Model Test Option

1. Decision Tree C4.5 version 8

Random Tree

2.

3. Random Forest

Use training set

```
Time taken to build model: 0.02 seconds
=== Evaluation on training set ===
Time taken to test model on training data: 0.07 seconds
=== Summary ===
0.0405
Mean absolute error
                                      0.1717
8.1085 %
34.3721 %
Root mean squared error
Relative absolute error
Root relative squared error
Total Number of Instances
                                     8124
=== Detailed Accuracy By Class ===
                 TP Rate FP Rate Precision Recall F-Measure MCC
                                                                            ROC Area PRC Area Class
0.923 0.008 0.991 0.923 0.956 0.920 0.998 0.998 p
0.992 0.077 0.933 0.992 0.962 0.920 0.998 0.998 e
Weighted Avg. 0.959 0.044 0.961 0.959 0.959 0.920 0.998 0.998
=== Confusion Matrix ===
    a b <-- classified as
3614 302 | a = p
32 4176 | b = e
```

Percentage split 66%

Cross-validation folds 10

```
Time taken to build model: 0.01 seconds

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

Correctly Classified Instances 7785 95.8272 %
Incorrectly Classified Instances 339 4.1728 %
Kappa statistic 0.9162
Mean absolute error 0.0419
Root mean squared error 0.1757
Relative absolute error 8.3962 %
Root relative squared error 35.1594 %
Total Number of Instances 8124

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 0.922 0.008 0.991 0.922 0.955 0.918 0.998 0.998 p
0.992 0.078 0.932 0.992 0.961 0.918 0.998 0.998 e
Weighted Avg. 0.958 0.044 0.960 0.958 0.958 0.918 0.998 0.998

=== Confusion Matrix ===

a b <-- classified as 3609 307 | a = p 32 4176 | b = e
```

4.

Naive Bayes

AdaBoostM1-Naive Bayes

5.

```
=== Summary ===
Correctly Classified Instances 2761
Incorrectly Classified Instances 1
Kappa statistic 0.9993
                                                               99.9638 %
                                                                  0.0362 %
                                             0.0002
0.0097
0.037 %
1.9447 %
Mean absolute error
Root mean squared error 0.0
Root relative absolute error 1.1
Root relative squared error 2762
=== Detailed Accuracy By Class ===
                    TP Rate FP Rate Precision Recall F-Measure MCC
                                                                                      ROC Area PRC Area Class
                   0.999 0.000 1.000 0.999 1.000 0.999 1.000 1.000 p
1.000 0.001 0.999 1.000 1.000
Weighted Avg. 1.000 0.000 1.000 1.000 1.000
                                                                          0.999 1.000 1.000
0.999 1.000 1.000
                                                                                                    1.000
 === Confusion Matrix ===
 a b <-- classified as
1351 1 | a = p
0 1410 | b = e
```

Use training set === Summary === Correctly Classified Instances 7829 Incorrectly Classified Instances 295 96.3688 % 3.6312 % 0.9271 0.0364 Kappa statistic Mean absolute error 0.1599 7.2844 % Root mean squared error Relative absolute error Root relative squared error 31.9966 % 8124 Total Number of Instances === Detailed Accuracy By Class === TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 0.933 0.007 0.992 0.933 0.961 0.929 0.999 0.998 p 0.993 0.067 0.941 0.993 0.966 0.929 0.999 0.999 e Weighted Avg. 0.964 0.038 0.965 0.964 0.964 0.929 0.999 0.999 === Confusion Matrix === a b <-- classified as 3652 264 | a = p 31 4177 | b = e

6. Bayes Net

```
=== Summary ===
Correctly Classified Instances 2641 95.6191 %
Incorrectly Classified Instances 121 4.3809 %
Wappa statistic 0.9122
                                                0.9122
0.0445
Kappa statistic
Mean absolute error
                                                0.1822
8.9118 %
36.4432 %
Root mean squared error
Relative absolute error
Relative absolute error
Root relative squared error
Total Number of Instances
Total Number of Instances
                                              2762
=== Detailed Accuracy By Class ===
                     TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 0.919 0.008 0.991 0.919 0.954 0.915 0.998 0.998 p
                   0.992 0.081 0.927 0.992 0.959 0.915 0.998 0.998 0.998 0.956 0.956 0.045 0.958 0.956 0.956 0.915 0.998 0.998
                                                                                                              0.998
Weighted Avg.
=== Confusion Matrix ===
    a b <-- classified as
 1242 110 | a = p
11 1399 | b = e
```

```
Use training set
                                                  === Summary ===
                                                  | Correctly Classified Instances | 2762 | 100 | $ | Incorrectly Classified Instances | 0 | 0 | $ | Kappa statistic | 1 | Mean absolute error | 0 |
                                                  Mean absolute error
                                                  Root mean squared error
                                                  0.0055 %
0.0058 %
                                                  === Detailed Accuracy By Class ===
                                                  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Cla
1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 p
1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 e
Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000
                                                                                                                                            ROC Area PRC Area Class
                                                   === Confusion Matrix ===
                                                   a b <-- classified as
1352 0 | a = p
0 1410 | b = e
IBK (using 3 neighbors)
                                                 Percentage split 66%
                                                  === Summary ===
                                                  Correctly Classified Instances 2762 100
Incorrectly Classified Instances 0 0
Kappa statistic 1
                                                  Mean absolute error

Root mean squared error

Relative absolute error

Root relative squared error

0.0055 %

0.0058 %
                                                  === Detailed Accuracy By Class ===
                                                                      TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class
                                                  === Confusion Matrix ===
                                                   a b <-- classified as
1352 0 | a = p
0 1410 | b = e
```

7.

```
Use training set
                                                 === Summary ===
                                                 Correctly Classified Instances 8124
Incorrectly Classified Instances 0
Kappa statistic 1
                                                                                                         100
0
                                                                                                                             e,
                                                 Mean absolute error
                                                 ş
                                                 === Detailed Accuracy By Class ===
                                                                     TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class
                                                 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 p
1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 e
Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000
                                                 === Confusion Matrix ===
                                                  a b <-- classified as
3916 0 | a = p
0 4208 | b = e
SMO (Support Vector Classifier)
                                                Percentage split 66%
                                                 === Summary ===
                                                Correctly Classified Instances 2762
Incorrectly Classified Instances 0
                                                                                                                 100
                                                 Mean absolute error
                                                                                                0
                                                === Detailed Accuracy By Class ===
                                                                   TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 p 1.000 0.000 1.000 1.000 1.000 1.000 1.000 e 1.000 0.000 1.000 1.000 1.000 1.000 1.000
                                                 Weighted Avg.
                                                 === Confusion Matrix ===
                                                  a b <-- classified as
1352 0 | a = p
0 1410 | b = e
```

9. K star

10.

Classification via Regression

```
Use training set
                                                                                                                                                                               === Summary ===
                                                                                                                                                                               Correctly Classified Instances
                                                                                                                                                                                                                                                                                                                                 8124
                                                                                                                                                                               Incorrectly Classified Instances
                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                               Kappa statistic
                                                                                                                                                                               Mean absolute error
                                                                                                                                                                                Root mean squared error
                                                                                                                                                                             Root mean squared error
Relative absolute error
Root relative squared error
Total Number of Instances
                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                8124
                                                                                                                                                                                === Detailed Accuracy By Class ===
                                                                                                                                                                                                                                                   TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class
                                                                                                                                                                               | 1.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | p | 1.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | e | Weighted Avg. | 1.000 | 0.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.00
                                                                                                                                                                                 === Confusion Matrix ===
                                                                                                                                                                                   a b <-- classified as
3916 0 | a = p
0 4208 | b = e
11.
                                                                                                                                                                            Percentage split 66%
                                                                                                                                                                              === Summary ===
                                                                                                                                                                             Correctly Classified Instances 2762
Incorrectly Classified Instances 0
                                                                                                                                                                                                                                                                                                                                                                                                      100 %
                                                                                                                                                                              Incorrectly Classified Instances
                                                                                                                                                                                                                                                                                                                                                                                                                0
```

Logistic Regression

```
0
  Kappa statistic
                                                                                                                                                                                                                                                   1
  Mean absolute error
                                                                                                                                                                                                                                                   0
Mean absolute error
Root mean squared error
Relative absolute error
Root relative squared error
                                                                                                                                                                                                                       0
  Total Number of Instances
    === Detailed Accuracy By Class ===
                                                                                                     TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Cl. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 p. 1.000 1.000 p. 1.000 1.000 p. 1.000 
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ROC Area PRC Area Class
 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000
    === Confusion Matrix ===
      a b <-- classified as
1352 0 | a = p
0 1410 | b = e
```

Use training set === Summary === 98.5229 % Correctly Classified Instances 8004 Incorrectly Classified Instances 120 1.4771 % 0.9704 Kappa statistic 0.0148 Mean absolute error Root mean squared error 2.958 % 24.323 % Relative absolute error Root relative squared error Total Number of Instances === Detailed Accuracy By Class === TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 0.969 0.000 1.000 0.969 0.984 0.971 0.985 0.992 e Weighted Avg. 0.985 0.016 0.986 0.985 0.985 0.971 0.985 0.978 0.978 === Confusion Matrix === a b <-- classified as 3796 120 | a = p 0 4208 | b = e

12. OneR

```
=== Summary ===
Correctly Classified Instances 2724
Incorrectly Classified Instances 38
Kappa statistic 0.9725
                                                                              98.6242 %
                                                                               1.3758 %
                                                     0.9725
0.0138
Mean absolute error
                                                     0.1173
2.7542 %
23.4582 %
Root mean squared error
Relative absolute error
Relative absolute error
Root relative squared error
Total Number of Instances
                                                  2762
=== Detailed Accuracy By Class ===
TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 0.972 0.000 1.000 0.972 0.986 0.973 0.986 0.986 p 1.000 0.028 0.974 1.000 0.987 0.987 0.986 0.974 e Weighted Avg. 0.986 0.014 0.987 0.986 0.986 0.986 0.980
=== Confusion Matrix ===
     a b <-- classified as
 1314 38 | a = p
0 1410 | b = e
```

13. Voted perceptron

Use training set === Summary === 0.0004 0.0288 % 0.083 % Root mean squared error Relative absolute error Root relative squared error 0.0 Relative absolute error === Detailed Accuracy By Class === TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class 1.000 0.000 1.000 1.000 1.000 1.000 1.000 p 1.000 0.000 1.000 1.000 1.000 1.000 e Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 === Confusion Matrix === a b <-- classified as 3916 0 | a = p 0 4208 | b = e

14. **Multilayer Perceptron**

```
=== Summary ===
100 %
0 %
=== Detailed Accuracy By Class ===
             TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class
             1.000 0.000 1.000 1.000 1.000 1.000 1.000 p
1.000 0.000 1.000 1.000 1.000 1.000 1.000 e
Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000
=== Confusion Matrix ===
  a b <-- classified as
 1352 0 | a = p
0 1410 | b = e
```

14. Classification via Regression