

Table S1. The hyper-parameters used for model training

Algorithms	Hyper-parameter settings
MLP	learning_rate: ['constant', 'invscaling', 'adaptive'] hidden_layer_sizes: [(32,), (64,), (128,), (32,32), (64,64), (128,128)]
gradient boosting	max_depth= [2,3,...,12] n_estimators: [5, 10, 20, 40]
AdaBoost	estimator: [logistic regression, LDA, SVM, KNN,GaussianNB,decision tree] n_estimators: [5, 10, 20, 40]
logistic regression	class_weight: ['balanced', None]
bagging	estimator: [logistic regression, LDA, SVM, KNN,GaussianNB,decision tree] n_estimators: [5, 10, 20, 40]
LDA	/
RandomForest	max_depth: [5,6,...,15] min_samples_leaf: uniform(loc=0, scale=0.1) min_samples_split: uniform(loc=0, scale=0.1) n_estimators: [5, 10, 20, 40]
extra trees	n_estimators: [5, 10, 20, 40]
SVM	kernel : ['rbf', 'sigmoid'] class_weight': ['balanced', None]
decision tree	max_depth: [5, 10, 20]

	min_samples_leaf: [2,4,8,16] min_samples_split: [2,4,8,16] class_weight: ["balanced",None]
KNN	n_neighbors:[2,5,10] weights: ['uniform', 'distance'] p: [1,2]
GaussianNB	/