Experiment 7: PCA in Face Recognition

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1 Description

The ORL Database of Faces (`https://www.cl.cam.ac.uk/research/dtg/attarchive/facedatabase.html`) is a widely used database in the context of face recognition applications. The images are organized in 40 directories, each of which consists of 10 images. Note that, in each directories, the images are taken from the same person.

To construct a set of training data, we randomly pick 5~7 images from each categories, while leaving the others as test data. Please first apply PCA to the images to reduce data dimension, and then use SVM classifier to realize face recognition. Specifically, for a given face image, find who is in the image.

2 Tasks

Report the classification accuracy based on your training data by varying parameter K (i.e., the number of projections in PCA).