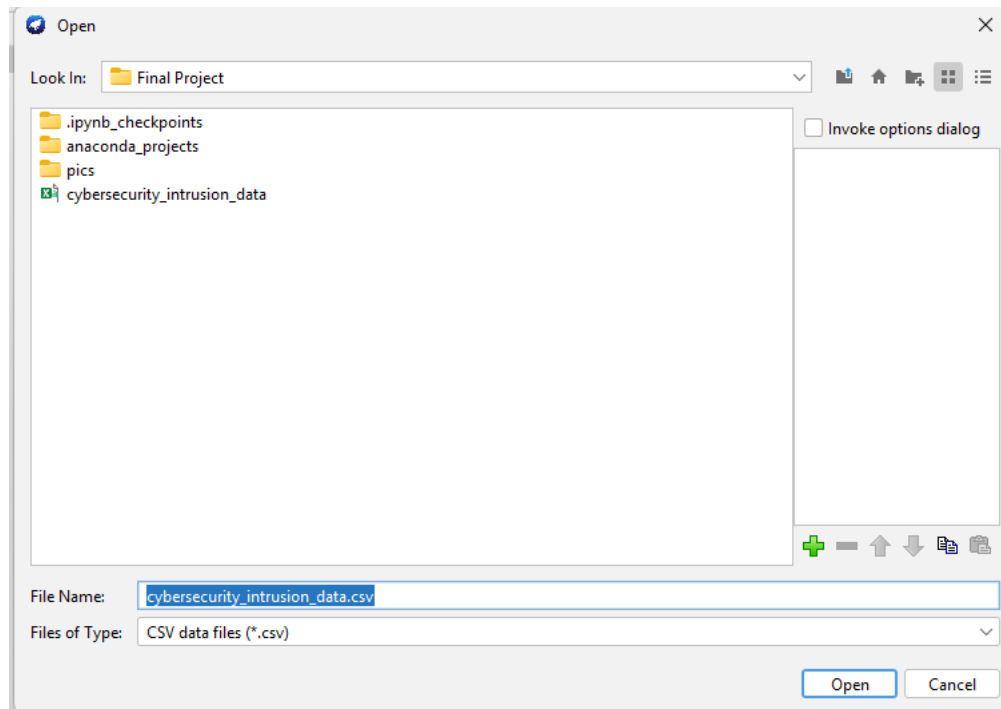


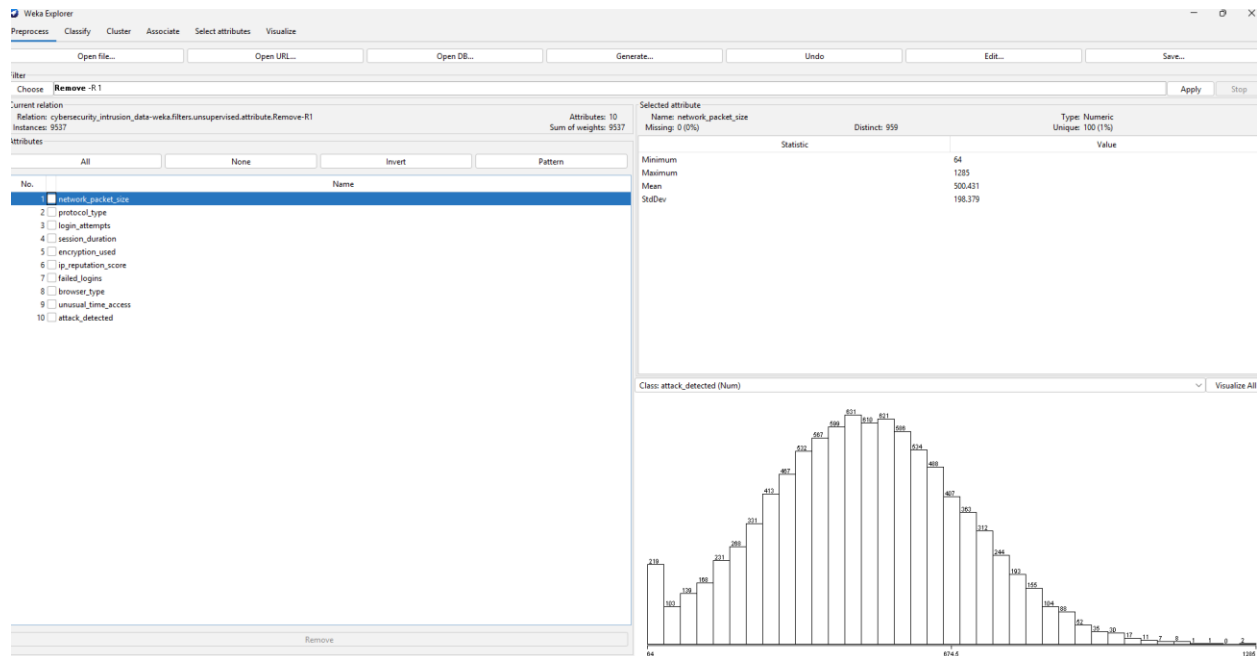
# Weka GUI

## I. Load Data

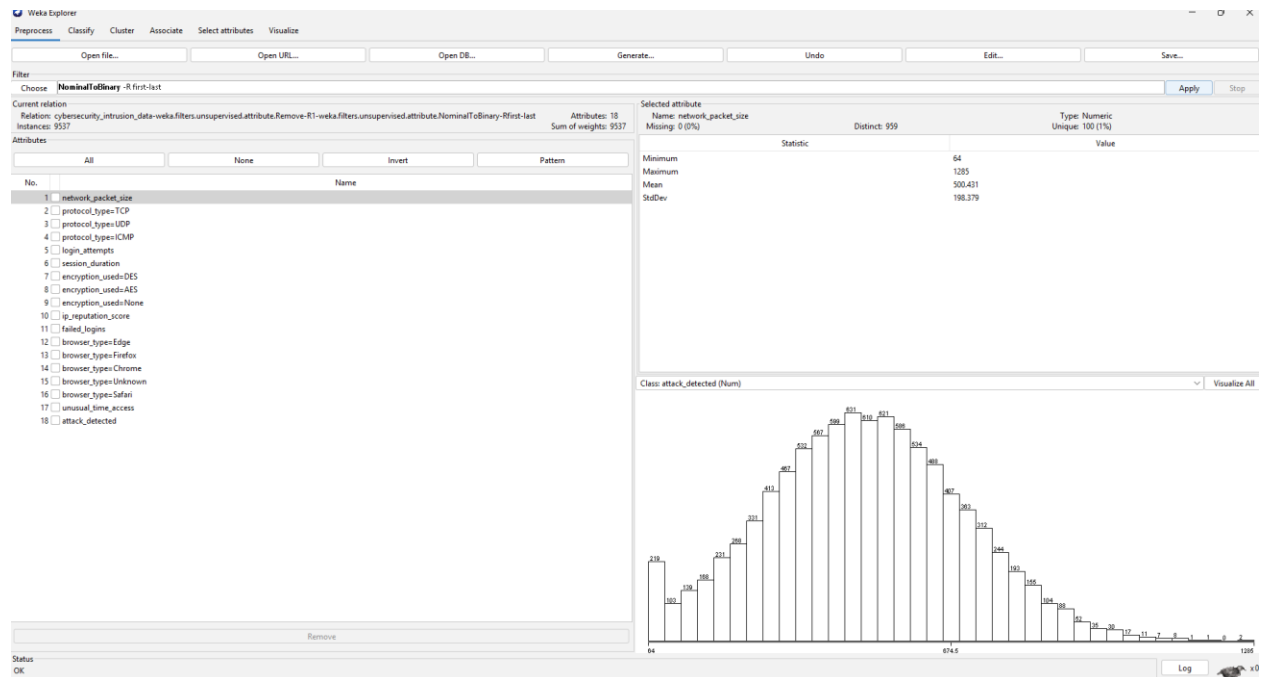


## II. Preprocessing

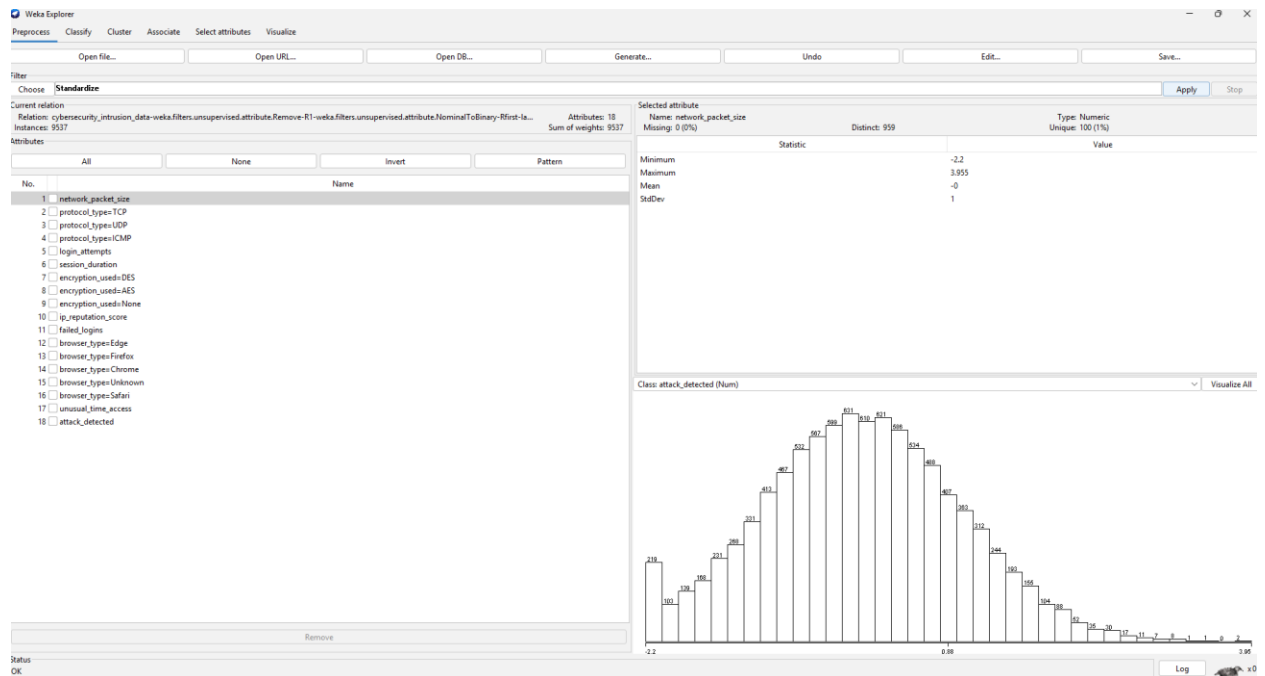
### Filtering, Remove ID



# Nominal To Binary



# Standerdize



## Target Attribute To Nominal

Viewer

Relation: cybersecurity\_intrusion\_data-weka.filters.unsupervised.attribute.Remove-R1-weka.filters.unsupervised.attribute.NominalToBinary-Rfirst-last-weka.filters.unsupervised.attribute...

12: browser_type=Edge	13: browser_type=Firefox	14: browser_type=Chrome	15: browser_type=Unknown	16: browser_type=Safari	17: unusual_time_access	18: attack_detected
Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Nominal
2.343415384615157	-0.5059628849767033	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	1.976222317709932	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	-1.0804524894917245	4.242183493324056	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	1.976222317709932	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	2.3808898175488094	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	2.3808898175488094	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	2.3808898175488094	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	1.976222317709932	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
2.343415384615157	-0.5059628849767033	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	-1.0804524894917245	-0.2357029456168983	4.319949134524535	2.3808898175488094	0
-0.42668284581056837	-0.5059628849767033	-1.0804524894917245	4.242183493324056	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	1.976222317709932	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	-0.5059628849767033	-1.0804524894917245	4.242183493324056	-0.2314599348480335	-0.41996699631118756	1
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	1.976222317709932	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	-0.5059628849767033	0.9254411044896997	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	1.976222317709932	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	0
-0.42668284581056837	-0.5059628849767033	-1.0804524894917245	-0.2357029456168983	-0.2314599348480335	-0.41996699631118756	1

Add instance

Undo

OK

Cancel

## Logression results in modelling 10 fold

```
unusual_time_access    -0.0179
Intercept              0.2582
```

Odds Ratios...

```
Class
Variable      0
=====
network_packet_size    1.0096
protocol_type=TCP      0.9868
protocol_type=UDP      1.0009
protocol_type=ICMP     1.026
login_attempts         0.4548
session_duration       0.9104
encryption_used=DES     0.9859
encryption_used=AES     1.0409
encryption_used=None    0.9671
ip_reputation_score    0.564
failed_logins          0.3676
browser_type=Edge      1.041
browser_type=Firefox   1.045
browser_type=Chrome    1.0788
browser_type=Unknown   0.6945
browser_type=Safari    1.0531
unusual_time_access    0.9823
```

Time taken to build model: 0.18 seconds

=== Stratified cross-validation ===

=== Summary ===

```
Correctly Classified Instances      7061          74.038 %
Incorrectly Classified Instances    2476          25.962 %
Kappa statistic                    0.4708
Mean absolute error                 0.3521
Root mean squared error             0.4192
Relative absolute error             71.2237 %
Root relative squared error         84.3182 %
Total Number of Instances          9537
```

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.797	0.330	0.749	0.797	0.773	0.472	0.805	0.797	0
	0.670	0.203	0.728	0.670	0.698	0.472	0.805	0.806	1
Weighted Avg.	0.740	0.273	0.740	0.740	0.739	0.472	0.805	0.801	

## Random Forest

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.998	0.236	0.840	0.998	0.912	0.798	0.884	0.840	0
	0.764	0.002	0.996	0.764	0.865	0.798	0.884	0.912	1
Weighted Avg.	0.893	0.131	0.910	0.893	0.891	0.798	0.884	0.872	

=== Confusion Matrix ===

```
  a    b  <-- classified as
5261  12 |    a = 0
1005 3259 |    b = 1
```

## ADABOOSTM1 with J48 base classifier

```
Number of Leaves :    640

Size of the tree :    1279

Weight: 3.08

Number of performed Iterations: 20

Time taken to build model: 5.78 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      8295           86.977 %
Incorrectly Classified Instances    1242           13.023 %
Kappa statistic                     0.7327
Mean absolute error                  0.1291
Root mean squared error              0.3533
Relative absolute error              26.1124 %
Root relative squared error          71.0514 %
Total Number of Instances          9537

=== Detailed Accuracy By Class ===

      TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
      0.943    0.221    0.841    0.943    0.889    0.740    0.881    0.839    0
      0.779    0.057    0.918    0.779    0.842    0.740    0.881    0.911    1
Weighted Avg.   0.870    0.148    0.875    0.870    0.868    0.740    0.881    0.871

=== Confusion Matrix ===

  a    b  <-- classified as
4975  298 |    a = 0
 944 3320 |    b = 1
```