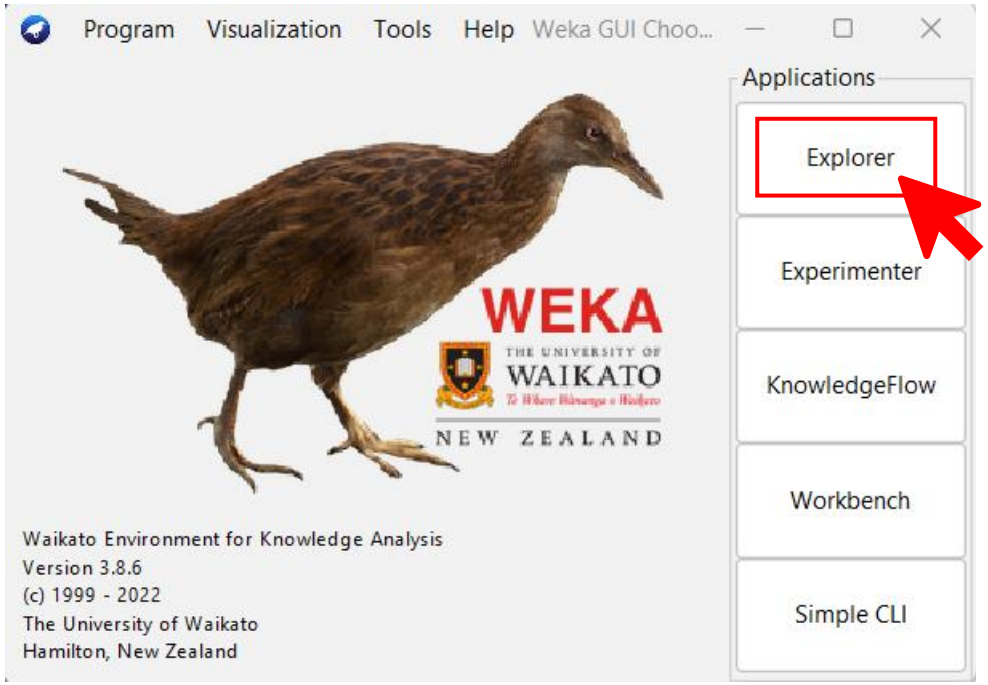
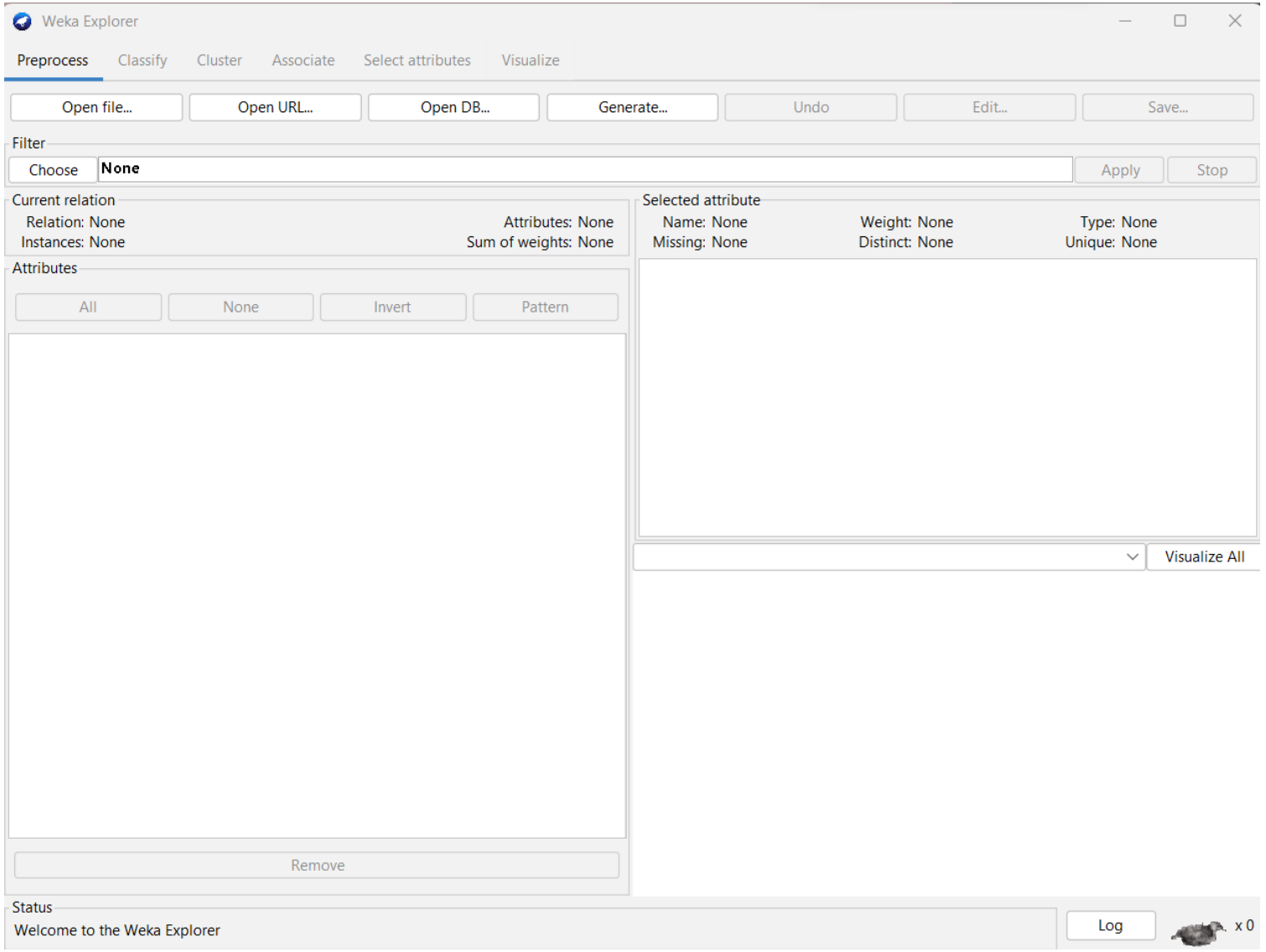
Classification using WEKA

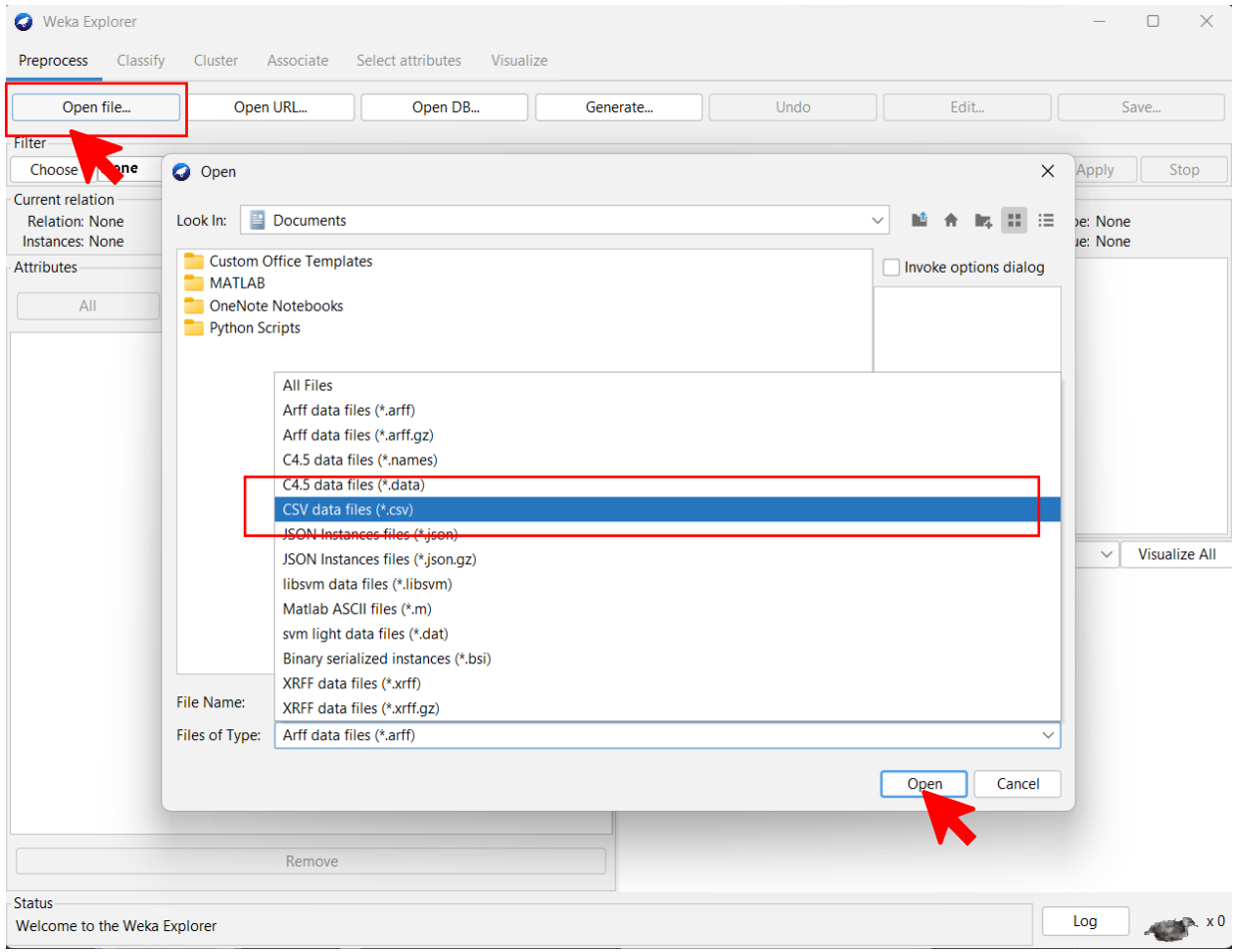
Drug resistance class prediction using Support Vector Machine

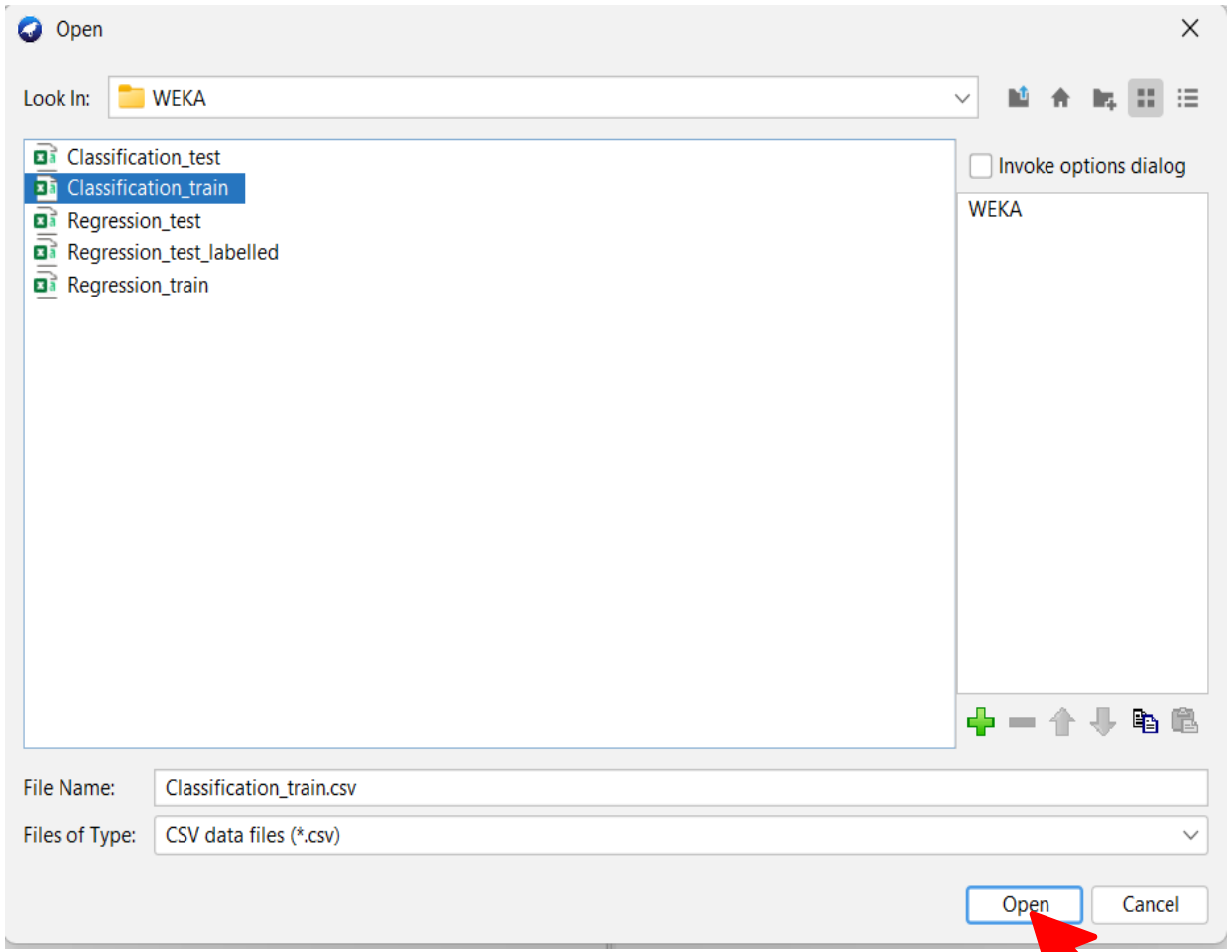
WEKA GUI


Program
Visualization
Tools
Help
Weka GUI Choo...
Applications
Explorer
Experimenter
KnowledgeFlow
Workbench
Simple CLI
WEKA
THE UNIVERSITY OF WAIKATO
NEW ZEALAND
Waikato Environment for Knowledge Analysis
Version 3.8.6
(c) 1999 - 2022
The University of Waikato
Hamilton, New Zealand

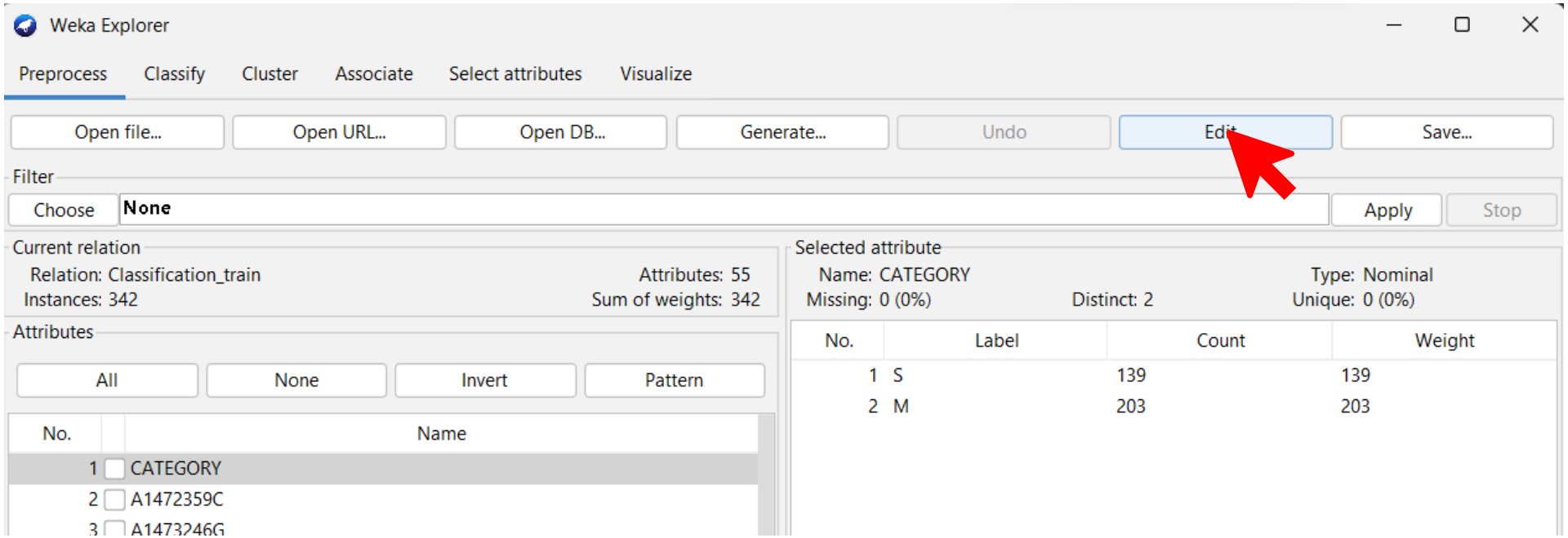

Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Open file...
Open URL...
Open DB...
Generate...
Undo
Edit...
Save...
Filter
Choose
None
Apply
Stop
Current relation
Relation: None
Instances: None
Attributes: None
Sum of weights: None
Selected attribute
Name: None
Missing: None
Weight: None
Distinct: None
Type: None
Unique: None
Attributes
All
None
Invert
Pattern
Remove
Visualize All
Status
Welcome to the Weka Explorer
Log
x 0

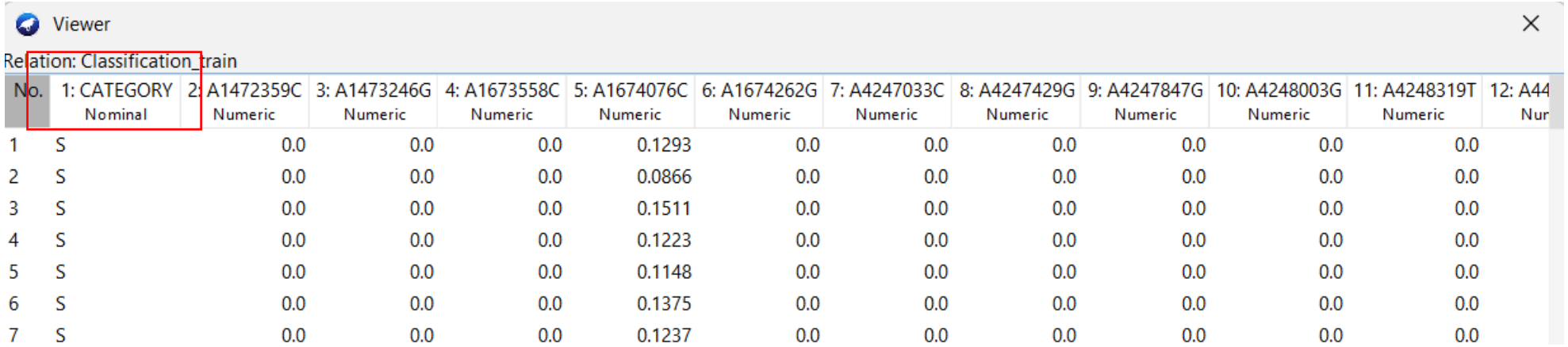
Loading Data



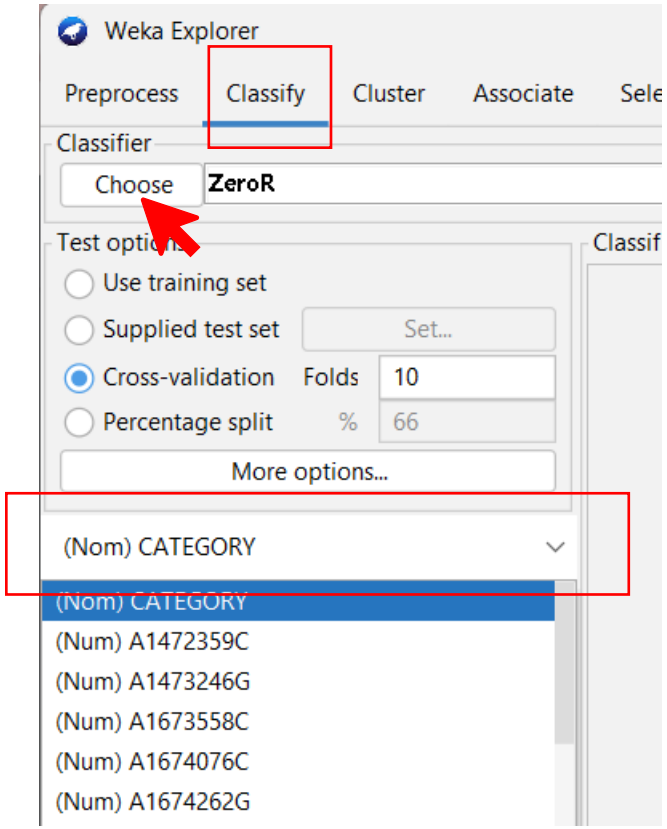


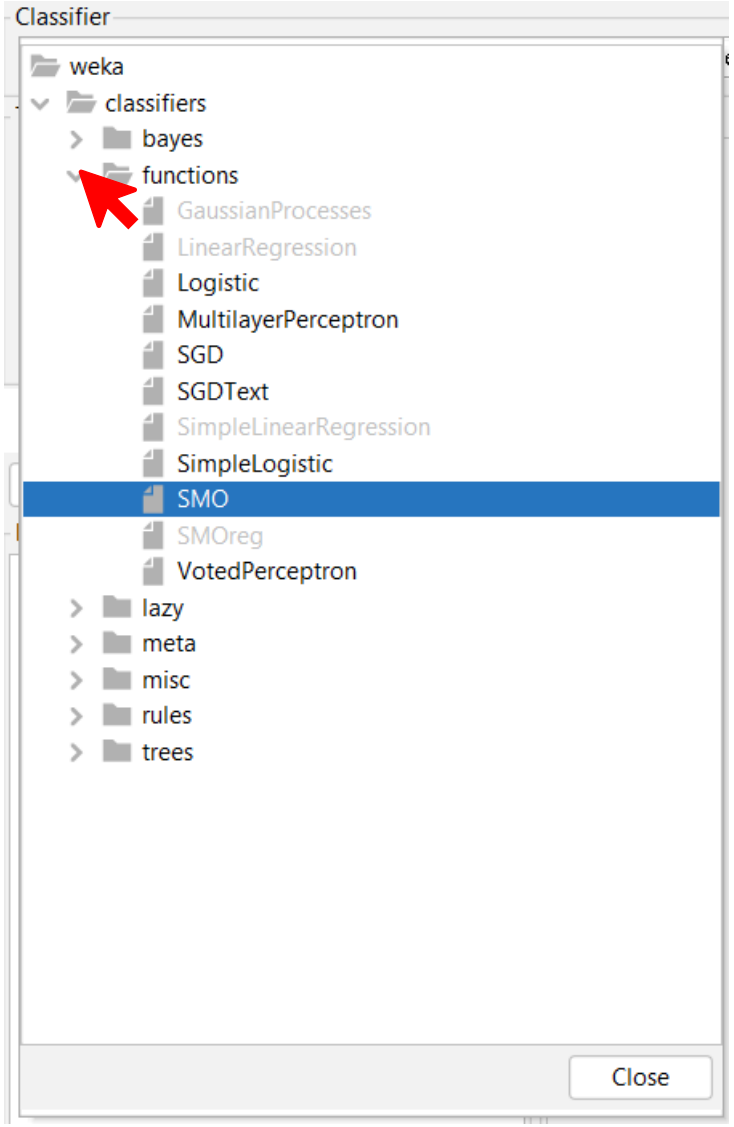
Dataset for Classification



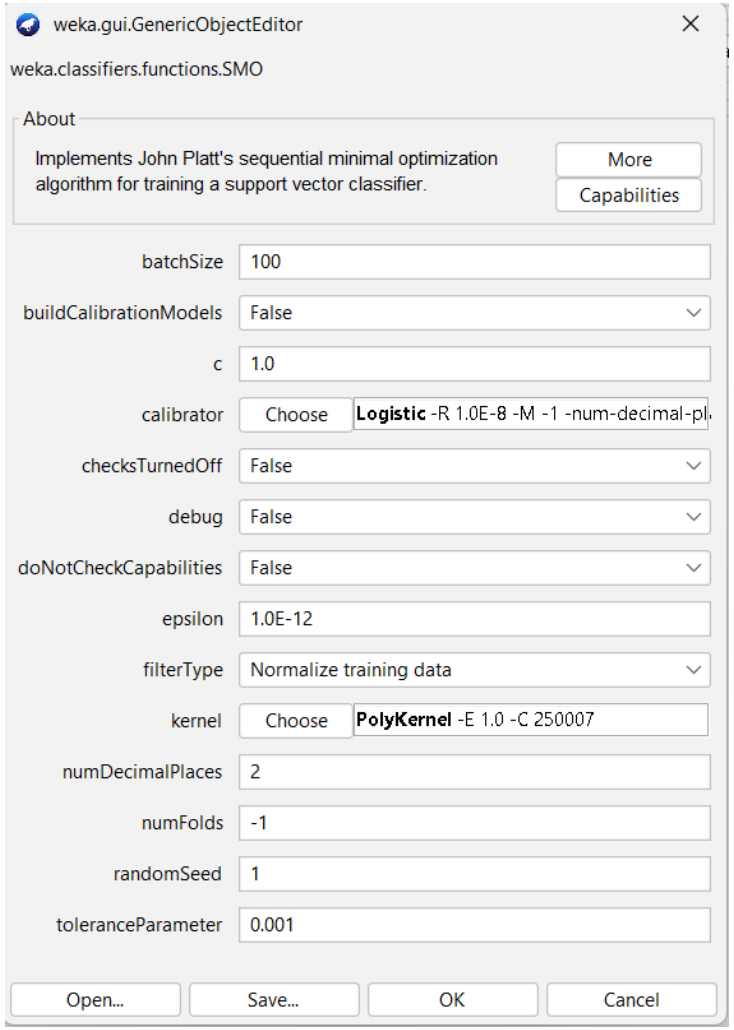


Choosing Algorithm

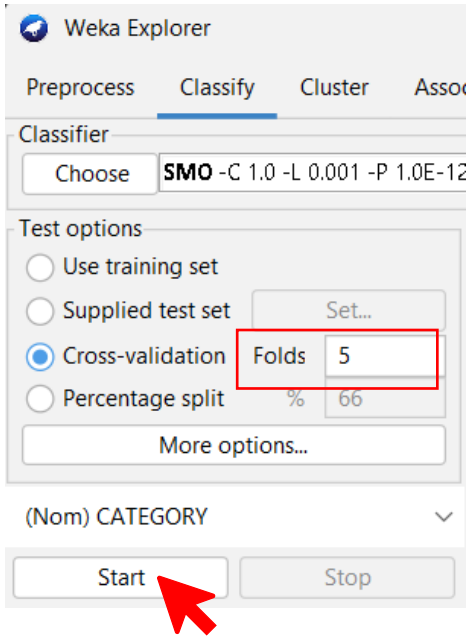




Algorithm parameters



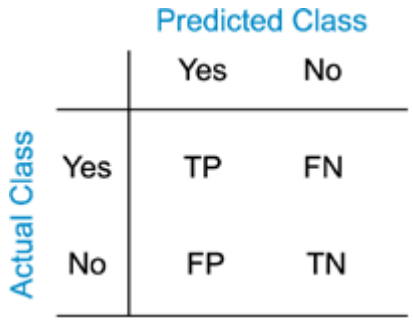
5-fold cross-validation




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

Correctly Classified Instances         325               95.0292 %
Incorrectly Classified Instances        17                4.9708 %
Kappa statistic                          0.8989
Mean absolute error                      0.0497
Root mean squared error                  0.223
Relative absolute error                 10.2993 %
Root relative squared error             45.3907 %
Total Number of Instances              342

=== Detailed Accuracy By Class ===

               TP Rate   FP Rate   Precision   Recall  F-Measure  MCC      ROC Area  PRC Area  Class
               1.000    0.084     0.891      1.000    0.942      0.904    0.958     0.891     S
               0.916    0.000     1.000      0.916    0.956      0.904    0.958     0.966     M
Weighted Avg.  0.950    0.034     0.956      0.950    0.951      0.904    0.958     0.936

=== Confusion Matrix ===

   a   b   <-- classified as
 139   0 |   a = S
  17 186 |   b = M
```

Confusion Matrix

Performance Metrics

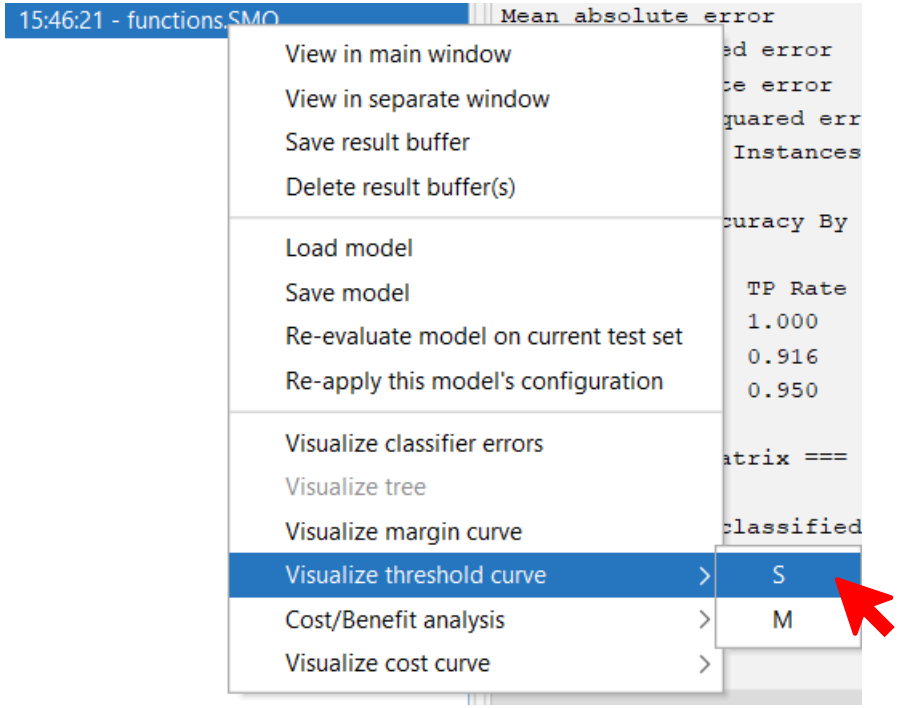


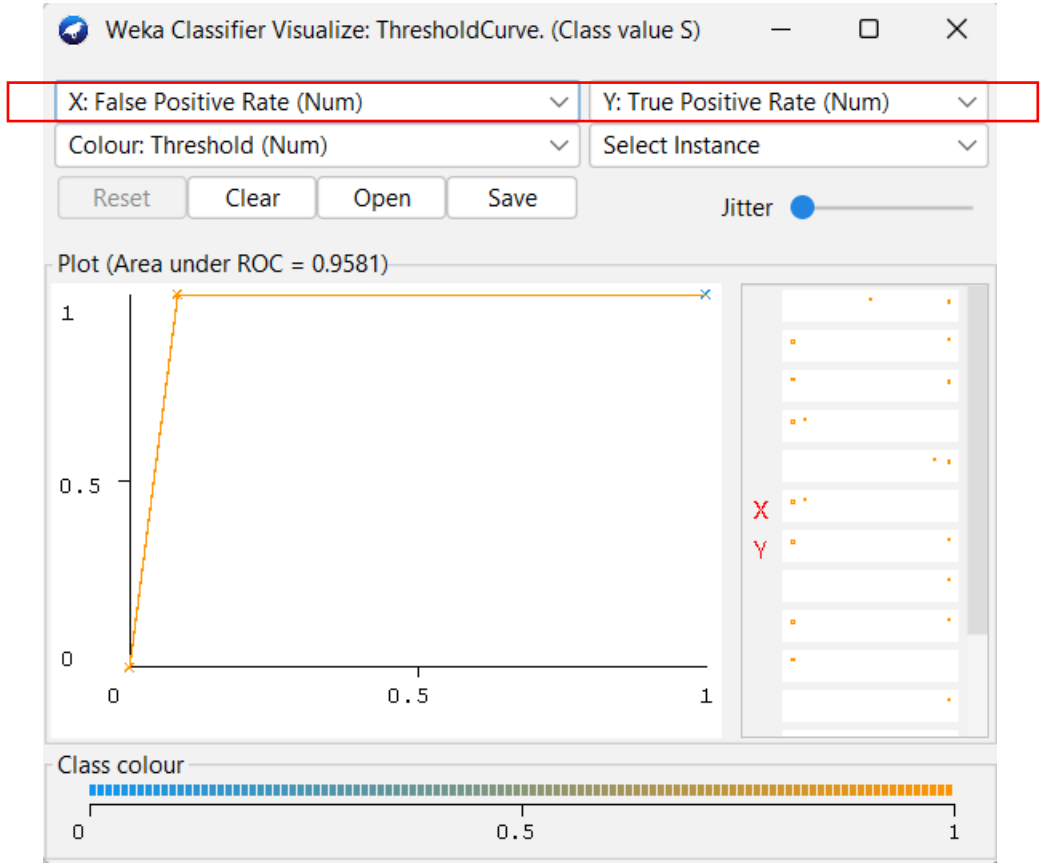
	S	**M**
S	139	0
M	17	186

Metrics	**Formula**
Accuracy	(TP+TN)/(TP+TN+FP+FN)
Precision	TP/(TP+FP)
Recall/Sensitivity/True Positive Rate (**TPR)**	TP/(TP+FN)
False Positive Rate (FPR)	FP/(FP+TN)
Specificity (**1-FPR)**	TN/(TN+FP)
F1 score	2TP/(2TP+FP+FN)

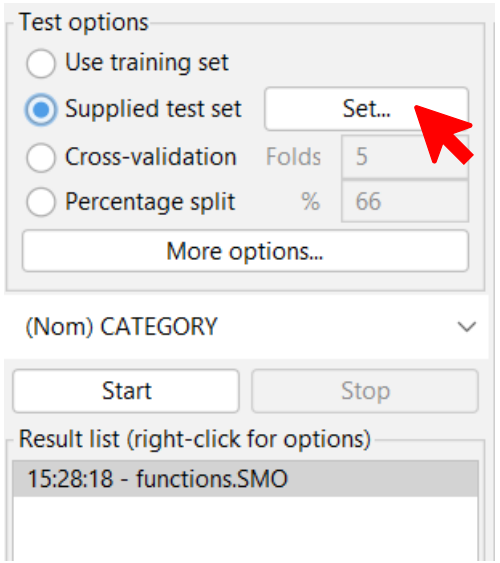
ROC Plot

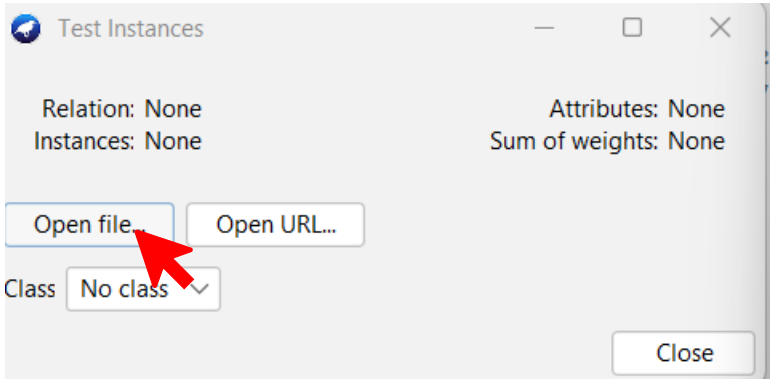
Right click on functions.SMO

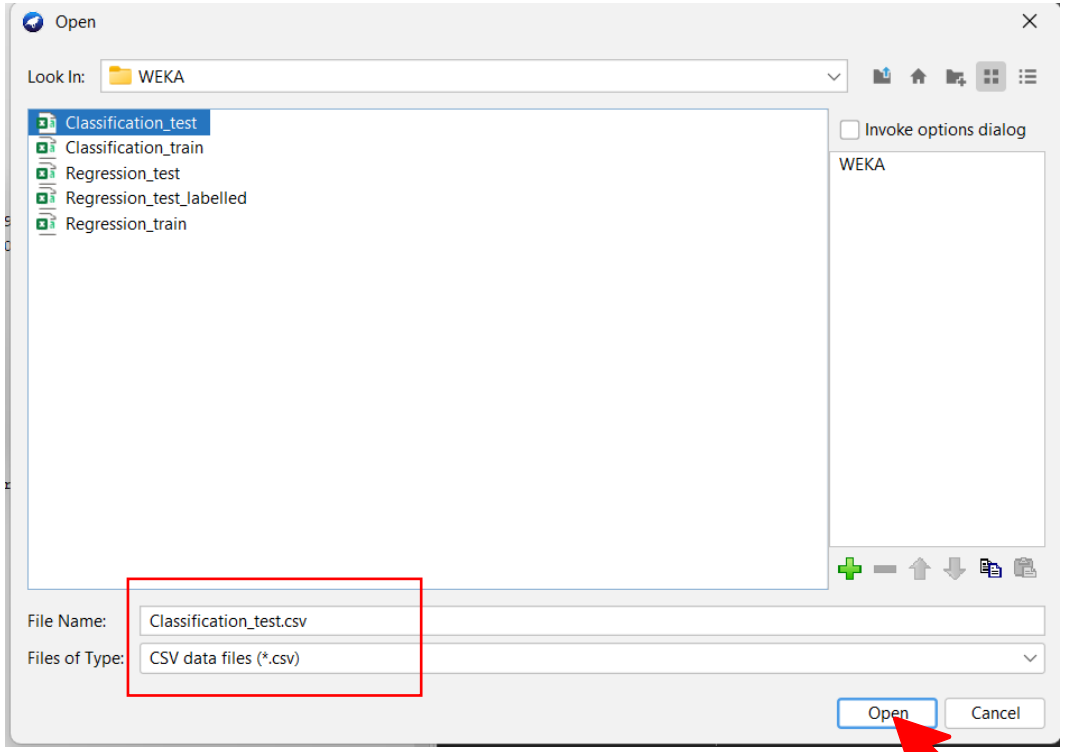


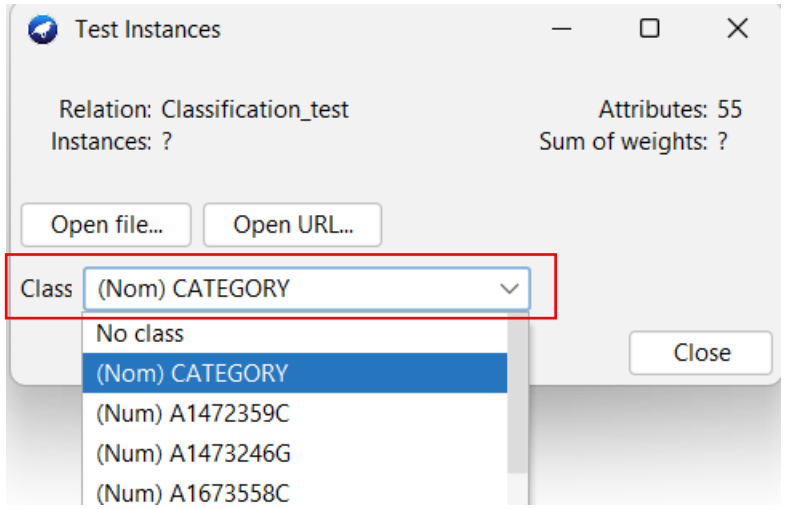


Model testing



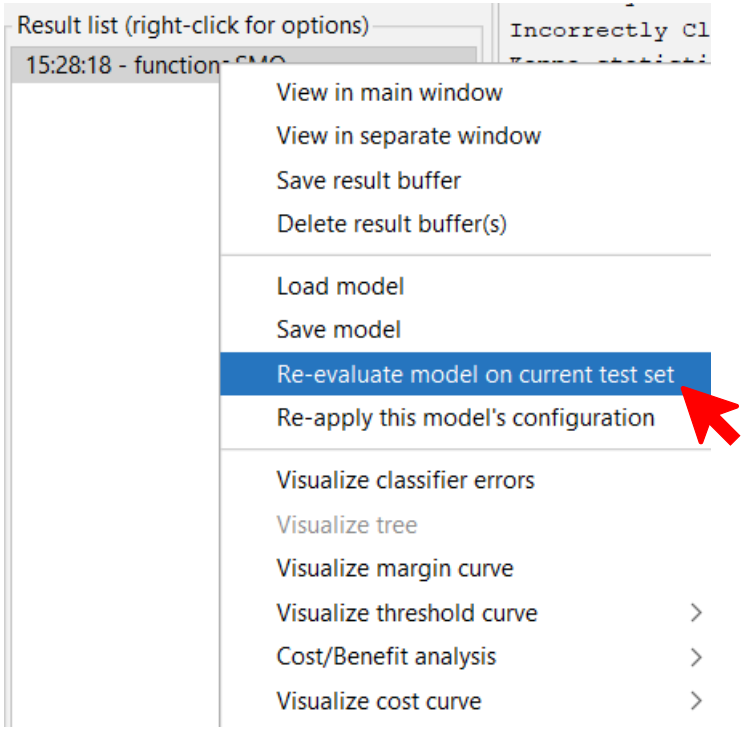






Test Performance

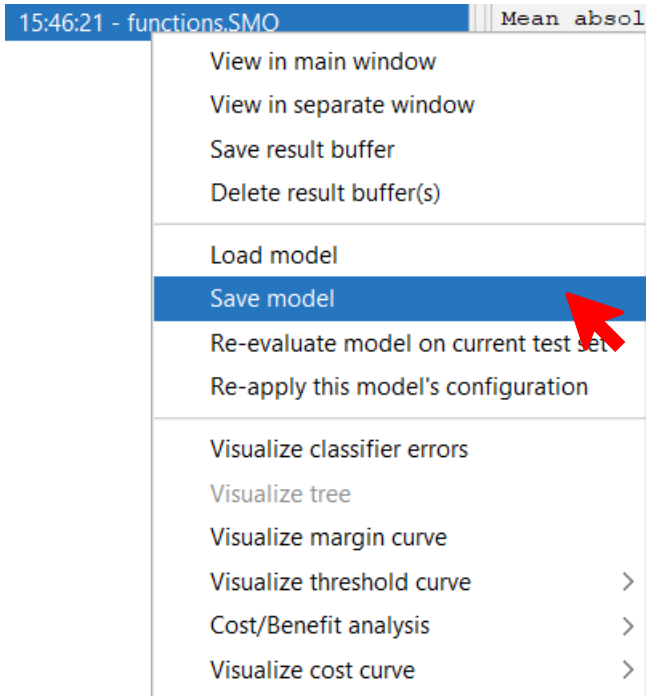
Right click on functions.SMO

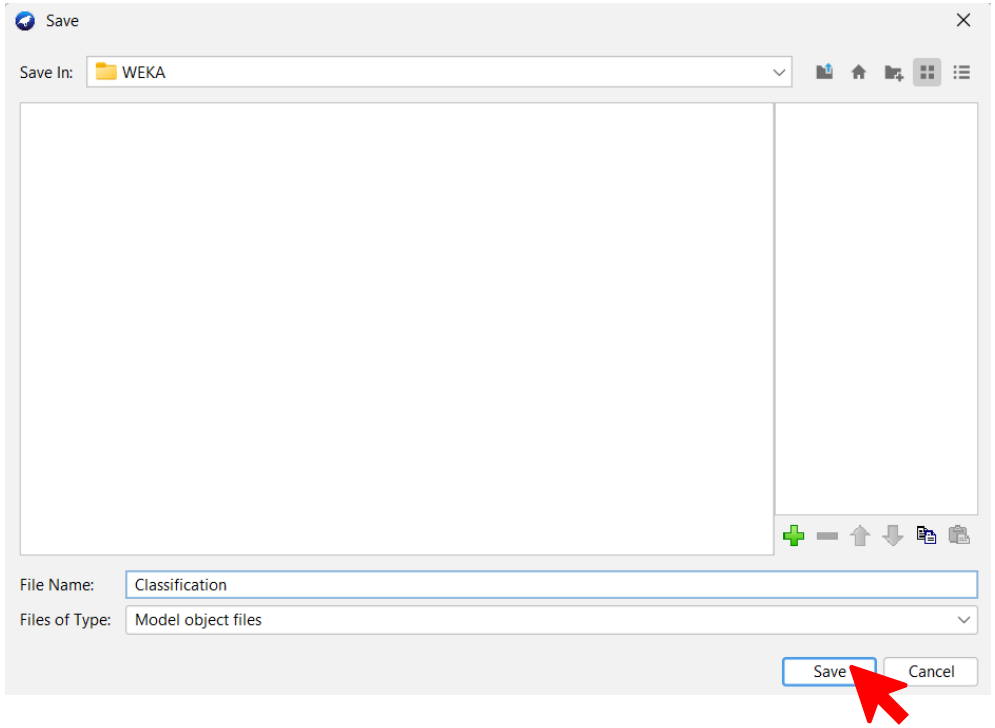



```
=== Re-evaluation on test set ===

User supplied test set
Relation:     Classification_test
Instances:     unknown (yet). Reading incrementally
Attributes:   55

=== Summary ===

Correctly Classified Instances          83               98.8095 %
Incorrectly Classified Instances         1                1.1905 %
Kappa statistic                          0.9754
Mean absolute error                      0.0119
Root mean squared error                  0.1091
Total Number of Instances               84

=== Detailed Accuracy By Class ===

                 TP Rate   FP Rate   Precision   Recall  F-Measure  MCC      ROC Area  PRC Area  Class
                 1.000     0.020     0.971       1.000   0.986      0.976    0.990     0.971     S
                 0.980     0.000     1.000       0.980   0.990      0.976    0.990     0.992     M
Weighted Avg.    0.988     0.008     0.988       0.988   0.988      0.976    0.990     0.984

=== Confusion Matrix ===

  a  b   <-- classified as
 34  0 |  a = S
  1 49 |  b = M
```

Saving Model

Right click on functions.SMO





Loading Model

Right click