Assignment 3

1. The dataset in ‘data_for_cnn.mat’ consists of 1000 ECG signals and each row corresponds to one ECG signal. The class label for each ECG signal is given in ‘class_label. mat’ file. Implement the 1D convolutional neural network with BPCNN as the learning algorithm for the evaluation of optimal weight matrices in FC layers and optimal kernels or filters in convolution layer. The network consists of one convolutional layer, one pooling layer and two fully connected (FC) layers. The network flow is given by

   Input-Convolution Layer-Pooling layer-FC1-FC2-Output

   Consider the square loss function as cost function in the output layer. You can consider 20 hidden neurons in the FC2 layer. In the pooling layer, you can use average pooling with down-sampling factor as 2. (For implementation of the BPCNN algorithm, please refer to the class notes or slides).