

Supplementary Material

Table S1 show the hyper parameters tuned for each ML models, respectively. In the table, the first and second columns list the model and parameter names, while the third column illustrates the candidate values for grid search. The last column shows the optimal value for selected model. The models are obtained in R 4.1.2 with package caret 6.0, xgboost 1.5.0.2, e1071 1.7, nnet 7.3.

Table S1. Parameter setting

Models	parameter	Candidate Parameter	Selected Parameter
Random Forest	ntrees	300, 400, 500, 600, 700	500
	nodesize	40, 50, 60, 70	60
	mtry	1, 2, 3, 4, 5	3
XGBoost	nrounds	30, 35, 40, 45, 50	45
	max_depth	1, 2, 3	1
	eta	0.2 ,0.3, 0.4, 0.5, 0.6	0.4
	gamma	0.1, 0.15, 0.2, 0.25, 0.3	0.2
	colsample_bytree	0.3, 0.5, 0.7, 1	0.5
	min_child_weight	0.5, 1, 3, 5	1
	subsample	0.3, 0.5, 0.7, 1	0.5
SVM	C	3, 5, 7, 9	7
	sigma	0.005, 0.01, 0.015, 0.02	0.01
KNN	K	2, 3, 4, 5, 6, 7, 8	5
ANN	size	1, 2, 3, 4, 5	2
	decay	0.05, 0.1, 0.15, 0.2, 0.25	0.1