

Optimising Botnet Detection via Swarm Intelligence For Consumer IoT

Detailed Evaluation Results

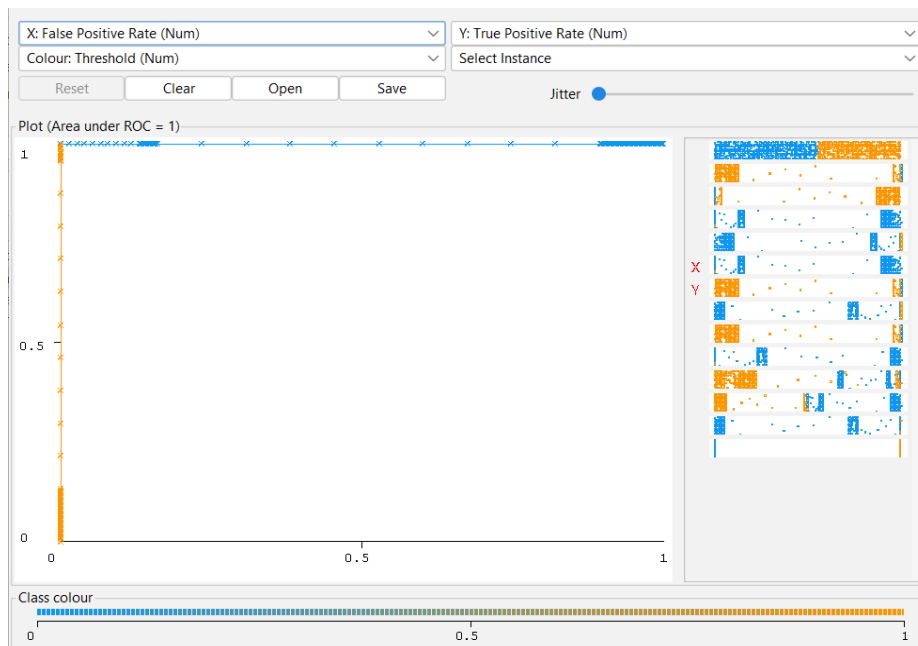
ANTHI DATASET

Total Features :137

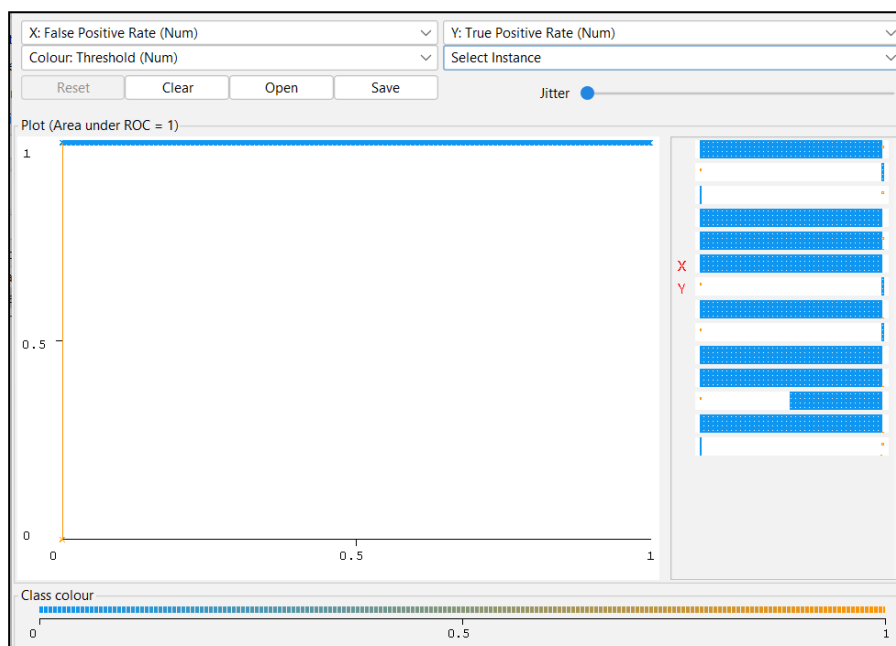
CLASSIFICATION	Binary (Is Malicious)
FS Method	ANT Search
Selected Attributes Subset	[5 7 8 18 20 28 56 61 70 72 80 92 95 119 127 131]
No. Of Features Selected	16

ML Algorithm	Time	Accuracy	FAR	Kappa	Mean Abs Error	RMS Error	Relative Abs Error	Root Related Sqrd Error	TP	FP	Precision	Recall	F-Measure	MCC	ROC Area	RPC Area
BayesNet	0.53	100	0	1	0	0	0	0	1	0	1	1	1	1	1	1
Naïve Bayes	0.27	100	0	1	0	0	0	0	1	0	1	1	1	1	1	1
RF	26.83	100	0	1	0	0	0.0001	0	1	0	1	1	1	1	1	1
AdaBoast	0.44	100	0	1	0	0	0	0	1	0	1	1	1	1	1	1
J.48	0.58	0.9995	0.0005	1	0	0.0021	0.0009	0.4256	1	0	1	1	1	1	1	1

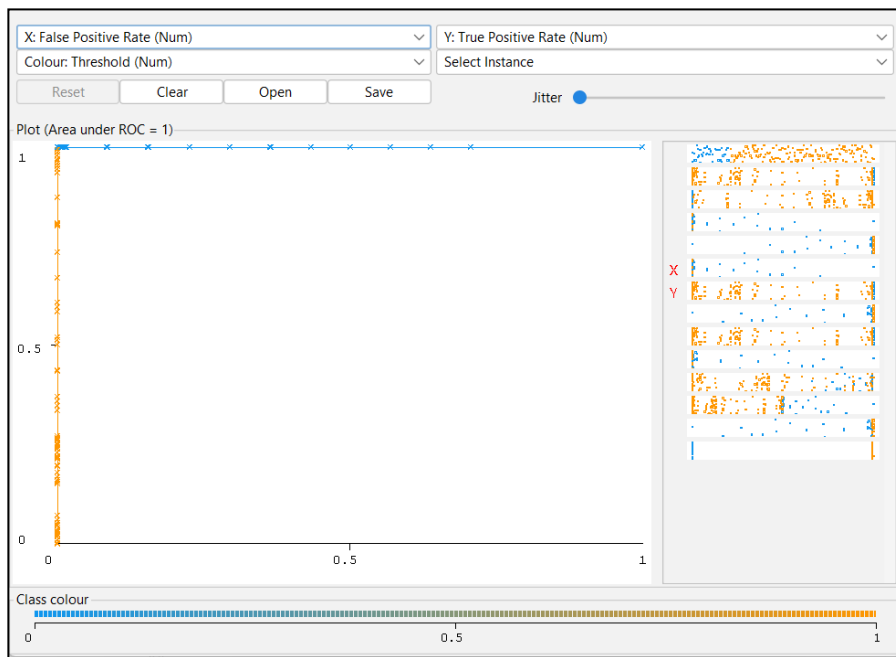
ROC Curve – BayesNet



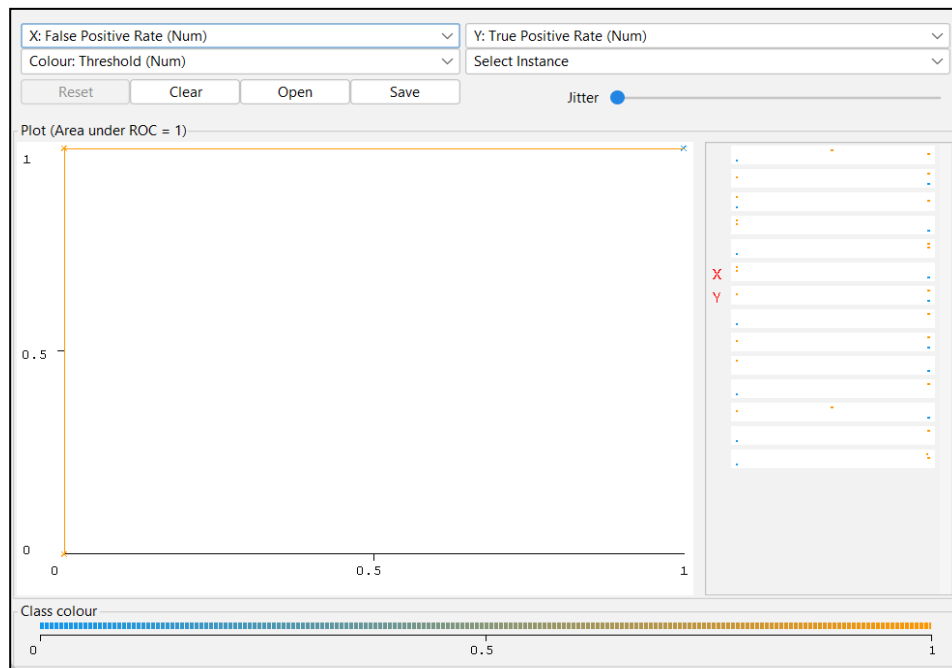
ROC Curve – Naïve Bayes



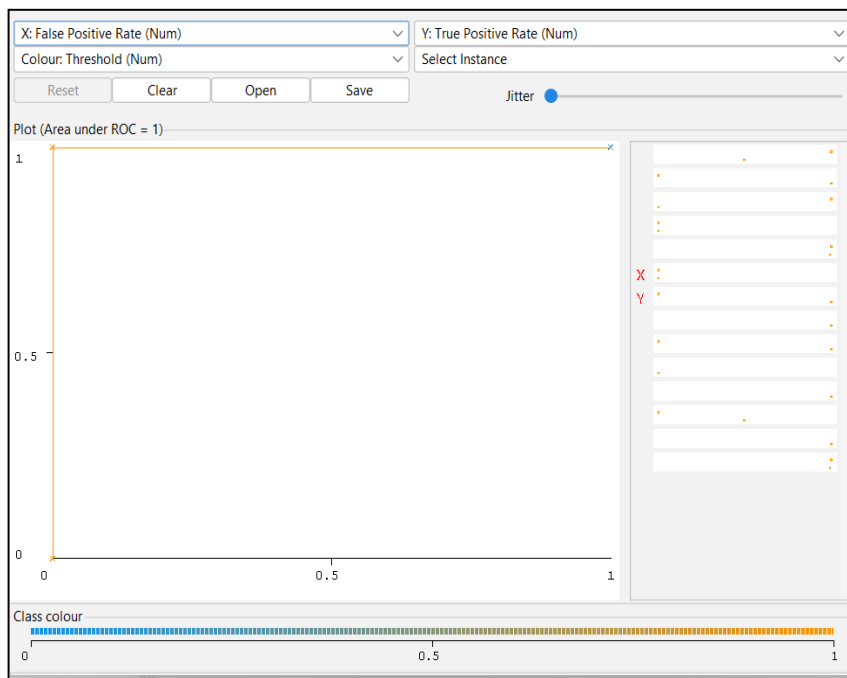
ROC Curve – Random Forest



RoC Curve – AdaBoost



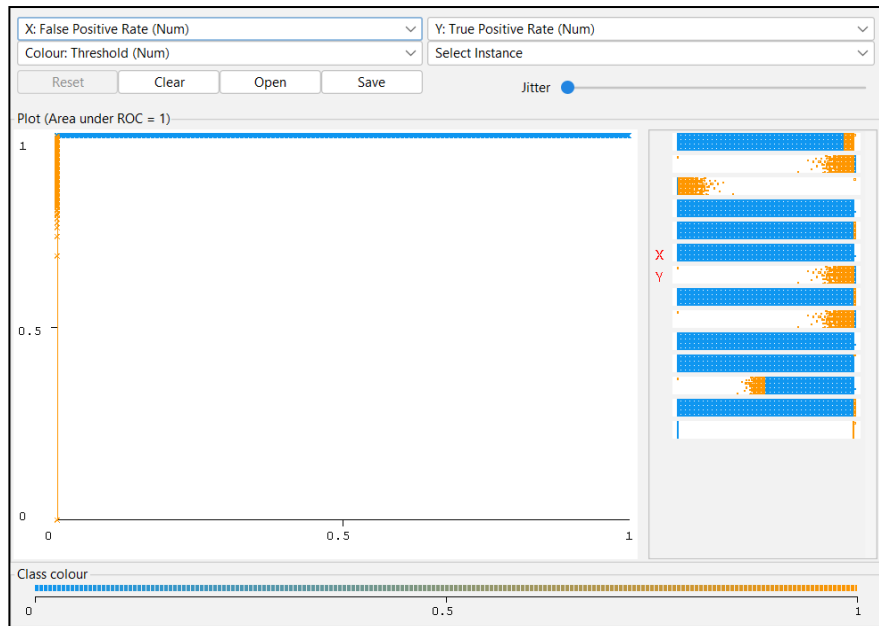
ROC Curve – J48



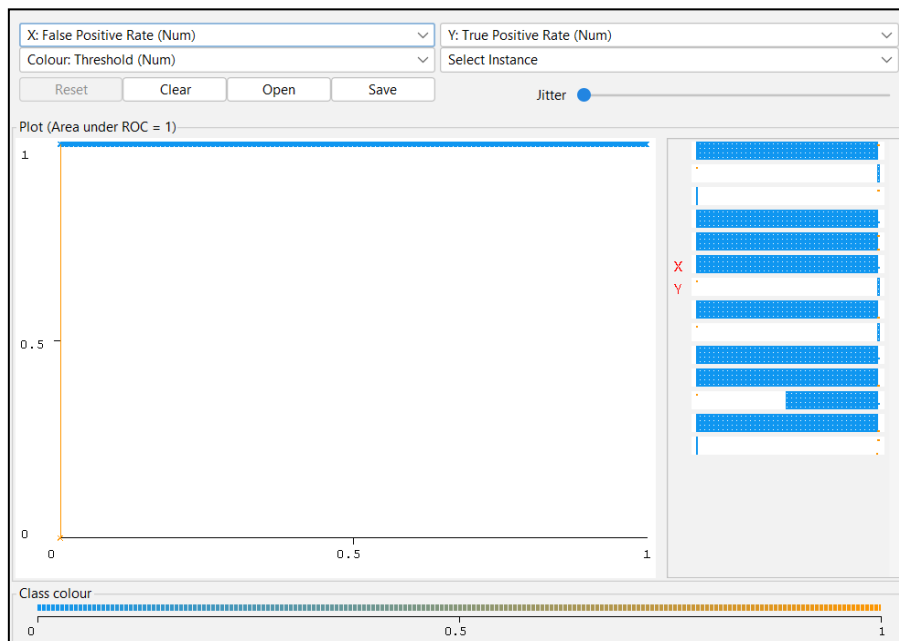
CLASSIFICATION	Binary (Is Malicious)
Instances/Records	220785
FS Method	BAT Search
Selected Attributes Subset	[3 5 7 8 10 12 19 20 27 31 38 51 56 57 59 72 77 80 82 84 86 104 106 108 109 123 133]
No. Of Features Selected	27

ML Algorithm	Time	Accuracy	FAR	Kappa	Mean Abs Error	RMS Error	Relative Abs Error	Root Related Sqrd Error	TP	FP	Precision	Recall	F-Measure	MCC	ROC Area	RPC Area
BayesNet	1.47	100	0	1	0	0	0	0.0001	1	0	1	1	1	1	1	1
Naïve Bayes	0.56	100	0	1	0	0	0	0	1	0	1	1	1	1	1	1
RF	25.16	100	0	1	0	0.0003	0.0016	0.0545	1	0	1	1	1	1	1	1
AdaBoast	0.73	100	0	1	0	0	0	0	1	0	1	1	1	1	1	1
J.48	0.69	99.9995	0.0005	1	0	0.0021	0.0009	0.4256	1	0	1	1	1	1	1	1

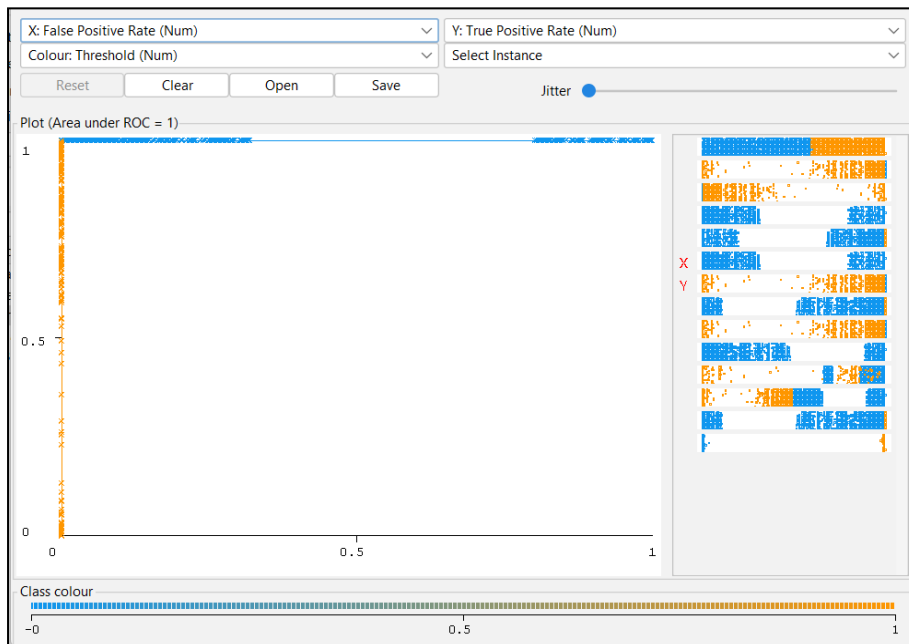
ROC Curve – BayesNet



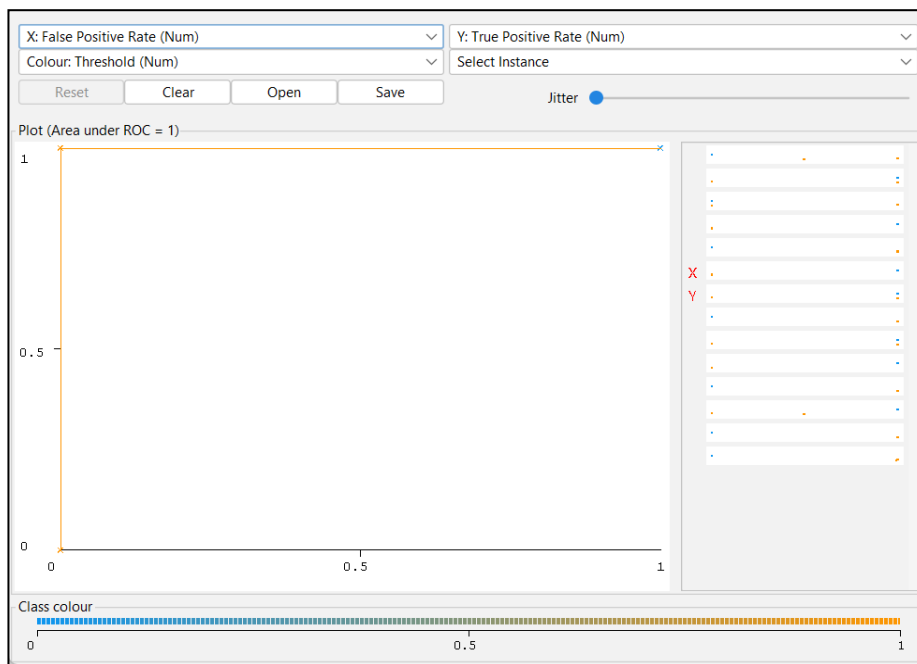
ROC Curve – Naïve Bayes



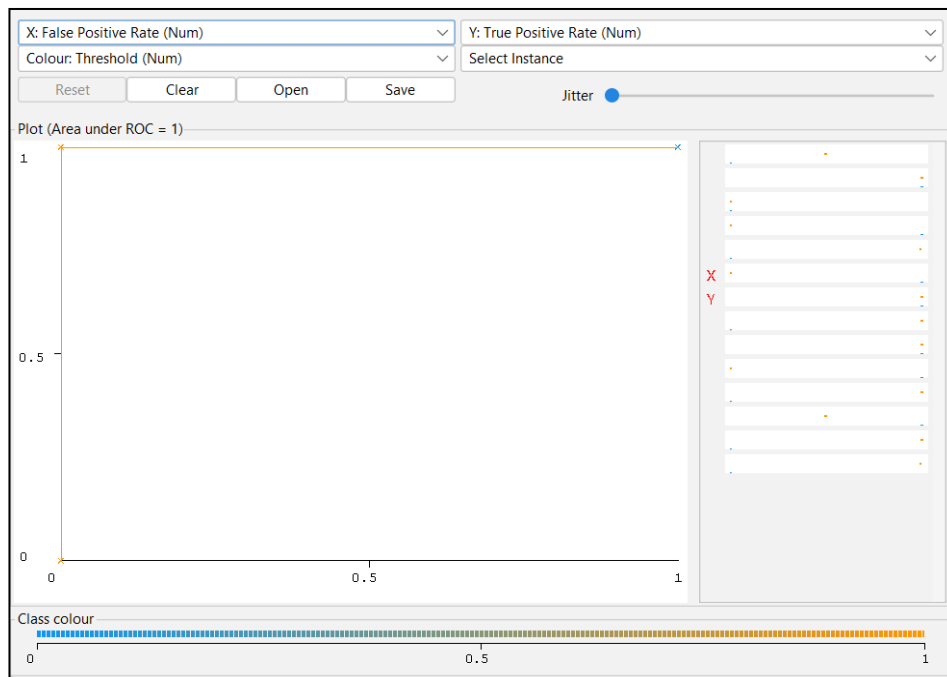
ROC Curve – Random Forest



RoC Curve – AdaBoast



ROC Curve – J48



ROC Curve – BayesNet

ROC Curve – Naïve Bayes

ROC Curve – Random Forest

RoC Curve – AdaBoast

ROC Curve – J48

ROC Curve – BayesNet

ROC Curve – Naïve Bayes

ROC Curve – Random Forest

RoC Curve – AdaBoast

ROC Curve – J48

ROC Curve – BayesNet

ROC Curve – Naïve Bayes

ROC Curve – Random Forest

RoC Curve – AdaBoast

ROC Curve – J48

ROC Curve – BayesNet

ROC Curve – Naïve Bayes

ROC Curve – Random Forest

RoC Curve – AdaBoast

ROC Curve – J48

ROC Curve – BayesNet

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