### J48

--- Run information ---

**Scheme:** weka.classifiers.trees.J48 -C 0.25 -M 2  
**Relation:** R  
**Instances:** 25000  
**Attributes:** 21

   a1 a2 a3 a4 a5 a6 a7 a8 a9 a10 a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 class

**Test mode:** user supplied test set: 2000 instances

--- Classifier model (full training set) ---

J48 pruned tree

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: -1 (25000.0/2636.0)

Number of Leaves : 1

Size of the tree : 1

Time taken to build model: 0.63 seconds

--- Evaluation on test set ---

--- Summary ---

Correctly Classified Instances 1000 50.0%

Incorrectly Classified Instances 1000 50.0%

Kappa statistic 0

Mean absolute error 0.5

Root mean squared error 0.6369

Relative absolute error 100.0%

Root relative squared error 100.031%

Total Number of Instances 2000

--- Detailed Accuracy By Class ---

<table>
<thead>
<tr>
<th>TP Rate</th>
<th>FP Rate</th>
<th>Precision</th>
<th>Recall</th>
<th>F-Measure</th>
<th>ROC Area</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
<td>0.667</td>
<td>0.5</td>
<td>-1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

--- Confusion Matrix ---

a b <-- classified as

1000 0 | a = -1
1000 0 | b = 1
Naïve Bayes

=== Run information ===
Scheme:       weka.classifiers.bayes.NaiveBayes
Relation:     R
Instances:    25000
Attributes:   21
   a1 a2 a3 a4 a5 a6 a7 a8 a9 a10 a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 class
Test mode:    evaluate on training data

=== Classifier model (full training set) ===

Naive Bayes Classifier

Class -1: Prior probability = 0.89

a1:  Normal Distribution. Mean = 0.3281 StandardDev = 0.1483 WeightSum = 22364
     Precision = 8.32345971563981E-4
a2:  Normal Distribution. Mean = 0.868 StandardDev = 0.5677 WeightSum = 22364 Precision
     = 0.00630407911001236
a3:  Normal Distribution. Mean = 44.3305 StandardDev = 6.7112 WeightSum = 22364
     Precision = 0.18135658914728586
a4:  Normal Distribution. Mean = 3.0314 StandardDev = 1.2464 WeightSum = 22364
     Precision = 0.01193603133159269
a5:  Normal Distribution. Mean = 1.127 StandardDev = 0.1512 WeightSum = 22364 Precision
     = 0.005948275862068966
a6:  Normal Distribution. Mean = 530.4957 StandardDev = 138.7164 WeightSum = 22364
     Precision = 2.7860696517412937
a7:  Normal Distribution. Mean = 407.9275 StandardDev = 227.642 WeightSum = 22364
     Precision = 0.7219547775346462
a8:  Normal Distribution. Mean = -32.4352 StandardDev = 40.1472 WeightSum = 22364
     Precision = 0.1596394300668838
a9:  Normal Distribution. Mean = 0.3196 StandardDev = 0.1566 WeightSum = 22364
     Precision = 0.002036659877800407
a10: Normal Distribution. Mean = 0.3145 StandardDev = 0.1618 WeightSum = 22364
     Precision = 0.0013937282229965157
a11: Normal Distribution. Mean = 0.3278 StandardDev = 0.1671 WeightSum = 22364
     Precision = 0.002242152466367713
a12: Normal Distribution. Mean = 0.1855 StandardDev = 0.0364 WeightSum = 22364
     Precision = 0.0010186528497409327
a13: Normal Distribution. Mean = 0.5016 StandardDev = 0.1758 WeightSum = 22364
     Precision = 0.001106949806949807
a14: Normal Distribution. Mean = 0.3281 StandardDev = 0.1483 WeightSum = 22364
     Precision = 8.32345971563981E-4
a15: Normal Distribution. Mean = 0.1218 StandardDev = 0.043 WeightSum = 22364
     Precision = 5.289256198347108E-4
a16: Normal Distribution. Mean = 0.0343 StandardDev = 0.7235 WeightSum = 22364
     Precision = 0.003686635944700184
a17: Normal Distribution. Mean = 0.0227 StandardDev = 0.7732 WeightSum = 22364
     Precision = 0.004805896805896572
a18: Normal Distribution. Mean = 0.5332 StandardDev = 0.2708 WeightSum = 22364
     Precision = 0.0036524752475247525
Class 1: Prior probability = 0.11

Time taken to build model: 0.65 seconds
### Evaluation on training set

#### Summary

- Correctly Classified Instances: 22258 (89.032 %)
- Incorrectly Classified Instances: 2742 (10.968 %)
- Kappa statistic: -0.0036
- Mean absolute error: 0.1911
- Root mean squared error: 0.3126
- Relative absolute error: 101.3143 %
- Root relative squared error: 101.8 %
- Total Number of Instances: 25000

#### Detailed Accuracy By Class

<table>
<thead>
<tr>
<th>TP Rate</th>
<th>FP Rate</th>
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<th>Recall</th>
<th>F-Measure</th>
<th>ROC Area</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.995</td>
<td>0.997</td>
<td>0.894</td>
<td>0.995</td>
<td>0.942</td>
<td>0.516</td>
<td>-1</td>
</tr>
<tr>
<td>0.003</td>
<td>0.005</td>
<td>0.066</td>
<td>0.003</td>
<td>0.006</td>
<td>0.516</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Confusion Matrix

```
a   b  <-- classified as
22250 114 | a = -1
2628  8   | b = 1
```
Dataset: DATASET.arff
Test Set: TestData.arff
Headers OK
Relation: R
Attributes: (21)
a1 a2 a3 a4 a5 a6 a7 a8 a9 a10 a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 class
Values: (2)
-1 1
Dataset OK
25000 items
Test Set OK
2000 items

/***************************************************************************/
Computing k = 1 ... Done in 14.78 secs

Results:
Class value: -1
Computed: 1795
Correct: 887
Real: 1000
Accuracy: 88.7%

Class value: 1
Computed: 205
Correct: 92
Real: 1000
Accuracy: 9.2%

Total Accuracy: 48.95%
/***************************************************************************/

/***************************************************************************/
Computing k = 3 ... Done in 14.76 secs

Results:
Class value: -1
Computed: 1943
Correct: 971
Real: 1000
Accuracy: 97.1%

Class value: 1
Computed: 57
Correct: 28
Real: 1000
Accuracy: 2.8%

Total Accuracy: 49.95%
/***************************************************************************/
Computing k = 5... Done in 14.83 secs

Results:

Class value: -1
Computed: 1981
Correct: 991
Real: 1000
Accuracy: 99.1%

Class value: 1
Computed: 19
Correct: 10
Real: 1000
Accuracy: 1%

Total Accuracy: 50.05%

Computing k = 7... Done in 14.89 secs

Results:

Class value: -1
Computed: 1998
Correct: 999
Real: 1000
Accuracy: 99.9%

Class value: 1
Computed: 2
Correct: 1
Real: 1000
Accuracy: 0.1%

Total Accuracy: 50%

Computing k = 9... Done in 14.89 secs

Results:

Class value: -1
Computed: 1998
Correct: 999
Real: 1000
Accuracy: 99.9%

Class value: 1
Computed: 2
Correct: 1
Real: 1000
Accuracy: 0.1%

Total Accuracy: 50%
Results:

Class value: -1
Computed: 1999
Correct: 1000
Real: 1000
Accuracy: 100%

Class value: 1
Computed: 1
Correct: 1
Real: 1000
Accuracy: 0.1%

Total Accuracy: 50.05%

/* *******************************************/
Computing k = 13… Done in 14.87 secs

Results:

Class value: -1
Computed: 2000
Correct: 1000
Real: 1000
Accuracy: 100%

Class value: 1
Computed: 0
Correct: 0
Real: 1000
Accuracy: 0%

Total Accuracy: 50%

/* *******************************************/
/* *******************************************/
Computing k >= 15… Done in 14.89 secs

Results:

Class value: -1
Computed: 2000
Correct: 1000
Real: 1000
Accuracy: 100%

Class value: 1
Computed: 0
Correct: 0
Real: 1000
Accuracy: 0%

Total Accuracy: 50%

/* *******************************************/