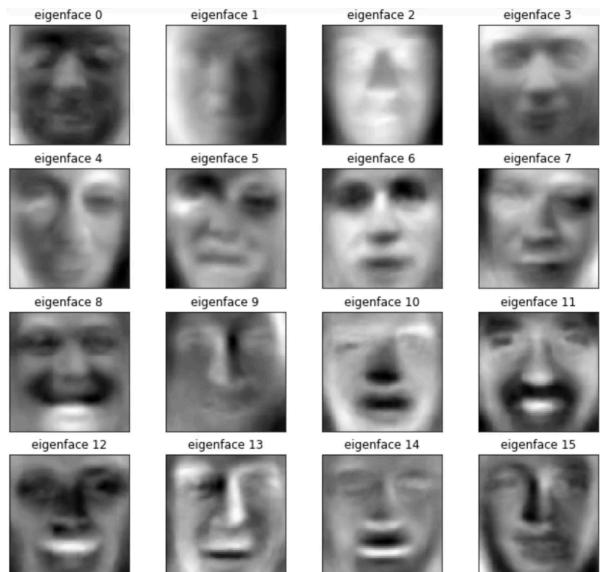# CS 682

Eigenfaces

Implement Eigenfaces for Recognition as described by M. Turk and A. Pentland in Journal of Cognitive Neuroscience, 3(1), 1991 and also describe in the lecture. Your code should consist of two main components.

Part 1 (5 points)

Build the eigenspace from the forty images given on the course web page. Here are the [training images](). Determine a reasonably low-dimension to project onto by looking at the eigenvalues of the covariance matrix. Store the new low-dimensional representation of each of the 40 training images.

Part 2 (5 points)

Given an image, project this image onto the new low-dimensional space, and find the closest match from the training set constructed above. Test the recognition on the original forty training images as well as forty [test images]().

Grading checklist

Submit your code and a short report that describes the accuracy of the face recognition for both the training and testing stages.

Instructions for turning in the assignment

You must upload the files to [GMU Blackboard](#).

1. All your **in a SINGLE zipped file**. The filename should be **netid_hw5_code.zip**. There is no need for PDFs of any ipython notebook output, just make sure you include the notebooks themselves in the zip file and show any required outputs in the report.
2. A single report in PDF format. The filename should be **netid_hw5_report.pdf**.