**Requirements**

Python 3.6

TensorFlow 1.10

Numpy

scikit-learn

matplotlib

keras

pandas

**Model:**

The file of ada\_pulearning.py is used to run the AdaPU model.

The file of PU\_bag.py is used to run the PU-BaggingDT model.

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

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

The file of ada\_Pu\_optimal.py is used to tune the hyperparameters of AdaPU model.

The file of RF\_optimal.py is used to tune the hyperparameters of random forest model.

The file of svm\_optimal.py is used to tune the hyperparameters of SVM model.

The file of LR\_optimal.py is used to tune the hyperparameters of logistic regression model.