Each separated folder contains all MATLAB code needed to train and test model. Raw data, however, is not included here. Please follow the following instructions to run the code.

For all SVM model, default setting is use polynomial kernel with degree q in {2, 3, 4}, and training/test data are randomly distributed. Change variable randomize to 0 to turn off data set random distribution. Change fitcsvm function’s input to change kernel.

1. Naïve

Raw data: EGM\_database.mat

Steps of running code:

1. make\_tdata.m
2. svm.m
3. 12 Features

Raw data: train\_test.mat

Run:

1. svm\_12\_features.m

(train\_test.mat is calculated from EGM\_database.mat by main\_features.m)

1. FFT k\_max

Raw data: EGM\_database.mat

Steps of running code:

1. fft\_data.m
2. max\_k\_freq.m
3. svm\_fft.m
4. FFT filters all frequencies higher than 1000Hz. To change this setting you need to change variable max\_freq in fft\_data.m, and it will change the name of the mat file it saves, so also change what you load at the beginning of max\_k\_freq.m
5. max\_k\_freq.m takes 10 frequencies with highest energy. To change this setting, you need to change variable k in max\_k\_freq.m and the load file name in svm\_fft.m accordingly.
6. FFT PCA

Raw data: EGM\_database.mat

Steps of running code:

1. fft\_data.m
2. pca\_fft\_data.m
3. svm\_pca\_fft.m
4. FFT part’s setting is similar as in FFT k\_max.
5. pca\_fft\_data.m takes 10 PCs. To change this setting, you need to change variable k in pca\_fft\_data.m and the load file name in svm\_pca\_fft.m accordingly.