Soft Computing:ISCO630E
Report

Assignment 6.2

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Question Description

1. Face recognition using LDA
    Hints:
        Create face dataset using your mobile phone for your face as well as faces of 9 other friends.Create multiple variants (at least 5) of each faces with different view angles

Introduction

We have to create a dataset comprising of Images of 9 people taken from 7 different angle.Now given a new Image we have to predict the person of whom the image is taken of.

RESULTS

75% of the data was used for training while the remaining was used for testing the predictor.

The Accuracy on the Training data is around :- 72.11%

The Accuracy on the Testing data is around :- 72.11%

Because there is a random distribution of training and testing data upon running the program every time thus results may differ from time to time.

Concepts Used

Training Steps:

1. Apply PCA on the given data and make a database of projected faces $(PF)_{k*P}$, where k is the number of selected principal components and p is the training population.
2. Divide the data into class like if each person have n images then, number_of_classes=P/n;
3. Calculate the means of each class $(\mu_i)_{k*1}$ and mean of the Projected faces $(M)_{k*1}$
4. Calculate the within class scatter matrix $(SW)_{k*k}$, and between class scatter matrix $(SB)_{k*k}$ discussed in equation (1) and (4).
5. Use the criterion function suggested in equation (5).
6. Find the Eigen vector and Eigen values of the Criterion function.
7. Now we need to select the best principal components from there, we can select m best values based on the maximum Eigen values.
8. Construct feature $(W)_{k*m}$ vectors of using these k bests.
9. Generate the fisher faces (FF) by projecting the projected faces by this transformation matrix W.

$$FF_{m*p} = (W^t)_{m*k} * (PF)_{k*p}$$