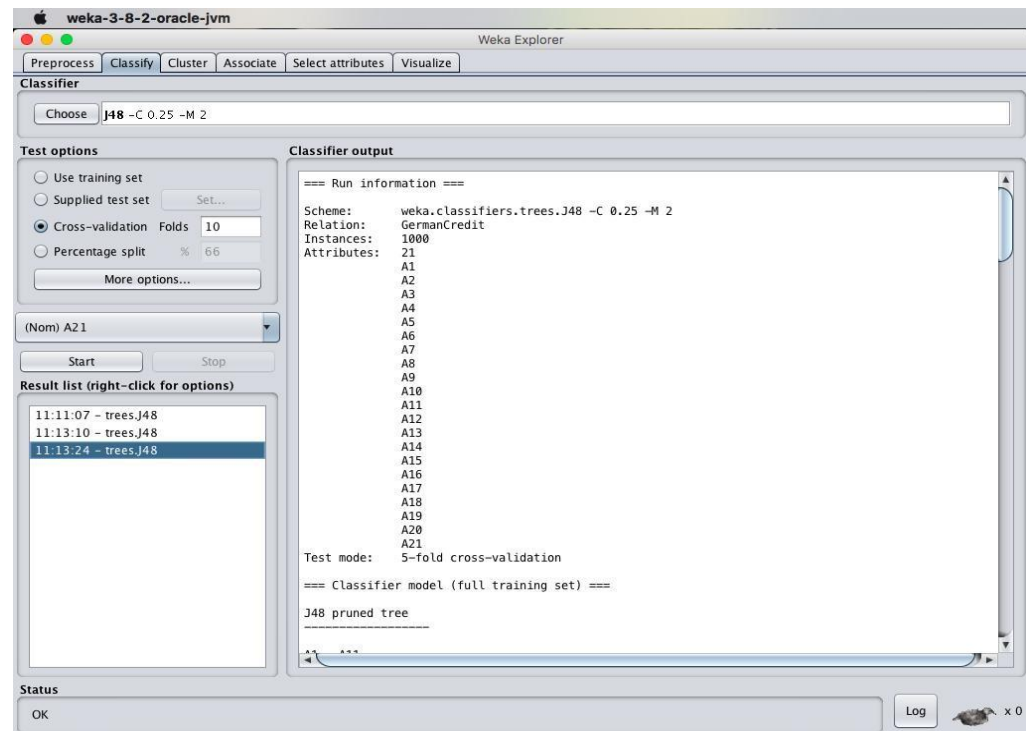


EXPERIMENT-12

PREDICTION OF CATEGORICAL DATA USING SMO ALGORITHM THROUGH WEKA

OUTPUT:

DECISION TREE:



weka-3-8-2-oracle-jvm Weka Explorer

Preprocess **Classify** Cluster Associate Select attributes Visualize

Classifier Choose J48 -C 0.25 -M 2

Test options

☐ Use training set
☐ Supplied test set Set...
☒ Cross-validation Folds 10
☐ Percentage split % 66
 More options...

(Nom) A21

Start Stop

Result list (right-click for options)

11:11:07 - trees.J48
 11:13:10 - trees.J48
 11:13:24 - trees.J48

Classifier output

```

A4 = A46: 1 (0.0)
A4 = A47: 1 (0.0)
A4 = A48: 1 (0.0)
A4 = A49: 1 (0.0)
A4 = A410: 1 (0.0)
A6 = A62
A4 = A40: 2 (15.0/5.0)
A4 = A41: 1 (3.0)
A4 = A42: 2 (4.0/1.0)
A4 = A43: 2 (8.0/2.0)
A4 = A44: 1 (0.0)
A4 = A45: 1 (2.0)
A4 = A46: 1 (0.0)
A4 = A47: 1 (0.0)
A4 = A48: 1 (0.0)
A4 = A49
A15 = A151
A16 <= 1: 1 (2.0)
A16 > 1: 2 (2.0)
A15 = A152: 1 (6.0)
A15 = A153: 2 (1.0)
A4 = A410: 1 (1.0)
A6 = A63: 1 (11.0/3.0)
A6 = A64: 1 (13.0/3.0)
A6 = A65: 1 (41.0/5.0)
A5 > 9857: 2 (20.0/3.0)
A1 = A13: 1 (63.0/14.0)
A1 = A14: 1 (394.0/46.0)

Number of Leaves : 103
Size of the tree : 140
  
```

Status OK Log x 0

weka-3-8-2-oracle-jvm Weka Explorer

Preprocess **Classify** Cluster Associate Select attributes Visualize

Classifier Choose J48 -C 0.25 -M 2

Test options

☐ Use training set
☐ Supplied test set Set...
☒ Cross-validation Folds 10
☐ Percentage split % 66
 More options...

(Nom) A21

Start Stop

Result list (right-click for options)

11:11:07 - trees.J48
 11:13:10 - trees.J48
 11:13:24 - trees.J48

Classifier output

```

Number of Leaves : 103
Size of the tree : 140

Time taken to build model: 0.02 seconds

=== Stratified cross-validation ===
=== Summary ===
Correctly Classified Instances 733 73.3 %
Incorrectly Classified Instances 267 26.7 %
Kappa statistic 0.3264
Mean absolute error 0.3293
Root mean squared error 0.4579
Relative absolute error 78.3705 %
Root relative squared error 99.914 %
Total Number of Instances 1000

=== Detailed Accuracy By Class ===
          TP Rate  FP Rate  Precision  Recall  F-Measure  MCC  ROC Area  PRC Area  Class
Weighted Avg.  0.457  0.149  0.568  0.457  0.506  0.330  0.685  0.483  1
                0.733  0.425  0.720  0.733  0.724  0.330  0.685  0.697  2

=== Confusion Matrix ===
  a b <- classified as
596 104 | a = 1
163 137 | b = 2
  
```

Status OK Log x 0

SMO ALGORITHM:

The screenshot shows the Weka Explorer interface with the SMO classifier selected. The classifier output pane displays the following results:

Number of kernel evaluations: 436644 (90.558% cached)

Time taken to build model: 0.76 seconds

=== Stratified cross-validation ===

=== Summary ===

Metric	Value	%
Correctly Classified Instances	751	75.1
Incorrectly Classified Instances	249	24.9
Kappa statistic	0.3654	
Total Cost	249	
Average Cost	0.249	
Mean absolute error	0.249	
Root mean squared error	0.499	
Relative absolute error	59.2607 %	
Root relative squared error	108.8905 %	
Total Number of Instances	1000	

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
Weighted Avg.	0.871	0.530	0.793	0.871	0.830	0.371	0.671	0.781	1
	0.470	0.129	0.610	0.470	0.531	0.371	0.671	0.446	2

=== Confusion Matrix ===

a \ b	1	2	classified as
610 90	610	90	a = 1
159 141	159	141	b = 2

ANALYSIS:

The screenshot shows the Weka Explorer interface with the SMO classifier selected. The classifier output pane displays the following results:

Number of kernel evaluations: 436644 (90.558% cached)

Time taken to build model: 0.76 seconds

=== Stratified cross-validation ===

=== Summary ===

Metric	Value	%
Correctly Classified Instances	751	75.1
Incorrectly Classified Instances	249	24.9
Kappa statistic	0.3654	
Total Cost	249	
Average Cost	0.249	
Mean absolute error	0.249	
Root mean squared error	0.499	
Relative absolute error	59.2607 %	
Root relative squared error	108.8905 %	
Total Number of Instances	1000	

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
Weighted Avg.	0.871	0.530	0.793	0.871	0.830	0.371	0.671	0.781	1
	0.470	0.129	0.610	0.470	0.531	0.371	0.671	0.446	2

=== Confusion Matrix ===

a \ b	1	2	classified as
610 90	610	90	a = 1
159 141	159	141	b = 2

weka-3-8-2-oracle-jvm

Weka Explorer

Preprocess

Classify

Cluster

Associate

Select attributes

Visualize

Classifier

Choose

CostSensitiveClassifier -cost-matrix "[0.0 1.0; 1.0 0.0]" -S 1 -W weka.classifiers.rules.ZeroR

Test options

Use training set

Supplied test set

Cross-validation

Folds

10

Percentage split

%

66

More options...

(Nom) A21

Start

Stop

Result list (right-click for options)

14:17:24 - meta.CostSensitiveClassifier

Classifier output

Cost Matrix

0 1

1 0

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances

700

70

%

Incorrectly Classified Instances

300

30

%

Kappa statistic

0

Mean absolute error

0.4202

Root mean squared error

0.4583

Relative absolute error

100

%

Root relative squared error

100

%

Total Number of Instances

1000

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
1	1.000	1.000	0.700	1.000	0.824	?	0.500	0.700	1
2	0.000	0.000	?	0.000	?	?	0.500	0.300	2
Weighted Avg.	0.700	0.700	?	0.700	?	?	0.500	0.500	

=== Confusion Matrix ===

a

b

<- classified as

700

0

a = 1

300

0

b = 2

Status

OK

Log

x 0