

Table 6: Results of LDA with various classifiers

Classifier	Precision	Recall	f1-score	Mean Accuracy
LR	0.94	0.95	0.94	0.9511
KNN	0.93	0.95	0.93	0.9473
SVM	0.95	0.95	0.94	0.9548
GNB	0.67	0.67	0.65	0.6654
DT	0.57	0.62	0.57	0.6240

The accuracies of PCA and LDA with various classifiers are compared and are shown graphically in figure 6.

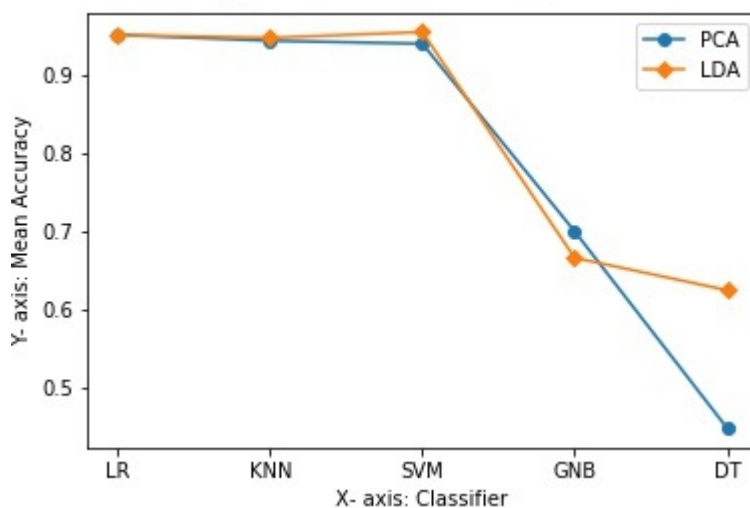


Fig 6. The mean accuracies of both PCA and LDA

5. Conclusion

In this paper, we have presented a comparative study of two dimensions reduction techniques the PCA and the LDA. The results of experiment-1 are shown in table 5 and results of experiment-2 are shown in table 6 and both the results are compared graphically in fig 6.

In PCA, we have explored Eigen Ears and its effectiveness on increasing the number of train samples. We can infer that a greater number of train images would result in more accuracy with lesser dimensions. That means higher accuracy rate can be achieved with lesser Eigen Ears if we increase the number of train samples of each individual. There are several research articles which state the comparison of these two dimensions reduction techniques. Some find PCA is superior to LDA whereas some conclude LDA is superior to PCA depending on their experimental results. From the above results we now can compare the effectiveness of both the dimension reduction techniques PCA and LDA. We found that in three of the cases that is KNN, SVM and DT classifier, the results including the precision, recall and mean accuracy of LDA are improved over PCA and in one case that is, LR classifier, it is nearly equivalent. So, it can be inferred that LDA is superior dimension reduction technique in comparison to PCA which we have found experimentally in our methodology.

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