**Requirements**

Python 3.6

TensorFlow 1.10

numpy

scikit-learn

matplotlib

keras

pandas

**Data**

Train data for training the model and test data for validation

Train data:

train\_data\_yongxin.csv 510\*16 (There are 255 labels for 1 and 255 labels for 0 data)

Test data:

test\_data\_yongxin.csv 218\*16 (There are 109 labels for 1 and 109 labels for 0 data)

**Model:**

The file of cnn\_5foldpara.py is used to find the optimal parameters by using five-fold cross-validation.

The file of cnn.py is used to train the CNN model.

The file of CNN\_SVM.py is used to run the hybrid method of CNN-SVM.

The file of CNN\_RF.py is used to run the hybrid method of CNN-RF.

The file of CNN\_LR.py is used to run the hybrid method of CNN-LR.

The file svm.py is used to run the SVM model

The file of RF.py is used to run the RF model.

The file of LR.py is used to run the LR model.