CSE 152 – HW4
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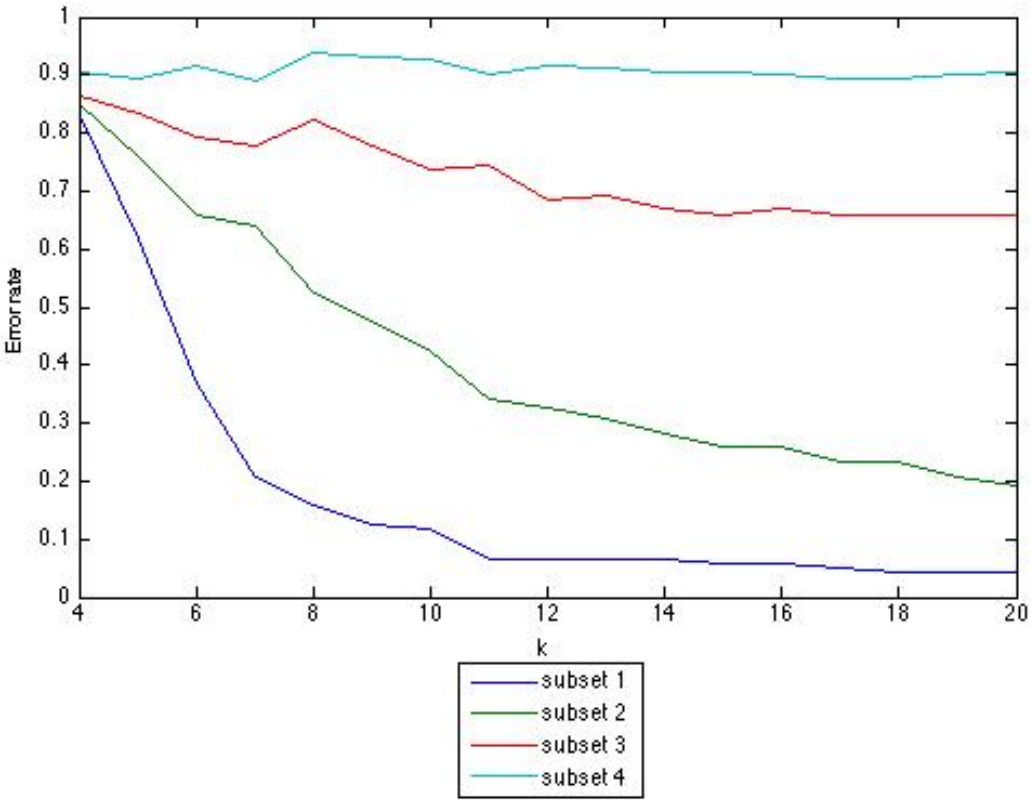
1)

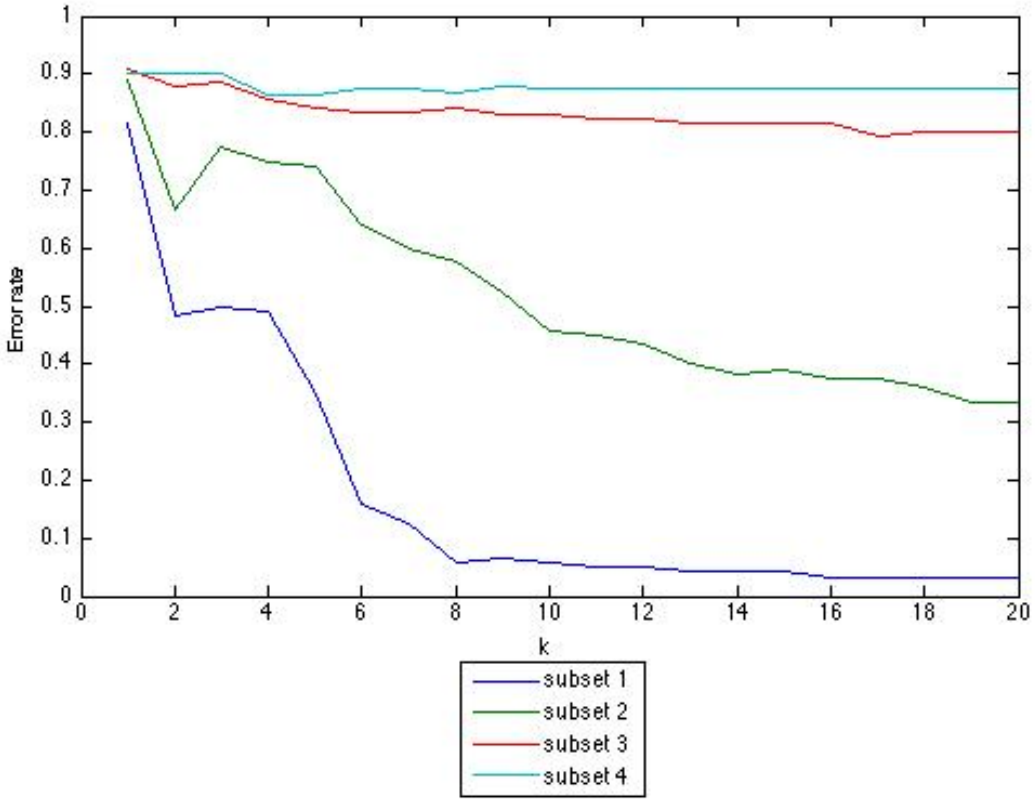
Top 20 eigenvectors for each Yale faces.

Top k eigenvectors reconstruction.

With k = 1..20



With k = 4..20



Images are getting darker over the subsets. This is why we have much more errors with « smaller » subsets (1, 2 for example) and less errors with « bigger » subsets (3, 4). Here are images from different subsets:


Subset 0


Subset 1

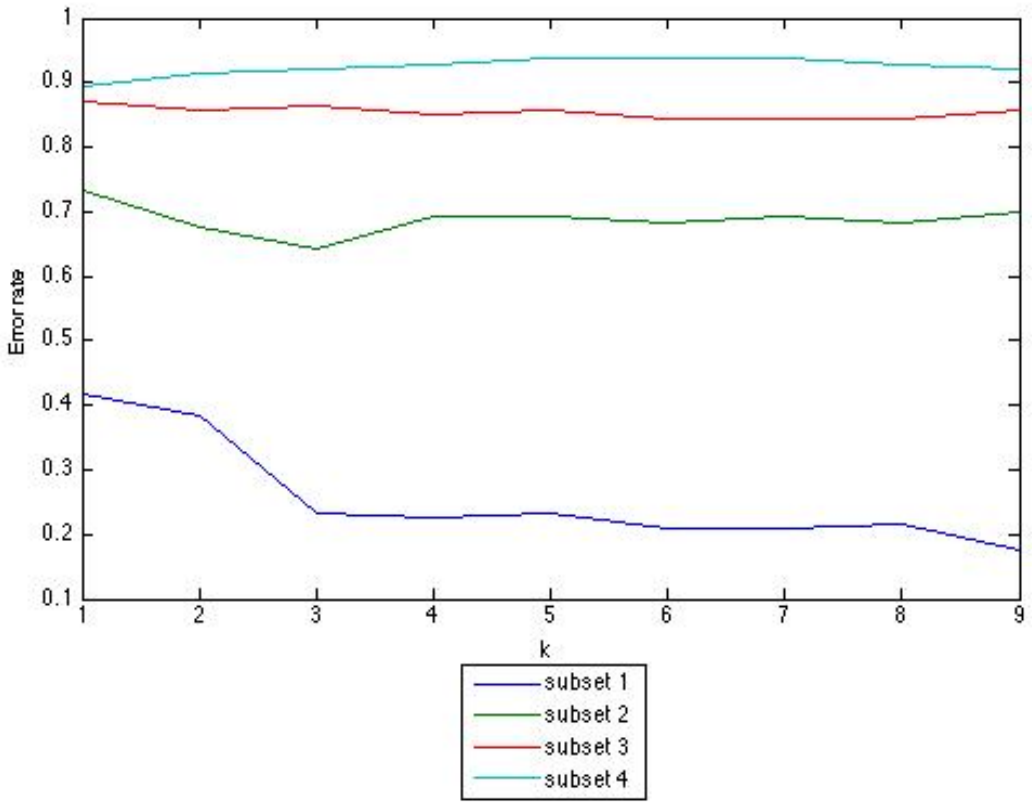

Subset 2


Subset 3


Subset 4

Also not taking the first 3 eigenvectors seems to lower the error rate on subsets with a lot of « noise » (dark zone, shadow). It seems logic since we are taking them out of the sum.

2)



Here also we see differences between each subset. The darker ones have a bigger error rate than subset 1. Compare to Eigenface method, it seems that Fisherface works better on good subsets like number 1, but still perform poor results on darker one like 3 and 4. However I might have miss understand something in the implementation of the fisherfaces since it is suppose to produce better results than Eigenfaces method.

http://www.cs.columbia.edu/~belhumeur/journal/fisherface-pami97.pdf