

PRACTICAL 7– VISUAL SOLUTIONS

Dimensionality Reduction and Evaluation

DISCLAIMER: PLEASE BE AWARE THAT YOUR RESULTS MAY BE SLIGHTLY DIFFERENT DEPENDING ON YOUR PARAMETERS, ETC.. THIS IS JUST FOR VISUAL HELP.

TASK 1: PCA AND EIGENFACES

STEP 4:

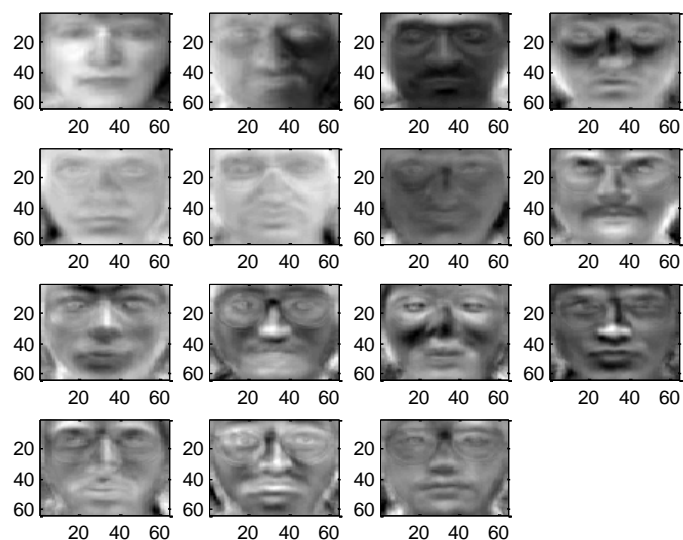


Please remember that the two hour duration of a practical class will probably not be enough time to complete all sections. There is an expectation that you will work outside of class as an independent learner.

STEP 6:



meanX (average face)



Eigenvectors

STEP 7:



STEP 8:**TASK 2: DIMENSIONALITY REDUCTION IN CLASSIFICATION****STEP 4:**

With PCA (sampling 50, 136 PCA dimensions):

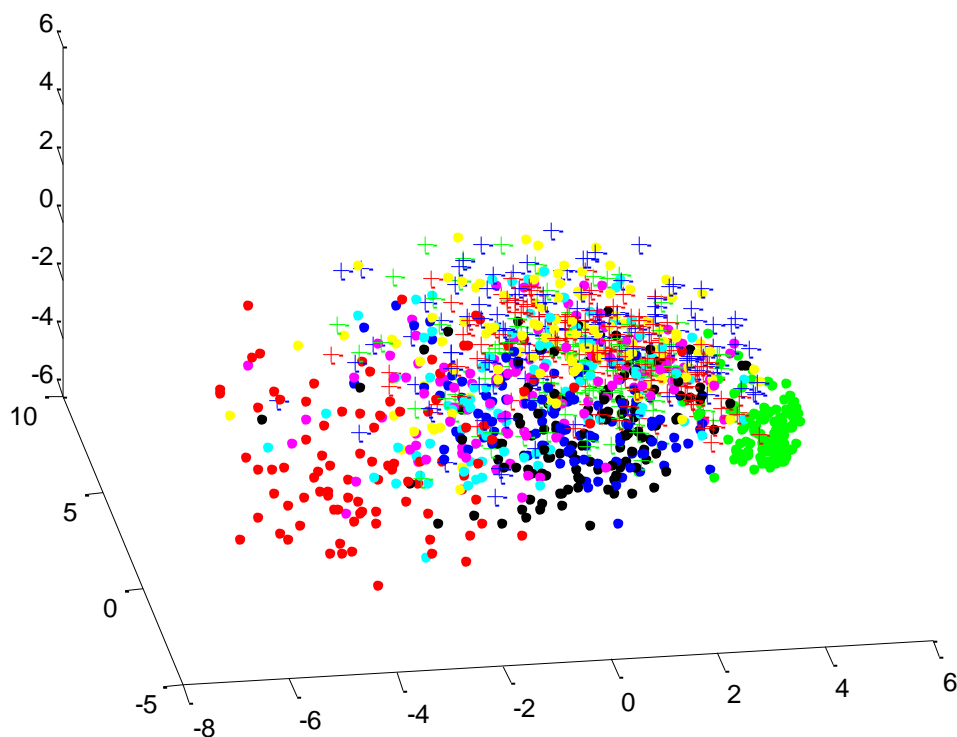
Accuracy = 0.8600

Elapsed time is 1.898309 seconds.

Without PCA:

Accuracy = 0.8300

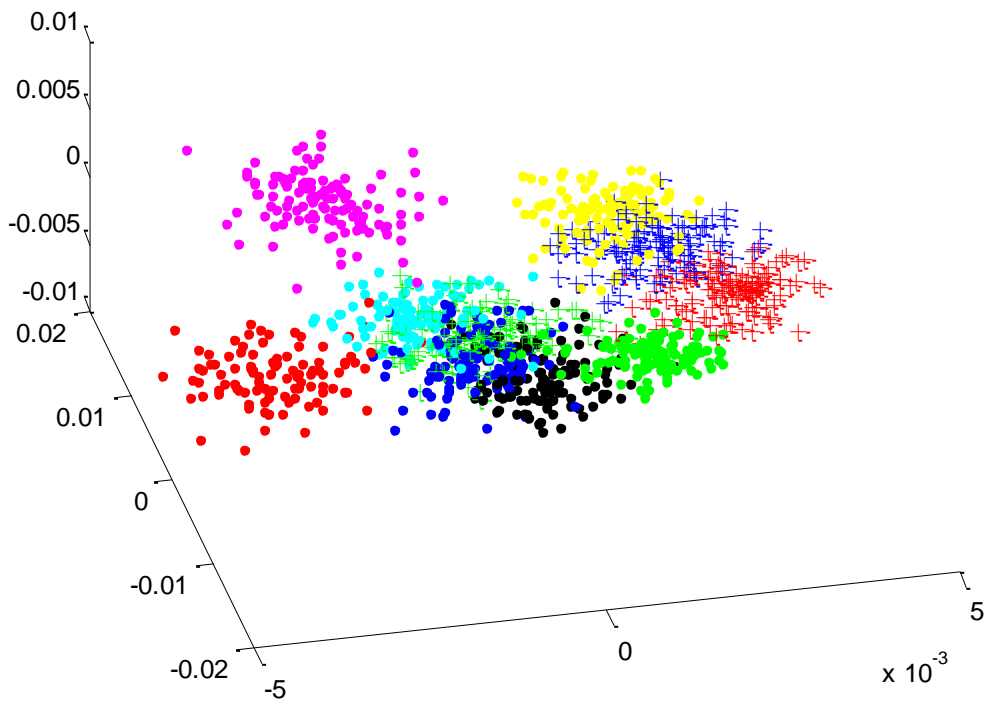
Elapsed time is 4.469412 seconds.



STEP 7:

With LDA ((sampling 50, 9 dimensions):)

Accuracy = 0.5950 Elapsed time is 1.650591 seconds.



TASK 3: EVALUATION METRICS

STEP 1:

ConfuMatrix=

0.5714	0.0714	0.0714	0	0.0714	0.0714	0.0714	0	0.0714	0
0	0.8696	0	0	0	0	0	0	0.1304	0
0.0476	0.0476	0.4286	0.2381	0.0952	0	0.0952	0	0.0476	0
0	0.0455	0.2273	0.5455	0.0455	0.0455	0	0	0.0455	0.0455
0.0556	0	0.0556	0	0.6667	0	0.1667	0.0556	0	0
0.1538	0	0	0.2308	0.2308	0.3077	0	0	0.0769	0
0.0952	0	0	0	0.0476	0.0476	0.8095	0	0	0
0.0455	0.0909	0.0455	0.1818	0.0455	0.0455	0	0.4545	0	0.0909
0.0435	0.0435	0.1739	0	0.0435	0.0435	0	0	0.6087	0.0435
0.0435	0.0435	0	0	0.1739	0.0870	0	0.0435	0.0435	0.5652

STEP 2:

AccuracyHog = 0.9667

TP = 975 TN = 475 FP = 22 FN = 28

STEP 3:

Precision = 0.9779 Recall = 0.9721

Sensitivity = 0.9721 Specificity = 0.9557

Fmeasure = 0.9750

False_alarm_rate = 0.0443