Below is a list of project suggestions from which you should choose a project. Choose a project, think about the details of what you’d like to do, and then talk with me to verify them before you start.

Please write well designed and well documented code. Hand in a report which documents your code, your algorithmic choices and the results you got.

Think about and do interesting experiments with the code you produce.

1 Project Suggestions

1. **Descriptors codebook** Many recent approaches to recognition are based on a codebook of descriptors that is learned from images of objects of a certain class. Write a program to produce such a codebook from a set of training images. Try a simple recognition algorithm using your codebook by checking if the descriptors you will extract from a new image are close to the ones in the codebook.

2. **Gender classification** Build classifiers that decide if a given face image is that of a man’s face or of a woman’s. Decide on the features you will use and train a SVM (using existing packages). Also implement a boosting-based classifier. Use the same database we used in the first two exercises.

3. **Histogram Comparisons** Histograms are very useful descriptors in many applications (tracking, recognition etc). There are several ways to measure the similarity between two histograms. Two recent methods are called pyramid match kernel and diffusion distance. Implement these two methods and compare them between themselves and between a “gold standard” method called EMD (whose implementation is available on the web).