Table 1: Base Models

Model	Parameters	Preprocessing	FS Percentile	F1 Train Score	F1 Validation Score
LogisticRegression	class_weight='balanced', max_iter=1000	baseline	50	0.3 ± 0.01	0.29 ± 0.02
LogisticRegression	class_weight='balanced', max_iter=1000	baseline	90	0.32 ± 0.0	0.3 ± 0.01
LogisticRegression	class_weight='balanced', max_iter=1000	baseline	70	0.31 ± 0.01	0.3 ± 0.01
DecisionTreeClassifier	class_weight='balanced', max_depth=15	baseline	50	0.45 ± 0.01	0.33 ± 0.04
DecisionTreeClassifier	class_weight='balanced', max_depth=15	baseline	90	0.46 ± 0.01	0.34 ± 0.03
DecisionTreeClassifier	class_weight='balanced', max_depth=15	baseline	70	0.46 ± 0.01	0.34 ± 0.03
KNeighborsClassifier	n_neighbors=35, p=1, weights='distance'	baseline	50	1.0 ± 0.0	0.34 ± 0.01
KNeighborsClassifier	n_neighbors=35, p=1, weights='distance'	baseline	90	1.0 ± 0.0	0.34 ± 0.0
KNeighborsClassifier	n_neighbors=35, p=1, weights='distance'	baseline	70	1.0 ± 0.0	0.34 ± 0.01
GaussianNB	base model	baseline	50	0.27 ± 0.01	0.27 ± 0.01
GaussianNB	base model	baseline	90	0.13 ± 0.01	0.12 ± 0.01
GaussianNB	base model	baseline	70	0.18 ± 0.04	0.18 ± 0.03
MLPClassifier	hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000	baseline	50	0.36 ± 0.02	0.34 ± 0.01
MLPClassifier	hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000	baseline	90	0.39 ± 0.02	0.37 ± 0.01
MLPClassifier	hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000	baseline	70	0.37 ± 0.02	0.36 ± 0.02

Table 2: Ensembles

Model	Parameters	Preprocessing	F1 Train Score	F1 Validation Score
BaggingClassifier	estimator=MLPClassifier(hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000 , max_features: 0.8, max_samples: 0.8, n_estimators=10	baseline	0.38 ± 0.01	0.37 ± 0.01
BaggingClassifier	estimator=MLPClassifier(hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000 , max_features: 0.8, max_samples: 1.0, n_estimators=10	baseline	0.36 ± 0.01	0.36 ± 0.01
BaggingClassifier	estimator=MLPClassifier(hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000 , max_features: 1.0, max_samples: 0.8, n_estimators=10	baseline	0.4 ± 0.01	0.38 ± 0.02
BaggingClassifier	estimator=MLPClassifier(hidden_layer_sizes=(20, 20), learning_rate_init=0.01, max_iter=1000 , max_features: 1.0, max_samples: 1.0, n_estimators=10	baseline	0.39 ± 0.02	0.37 ± 0.0
RandomForestClassifier	max_depth: 5, min_samples_split: 2, n_estimators: 100	baseline	0.25 ± 0.01	0.25 ± 0.0
RandomForestClassifier	max_depth: 5, min_samples_split: 2, n_estimators: 200	baseline	0.25 ± 0.01	0.25 ± 0.01
RandomForestClassifier	max_depth: 5, min_samples_split: 5, n_estimators: 100	baseline	0.25 ± 0.01	0.25 ± 0.01
RandomForestClassifier	max_depth: 5, min_samples_split: 5, n_estimators: 200	baseline	0.25 ± 0.01	0.25 ± 0.01
RandomForestClassifier	max_depth: 10, min_samples_split: 2, n_estimators: 100	baseline	0.36 ± 0.01	0.35 ± 0.0
RandomForestClassifier	max_depth: 10, min_samples_split: 2, n_estimators: 200	baseline	0.36 ± 0.01	0.35 ± 0.0
RandomForestClassifier	max_depth: 10, min_samples_split: 5, n_estimators: 100	baseline	0.36 ± 0.0	0.35 ± 0.0
RandomForestClassifier	max_depth: 10, min_samples_split: 5, n_estimators: 200	baseline	0.36 ± 0.01	0.35 ± 0.0
AdaBoostClassifier	learning_rate: 0.05, n_estimators: 50	baseline	0.2 ± 0.0	0.2 ± 0.0
AdaBoostClassifier	learning_rate: 0.05, n_estimators: 100	baseline	0.2 ± 0.0	0.2 ± 0.0
AdaBoostClassifier	learning_rate: 0.1, n_estimators: 50	baseline	0.2 ± 0.0	0.2 ± 0.0
AdaBoostClassifier	learning_rate: 0.1, n_estimators: 100	baseline	0.2 ± 0.0	0.2 ± 0.0
GradientBoostingClassifier	learning_rate: 0.05, max_depth: 5, n_estimators: 50	baseline	0.49 ± 0.02	0.39 ± 0.01
GradientBoostingClassifier	learning_rate: 0.05, max_depth: 5, n_estimators: 100	baseline	0.52 ± 0.03	0.4 ± 0.01
GradientBoostingClassifier	learning_rate: 0.05, max_depth: 10, n_estimators: 50	baseline	0.7 ± 0.01	0.39 ± 0.01
GradientBoostingClassifier	learning_rate: 0.05, max_depth: 10, n_estimators: 100	baseline	0.75 ± 0.01	0.39 ± 0.01
GradientBoostingClassifier	learning_rate: 0.1, max_depth: 5, n_estimators: 50	baseline	0.46 ± 0.01	0.4 ± 0.01
GradientBoostingClassifier	learning_rate: 0.1, max_depth: 5, n_estimators: 100	baseline	0.48 ± 0.01	0.4 ± 0.01
GradientBoostingClassifier	learning_rate: 0.1, max_depth: 10, n_estimators: 50	baseline	0.72 ± 0.01	0.39 ± 0.01
GradientBoostingClassifier	learning_rate: 0.1, max_depth: 10, n_estimators: 100	baseline	0.8 ± 0.01	0.38 ± 0.02