CS663 Assignment 4 Question 6 Report

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1 Q6

If we test our system on images of people which were not a part of the traning set, we have no way of knowing that these are unknown faces or our model is not good enough. Plot of recognition rate of the 10 images of 8 people is given in Fig1. We have 1.25 percent recognition rate.

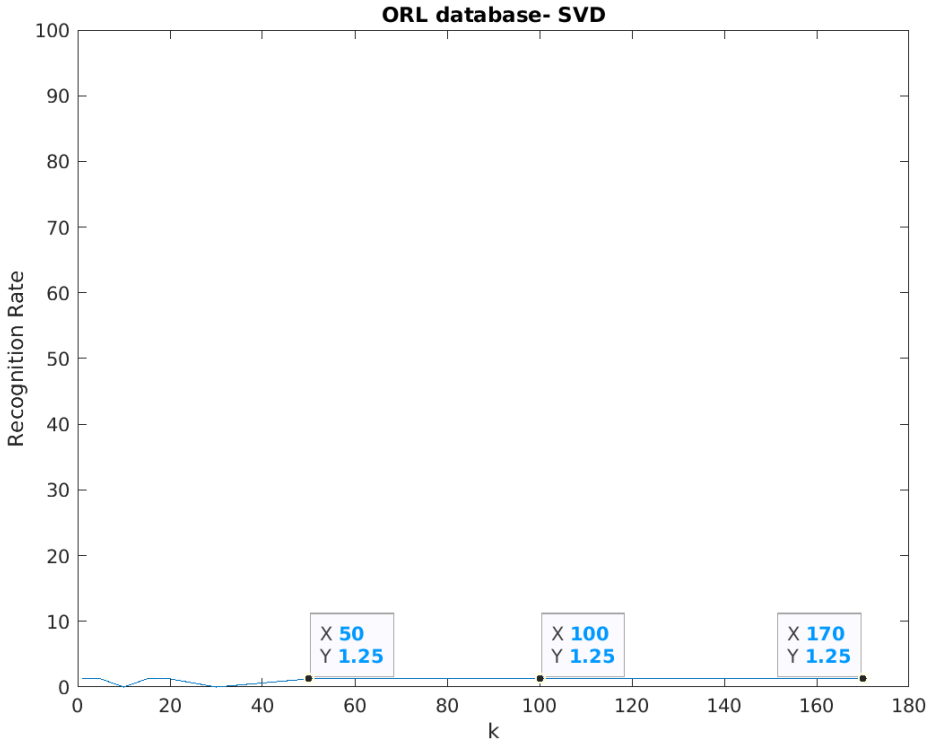

Figure 1: Our model for unknown faces

2 Mechanism Description

For different values of k, we calculate eigencoefficients corresponding to k highest values for all images in the traning set. Then we calculate the maximum of the norm of the difference between the eigencoefficient vectors for different images of same person (deviation per person). We then calculate a threshold deviation value using the deviation values obtained for the 32 persons in the training dataset. For a probe image, if we get the minimum norm of the difference in the eigencoefficient vectors of the training images with the probe image below the threshold value, then the person is known, otherwise unknown.

3 Results

For k=100 false positive rate= 21.25 % (17/80 in graph)
For k=100 false negative rate= 5.46 % (7/128 in graph)
Thresold deviation is 0.831*(minimum of deviation per person)

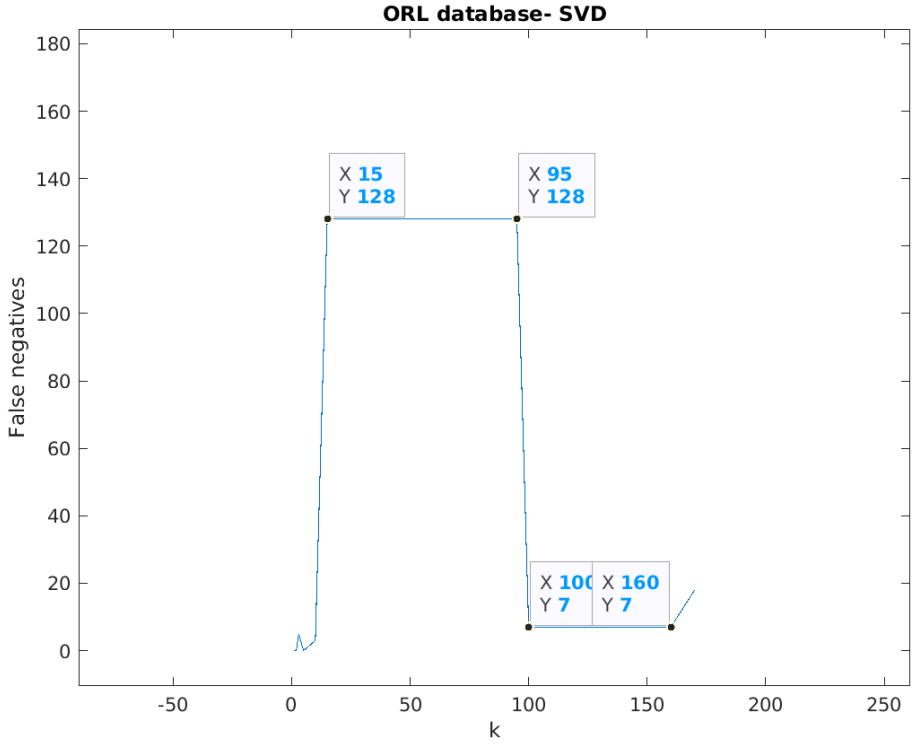

Figure 2: Deviation of false negatives vs k

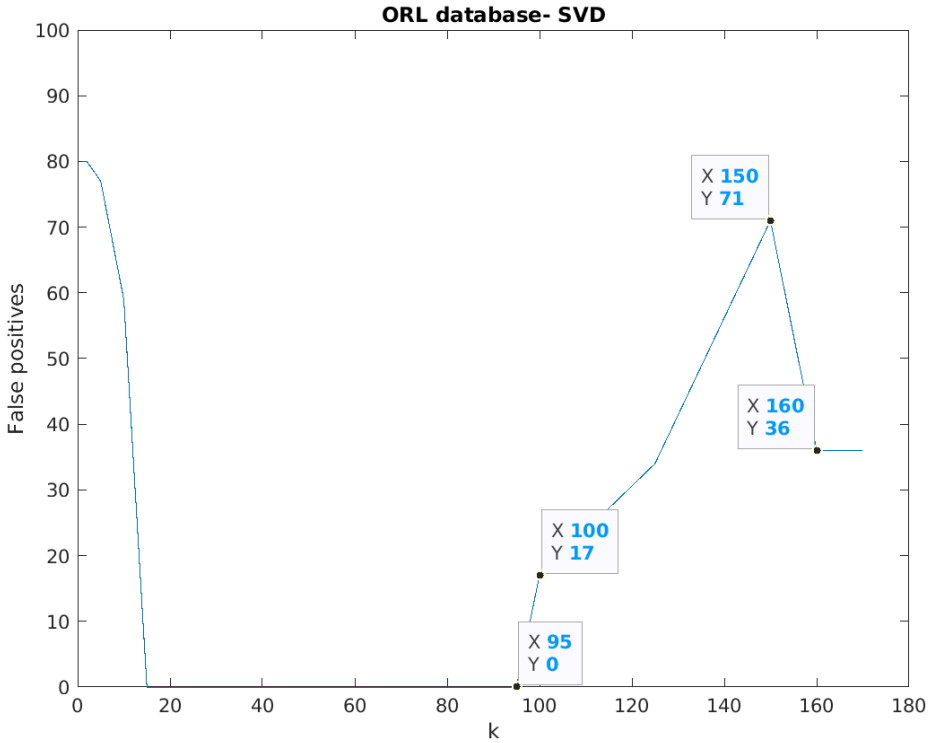

Figure 3: Deviation of false positives vs k