

## 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	%
Incorrectly Classified Instances	1000	50	%
Kappa statistic	0		
Mean absolute error	0.5		
Root mean squared error	0.6369		
Relative absolute error	100	%	
Root relative squared error	100.0031	%	
Total Number of Instances	2000		

=== Detailed Accuracy By Class ===

TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
1	1	0.5	1	0.667	0.5	-1
0	0	0	0	0.5	1	1

=== 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

a19: Normal Distribution. Mean = 0.9418 StandardDev = 0.2554 WeightSum = 22364  
Precision = 0.0030944700460829493  
a20: Normal Distribution. Mean = 133.392 StandardDev = 124.5744 WeightSum = 22364  
Precision = 1.2259786476868328

Class 1: Prior probability = 0.11

a1: Normal Distribution. Mean = 0.3226 StandardDev = 0.1469 WeightSum = 2636 Precision = 8.32345971563981E-4  
a2: Normal Distribution. Mean = 0.8669 StandardDev = 0.628 WeightSum = 2636 Precision = 0.00630407911001236  
a3: Normal Distribution. Mean = 44.5328 StandardDev = 6.8156 WeightSum = 2636 Precision = 0.18135658914728586  
a4: Normal Distribution. Mean = 3.0509 StandardDev = 1.2615 WeightSum = 2636 Precision = 0.01193603133159269  
a5: Normal Distribution. Mean = 1.1246 StandardDev = 0.15 WeightSum = 2636 Precision = 0.005948275862068966  
a6: Normal Distribution. Mean = 532.7206 StandardDev = 145.9947 WeightSum = 2636 Precision = 2.7860696517412937  
a7: Normal Distribution. Mean = 403.6297 StandardDev = 228.3141 WeightSum = 2636 Precision = 0.7219547775346462  
a8: Normal Distribution. Mean = -32.5434 StandardDev = 39.6947 WeightSum = 2636 Precision = 0.1596394300668838  
a9: Normal Distribution. Mean = 0.3196 StandardDev = 0.1557 WeightSum = 2636 Precision = 0.002036659877800407  
a10: Normal Distribution. Mean = 0.3158 StandardDev = 0.1585 WeightSum = 2636 Precision = 0.0013937282229965157  
a11: Normal Distribution. Mean = 0.3276 StandardDev = 0.1612 WeightSum = 2636 Precision = 0.002242152466367713  
a12: Normal Distribution. Mean = 0.1857 StandardDev = 0.0367 WeightSum = 2636 Precision = 0.0010186528497409327  
a13: Normal Distribution. Mean = 0.5077 StandardDev = 0.1747 WeightSum = 2636 Precision = 0.001106949806949807  
a14: Normal Distribution. Mean = 0.3226 StandardDev = 0.1469 WeightSum = 2636 Precision = 8.32345971563981E-4  
a15: Normal Distribution. Mean = 0.1236 StandardDev = 0.0426 WeightSum = 2636 Precision = 5.289256198347108E-4  
a16: Normal Distribution. Mean = 0.0134 StandardDev = 0.7093 WeightSum = 2636 Precision = 0.003686635944700184  
a17: Normal Distribution. Mean = 0.0281 StandardDev = 0.8108 WeightSum = 2636 Precision = 0.004805896805896572  
a18: Normal Distribution. Mean = 0.5382 StandardDev = 0.27 WeightSum = 2636 Precision = 0.0036524752475247525  
a19: Normal Distribution. Mean = 0.9324 StandardDev = 0.2507 WeightSum = 2636 Precision = 0.0030944700460829493  
a20: Normal Distribution. Mean = 128.1101 StandardDev = 122.6162 WeightSum = 2636 Precision = 1.2259786476868328

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 ===

TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
0.995	0.997	0.894	0.995	0.942	0.516	-1
0.003	0.005	0.066	0.003	0.006	0.516	1

=== Confusion Matrix ===

```
a  b <-- classified as
22250 114 | a = -1
2628  8 | b = 1
```

## K-NN

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%

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/\*\*\*\*\*/  
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%

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```

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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%

```

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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%

```

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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%

```

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Computing k = 11... Done in 15.19 secs

```

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%

```

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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%

```

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```