1 Score (without probability)

CV method: `RepeatedStratifiedKFold(n_splits=5, n_repeats=6)`. So, `training_data` are 0.8 of `data` and `testing_data` are 0.2 of `data`.
While computing the training time, `training_data = data`.

1.1 Standard models

Data info: `data.shape = (2000, 100)`

	SVC	RFC	KNC	LGB

Best HP	`kernel = 'rbf'`
	`gamma = 0.0151`
	`C = 1.45`
		`n_estimators = 400`
		`min_samples_split = 3`
		`bootstrap = False`
			`n_neighbors = 1`
			`algorithm = 'ball_tree'`
			`leaf_size = 10`
			`p = 8`
				`best_learning_rate = 0.112`
				`best_min_data_in_leaf = 7`
				`best_num_leaves = 30`

Score	0.98054 ± 0.00627	0.91433 ± 0.01130	0.90033 ± 0.01501	0.91175 ± 0.00405
Training time	0.506 s (1 thread)	13.519 s (4 thread)	0.106 s (4 thread)	0.785 s (4 thread)

1.2 Data augmentation

Data info: `data.shape = (400000, 100)`

	SVC	SVC bagging	RFC	KNC	LGB

Best HP	`kernel = 'rbf'`
	`gamma = 0.0145`
	`C = 0.8`
		`kernel = 'rbf'`
		`gamma = 0.0145`
		`C = 0.8`
		`n_estimators = 4`
		`max_samples = 0.95`
			`n_estimators = 400`
			`min_samples_split = 3`
			`bootstrap = False`
				`n_neighbors = 1`
				`algorithm = 'ball_tree'`
				`leaf_size = 10`
				`p = 8`
					`best_learning_rate = 0.112`
					`best_min_data_in_leaf = 7`
					`best_num_leaves = 30`

Score normal dataset	0.98966 ± 0.00214	0.98967 ± 0.00204	0.99608 ± 0.00118	0.98917 ± 0.00224	0.95367 ± 0.00394
Score augment. dataset	0.98966 ± 0.00214	0.98980 ± 0.00187	0.99587 ± 0.00118	0.98917 ± 0.00224	0.95430 ± 0.00372
Training time	1 h 53 m 50.236 s (1 thread)	1 h 21 m 1.844 s (4 thread)	5 h 9 m 18.714 s (4 thread)	45.476 s (4 thread)	10.325 s (4 thread)

1.3 Sorted models

Data info: `data.shape = (2000, 100)`

	SVC	RFC	KNC	LGB

Best HP	`kernel = 'linear'`
	`C = 0.15`
		`n_estimators = 400`
		`min_samples_split = 3`
		`bootstrap = False`
			`n_neighbors = 1`
			`algorithm = 'ball_tree'`
			`leaf_size = 10`
			`p = 8`
				`best_learning_rate = 0.177`
				`best_min_data_in_leaf = 24`
				`best_num_leaves = 120`

Score	0.99932 ± 0.00124	0.98992 ± 0.00518	0.99842 ± 0.00177	0.99617 ± 0.00184
Training time	0.017 s (1 thread)	0.899 s (4 thread)	0.097 s (4 thread)	0.627 s (4 thread)

2 Score (with probability) + computational time

Data info: `data.shape = (2000, 100)`

Every model has been tested using `data` and repeating the test 2000 times. So, the testing sample is about 4 million elements. The final time reported is the sum of every single testing time.

N.B.: the training time is different only for the SVC model, because of the hyper parameter `probability = True`; the other models always calculate the probability.

2.1 Standard model

	SVC	**SVC bagging**	**RFC**	**KNC**	**LGB**
Training time	2.639 s (1 thread)	2.692 s (4 thread)	13.519 s (4 thread)	0.106 s (4 thread)	0.802 s (4 thread)
Testing time	12 m 47.225 s (1 thread)	9 m 57.627 s (4 thread)	6 m 44.651 s (4 thread)	4 h 0 m 39.048 s (4 thread)	16.325 s (4 thread)

2.2 Sorted model

	SVC	**RFC**	**KNC**	**LGB**
Training time	0.766 s (1 thread)	0.899 s (4 thread)	0.097 s (4 thread)	0.643 s (4 thread)
Testing time	3 m 9.198 s (1 thread)	3 m 26.799 s (4 thread)	1 h 23 m 32.290 s (4 thread)	9.788 s (4 thread)

3 Real life test

Test models on OD from 91 to 105 (data already cleaned).

3.1 Standard model

	SVC	SVC bagging	RFC	KNC	LGB
Total time (only model)	26 m 27.209 s (1 thread)	20 h 29 m 44.908 s (4 thread)	6 d 19 h 29 m 5.175 s (4 thread)	(4 thread)	14 m 32.227 s (4 thread)
Total time (all)	38 m 22.223 s (1 thread)	20 h 56 m 47.242 s (4 thread)	6 d 20 h 9 m 27.406 s (4 thread)	(4 thread)	27 m 43.873 s (4 thread)

3.2 Sorted model

	SVC	RFC	KNC	LGB
Total time (only model)	8 m 17.891 s (1 thread)	6 d 19 h 19 m 5.913 s (4 thread)	(4 thread)	13 m 42.721 s (4 thread)
Total time (all)	21 m 8.052 s (1 thread)	6 d 19 h 58 m 32.617 s (4 thread)	(4 thread)	27 m 59.176 s (4 thread)