4105109 Computer Vision

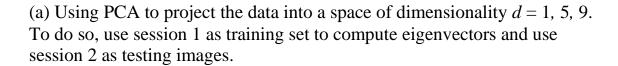
Assignment #1

Deadline: 10/15 (Wed) 11:59 p.m.

Apply PCA to AR face datasets. It comprises images from 100 subjects, each of which has 26 images in lighting and occlusion conditions.

AR Face Dataset

- AR Face Database
 - 50 males, 50 females
 - 1: Neutral expression
 - 2 : Smile
 - 3: Anger
 - 4 : Scream
 - 5 : Left light on
 - 6 : Right light on
 - 7 : All side lights on
 - 8 : Wearing sun glasses
 - 9: Wearing sun glasses and left light on
 - 10: Wearing sun glasses and right light on
 - 11: Wearing scarf
 - 12 : Wearing scarf and left light on
 - 13: Wearing scarf and right light on
 - One session has 13 images. There are two sessions for each person.



Then, show the following results:

- (i) For each value of d, show the d eigenfaces, and
- (ii) For each subject, randomly select an image from its test set, and then display the respective approximation using the d eigenfaces (for each value of d).
- (b) With the learned projections by PCA for d = 1, 5, 9, perform face recognition via *nearestneighbor search* for all test images, and report their error rate.

