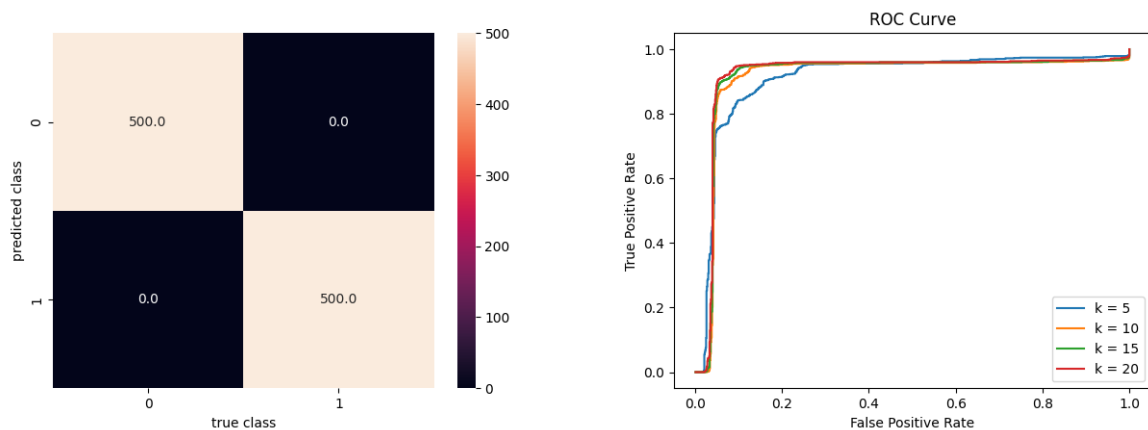


Accuracy for only SVM - 95 percent

Accuracy for PCA followed by SVM - 97 percent

Accuracy for PCA with LDA followed by SVM - 95 percent

Synthetic Data-set : The confusion matrix, ROC and DET curves are as follows:

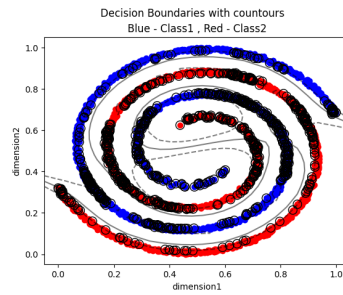


Accuracy for only SVM - 100 percent

Accuracy for PCA followed by SVM - 89.5 percent

Accuracy for PCA with LDA followed by SVM - 89 percent

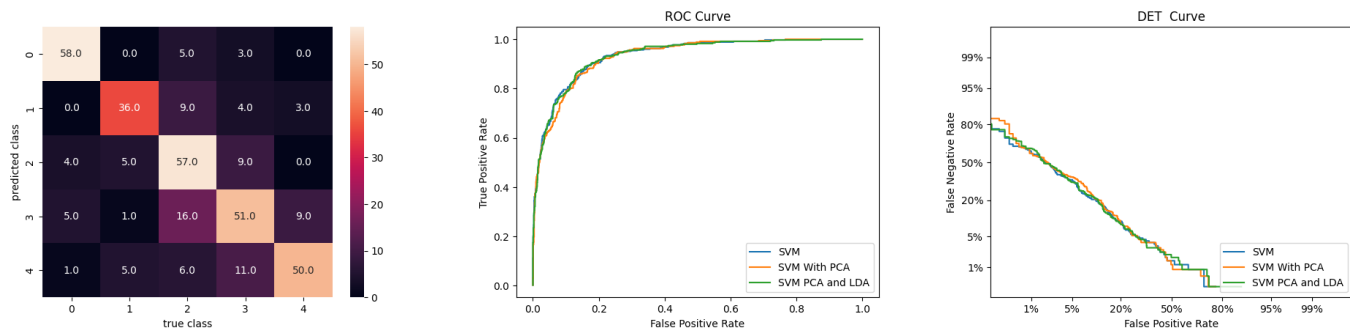
Decision boundary for this dataset :



ANN :

For each of the datasets we have implemented the ANN, PCA followed by ANN, PCA followed by LDA followed by ANN.

Image Data-Set : The confusion matrix, ROC and DET curves are as follows:

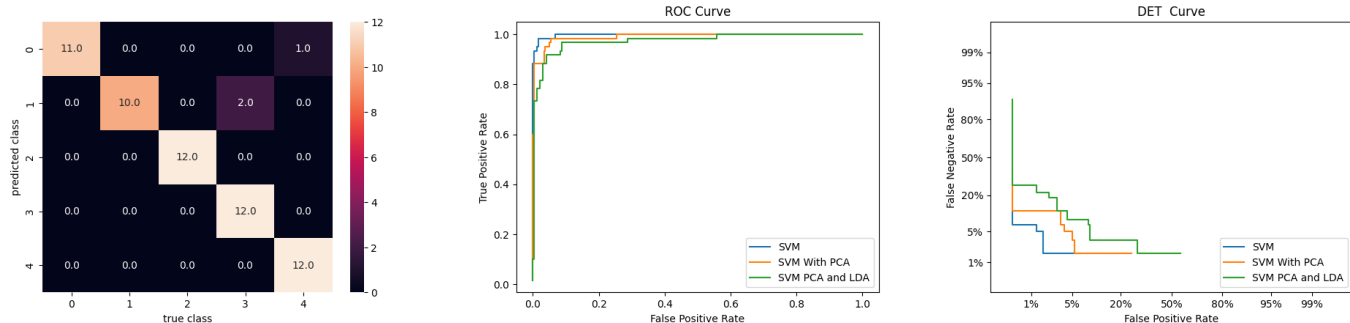


Accuracy for only ANN - 73.56 percent

Accuracy for PCA followed by ANN - 70.11 percent

Accuracy for PCA with LDA followed by ANN - 72.12 percent

Spoken Digit Data-Set : The confusion matrix, ROC and DET curves are as follows:

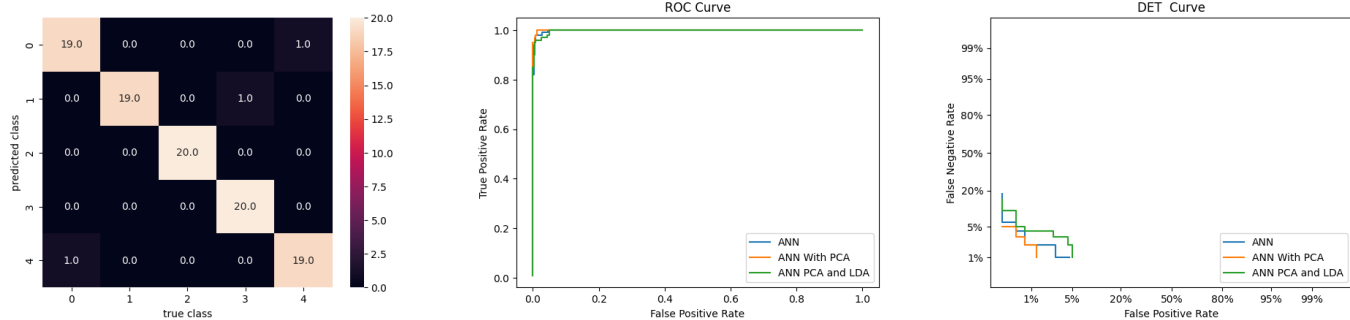


Accuracy for only SVM - 95 percent

Accuracy for PCA followed by ANN - 88.33 percent

Accuracy for PCA with LDA followed by ANN - 86.66 percent

Hand-written Data-Set : The confusion matrix, ROC and DET curves are as follows:

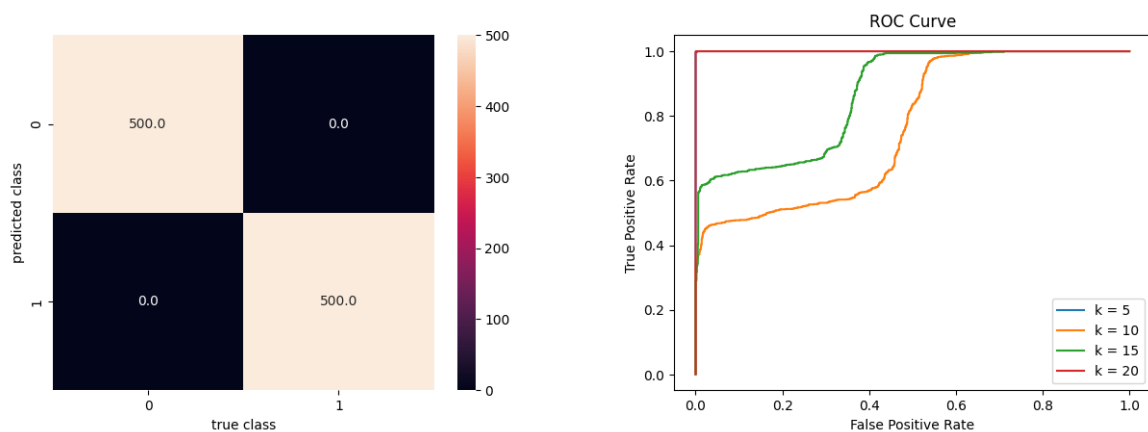


Accuracy for only ANN - 97 percent

Accuracy for PCA followed by ANN - 98 percent

Accuracy for PCA with LDA followed by ANN - 97 percent

Synthetic Data-set : The confusion matrix, ROC and DET curves are as follows:



Accuracy for only ANN - 100 percent

Accuracy for PCA followed by ANN - 58.09 percent

Accuracy for PCA with LDA followed by ANN - 69.6 percent