

Classification Results Navigation

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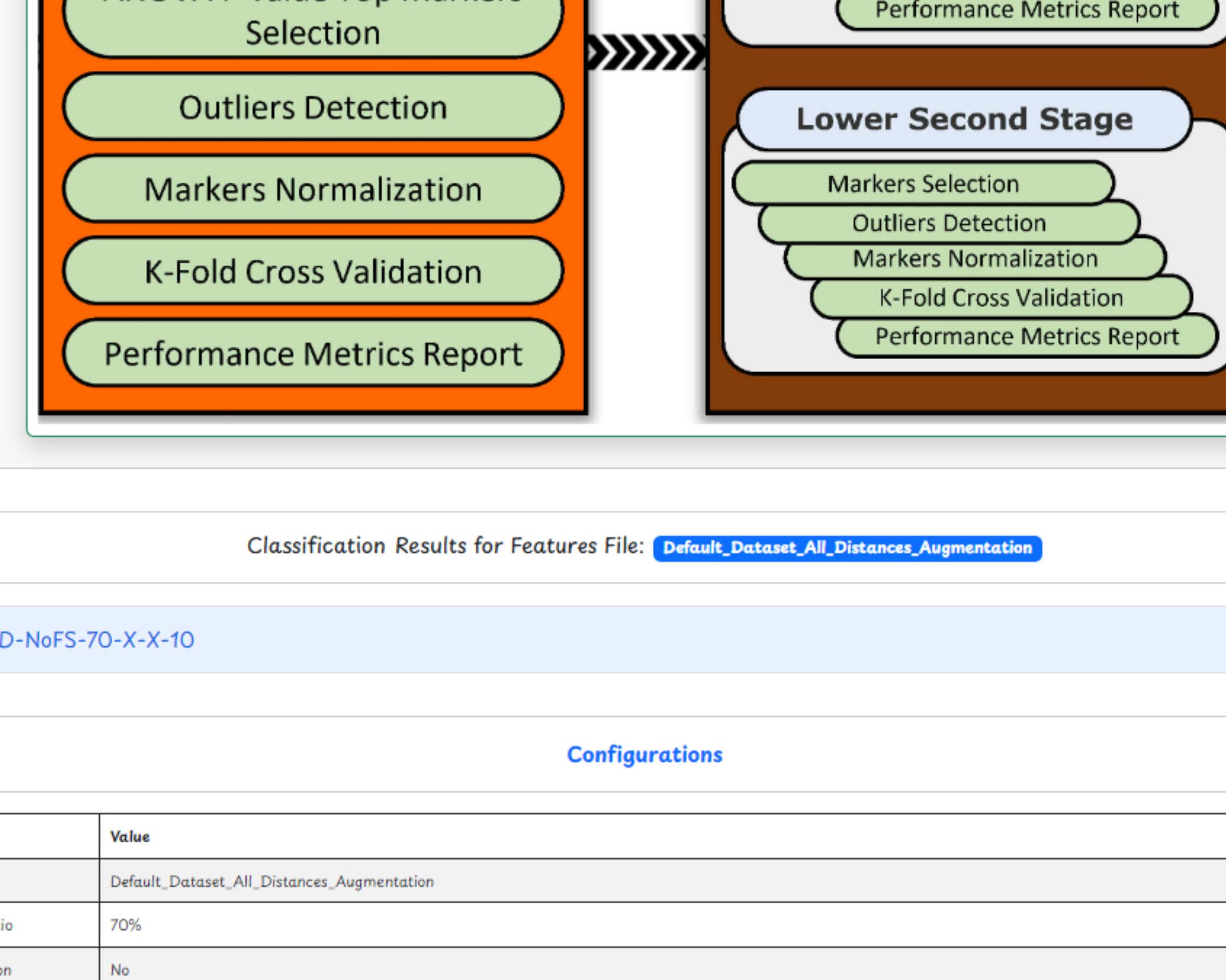
Outliers, also known as anomalies, are data points that exhibit significant deviations from the rest of the dataset. The significance of outliers detection lies in its ability to mitigate the impact of inter-observer and intra-observer variability on data analysis and interpretation.

Inter-observer variability, stemming from differences in observations among different individuals, and intra-observer variability, reflecting variations in observations made by the same individual over time, can both introduce discrepancies in identifying outliers.

By employing robust outlier detection techniques, we can identify and address these discrepancies, ensuring that data points deviating significantly from the majority are appropriately accounted for. This process not only enhances the reliability and reproducibility of research findings but also reduces the influence of subjective interpretations on analysis results. We utilize various outlier detection methods, each tailored to identify anomalies within our dataset.

We utilized feature selection techniques to enhance the efficiency and interpretability of our models. One crucial aspect of feature selection is identifying collinear features, which are highly correlated with each other. Collinear features can introduce redundancy into the model, leading to overfitting and decreased generalization performance.

To address this issue, we employed a method to find collinear features based on the correlation coefficient between features. The correlation coefficient measures the strength and direction of a linear relationship between two variables, ranging from -1 to 1. A correlation coefficient close to 1 indicates a strong positive linear relationship, while a coefficient close to -1 indicates a strong negative linear relationship. A coefficient close to 0 suggests little to no linear relationship.



Classification Results for Features File: [Default_Dataset_All_Distances_Augmentation](#)

History-NoOD-NoFS-70-X-T0

Configurations	
Configuration	Value
Feature File	Default_Dataset_All_Distances_Augmentation
Train to Test Ratio	70%
Outliers Detection	No
Outliers Fraction	N/A
Features Selection	No
Correlation Threshold	N/A
Scalers	None,STD,MinMax,Robust,MaxAbs
Classifiers	GradientBoosting,XGB,LGBM,RandomForest,DecisionTree,KNeighbors,MLP,SVC,LogisticRegression,ExtraTrees,AdaBoost,HistGradientBoosting
Number of Trials	10

Final Results Metrics

#	First_Stage_Keyword	Second_Stage_Up_Keyword	Second_Stage_Down_Keyword	With Error Propagation	Accuracy	Precision	Recall
1	First_Stage_DecisionTree_STD_Majority	Second_Stage_Up_GradientBoosting_MinMax_Majority	Second_Stage_Down_GradientBoosting_MinMax_Majority	Yes	99.06	97.29	97.25
2	First_Stage_DecisionTree_STD_Majority	Second_Stage_Up_GradientBoosting_MinMax_Majority	Second_Stage_Down_GradientBoosting_MinMax_Majority	No	99.05	97.26	97.22
3	First_Stage_DecisionTree_STD_Majority_ExtraTrees_MinMax_Majority	Second_Stage_Up_DecisionTree_Robust_Majority_GradientBoosting_MinMax_Majority_LogisticRegression_STD_Majority_MLP_Robust_Majority	Second_Stage_Down_DecisionTree_STD_Majority_GradientBoosting_MinMax_Majority_KNeighbors_MinMax_Majority	Yes	99.19	97.65	97.64
4	First_Stage_DecisionTree_STD_Majority_ExtraTrees_MinMax_Majority	Second_Stage_Up_DecisionTree_Robust_Majority_GradientBoosting_MinMax_Majority_LogisticRegression_STD_Majority_MLP_Robust_Majority	Second_Stage_Down_DecisionTree_STD_Majority_GradientBoosting_MinMax_Majority_KNeighbors_MinMax_Majority	No	99.19	97.62	97.62

First Stage Top-1 Individual Metrics

#	Classifier	Scaler	Accuracy	Precision	Recall	Specificity	F1	f0U	BAC	MCC	Youden	Yule	AUC_Mean	Mean_Score	Order
1	DecisionTree	STD	99.02	98.85	99.23	98.79	99.04	98.11	98.03	98.02	99.98	99.01	98.83	98.83	1
2	LGBM	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.83	2
3	MLP	Robust	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.83	3
4	XGB	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.83	4
5	ExtraTrees	MinMax	98.82	99.23	98.47	99.19	98.85	97.72	98.83	97.64	97.64	99.97	98.83	98.66	5
6	RandomForest	Robust	98.82	99.23	98.47	99.19	98.85	97.72	98.83	97.64	97.66	99.97	98.83	98.66	6
7	GradientBoosting	None	98.82	98.85	98.85	98.79	98.85	97.73	98.82	97.64	97.64	99.97	98.82	98.62	7
8	HistGradientBoosting	None	98.82	98.85	98.85	98.79	98.85	97.73	98.82	97.64	97.64	99.97	98.82	98.62	8
9	AdaBoost	None	97.45	98.82	96.17	98.79	97.48	95.08	97.48	94.93	94.96	99.9	97.48	97.14	9
10	SVC	STD	92.34	93.7	91.19	93.65	92.43	85.92	92.37	84.71	84.74	98.68	92.37	91.09	10
11	KNeighbors	MinMax	91.75	93.28	90.42	93.15	91.83	84.89	91.78	83.54	83.57	98.45	91.78	90.4	11
12	LogisticRegression	Robust	91.55	92.25	91.19	91.94	91.71	84.7	91.56	83.1	83.12	98.32	91.56	90.09	12

First Stage Top-1 Combinations Metrics

#	Classifier	Scaler	Accuracy	Precision	Recall	Specificity	F1	f0U	BAC	MCC	Youden	Yule	AUC_Mean	Mean_Score	Order
1	DecisionTree, ExtraTrees	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-2
2	AdaBoost, DecisionTree, ExtraTrees	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-3
3	AdaBoost, DecisionTree, ExtraTrees, MLP	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-4
4	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, LogisticRegression	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-5
5	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, LogisticRegression, MLP	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-6
6	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, HistGradientBoosting, MLP	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-7
7	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, HistGradientBoosting, MLP, RandomForest	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-8
8	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, HistGradientBoosting, Neighbors, LogisticRegression, MLP, RandomForest	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-9
9	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, HistGradientBoosting, Neighbors, LogisticRegression, MLP, RandomForest, SVC	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-10
10	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, HistGradientBoosting, Neighbors, LGBM, LogisticRegression, MLP, RandomForest, SVC	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-11
11	AdaBoost, DecisionTree, ExtraTrees, GradientBoosting, HistGradientBoosting, Neighbors, LGBM, LogisticRegression, MLP, RandomForest, SVC, XGB	None	99.02	98.85	99.23	98.79	99.04	98.11	99.07	98.03	98.02	99.98	99.01	98.81	Top-12

Second Stage Up Top-1 Individual Metrics

#	Classifier	Scaler	Accuracy	Precision	Recall	Specificity	F1	f0U	BAC	MCC	Youden	Yule	AUC_Mean	Mean_Score	Order
1	GradientBoosting	MinMax	97.74	96.6	96.55	98.03	96.53	93.32	97.29	94.85	94.58	99.91	97.0		