

**ECE 738: Computer Vision**  
**Project 5 - Spring 25**

In this project, you are provided with a database of training and testing images that are utilized in the eigenfaces technique for face recognition. Here, all of the images in the training data are used to calculate the eigenfaces by PCA, and the testing data is the one used to test the recognition performance. Here, the test data are organized in 2 folders. You are to use exactly half (rounded to nearest integer) of the images in each folder for testing. Your system should be able to determine if the image is one of a face or not, as well as be able to recognize the face if it is a face from the training data.

Please make sure that your system should only work with a subset of most important eigenfaces corresponding to the larger eigenvalues

The report should clearly show the entire training data (these may be minimized to fit into one large 2-D array of facial images, as well as all the testing data, and the system output based on the class to which they belong.

Your analysis of the results should demonstrate your understanding of the failure cases, and also would be desired to know how the performance varies with the number of principal eigenfaces that are maintained.