The ECG Heart Attack monitor

There are two portion of the ECG heart attack signal monitor program: Training & Prediction

Training:

1. Decode the raw data: 2 kinds of data people with heart attach and ECG of normal people
2. Do transformations:

Map the time domain signal into frequency domain using different transformation types: Using 6 different transformation algorithms and expand it to 2 level wavelet-packet.
Different Wavelet transforms: Such as Har and Dab

Feature extraction :

Approximate entropy variance covariance is calculated for each sample signal to form a feature.

SVM:

Used SVM type :C-SVC nu-
Using linear, different levels of polynomial kernel function, with kernel levels of 1 2 3 4.

The program will automatically run these different combination of algorithms in sequence to create a training model.

Validation: Use the cross-validation algorithm to evaluate the trained model if the percentage of the evaluation is over 90 percent, the program will save the training model and the training model will be use for prediction. If it is lower the program will change the parameter of the SVM classifier or reprocess the signal with different transformation, and do the testing again. And eliminate the not useful model.

Prediction:

Put the testing signal in the pre-defined directory.

The program will process the signal with the model constructed and send out the classification result.