**SET 1 with k = 4**

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 3 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: full\_set1-weka.filters.unsupervised.attribute.Remove-R10

Instances: 2372

Attributes: 10

Word count limit ratio

Long sentences

Voice

Tense

Spell errors

Grammatical Errors

SS Essay

SS Topic Essay

Vocabulary

Grade

Test mode: 4-fold cross-validation

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

IB1 instance-based classifier

using 3 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 1888 79.5953 %

Incorrectly Classified Instances 484 20.4047 %

Kappa statistic 0.5618

Mean absolute error 0.1272

Root mean squared error 0.2858

Relative absolute error 51.7917 %

Root relative squared error 81.6049 %

Total Number of Instances 2372

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.886 0.374 0.822 0.886 0.853 0.536 0.811 0.849 B

0.644 0.082 0.731 0.644 0.685 0.587 0.854 0.658 A

0.539 0.017 0.716 0.539 0.615 0.596 0.859 0.538 C

0.538 0.000 1.000 0.538 0.700 0.733 0.923 0.781 D

Weighted Avg. 0.796 0.270 0.792 0.796 0.791 0.555 0.827 0.776

=== Confusion Matrix ===

a b c d <-- classified as

1390 145 33 0 | a = B

218 395 0 0 | b = A

82 0 96 0 | c = C

1 0 5 7 | d = D

**SET 1 with k = 10**

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 3 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: full\_set1-weka.filters.unsupervised.attribute.Remove-R10

Instances: 2372

Attributes: 10

Word count limit ratio

Long sentences

Voice

Tense

Spell errors

Grammatical Errors

SS Essay

SS Topic Essay

Vocabulary

Grade

Test mode: 10-fold cross-validation

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

IB1 instance-based classifier

using 3 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 1886 79.511 %

Incorrectly Classified Instances 486 20.489 %

Kappa statistic 0.5583

Mean absolute error 0.1266

Root mean squared error 0.2841

Relative absolute error 51.5747 %

Root relative squared error 81.1351 %

Total Number of Instances 2372

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.888 0.378 0.821 0.888 0.853 0.534 0.814 0.854 B

0.653 0.084 0.731 0.653 0.690 0.591 0.856 0.683 A

0.489 0.015 0.719 0.489 0.582 0.567 0.869 0.556 C

0.538 0.000 0.875 0.538 0.667 0.685 0.861 0.619 D

Weighted Avg. 0.795 0.273 0.790 0.795 0.789 0.552 0.829 0.786

=== Confusion Matrix ===

a b c d <-- classified as

1392 147 29 0 | a = B

213 400 0 0 | b = A

90 0 87 1 | c = C

1 0 5 7 | d = D

**SET 7 with k = 4**

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 3 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: full\_set7-weka.filters.unsupervised.attribute.Remove-R10

Instances: 2010

Attributes: 10

Word count limit ratio

Long sentences

Voice

Tense

Spell errors

Grammatical Errors

SS Essay

SS Topic Essay

Vocabulary

Grade

Test mode: 4-fold cross-validation

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

IB1 instance-based classifier

using 3 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 1323 65.8209 %

Incorrectly Classified Instances 687 34.1791 %

Kappa statistic 0.3391

Mean absolute error 0.1992

Root mean squared error 0.3622

Relative absolute error 72.547 %

Root relative squared error 97.8051 %

Total Number of Instances 2010

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.785 0.486 0.696 0.785 0.738 0.310 0.677 0.698 B

0.547 0.165 0.606 0.547 0.575 0.393 0.759 0.553 C

0.280 0.030 0.450 0.280 0.345 0.312 0.720 0.265 A

0.125 0.001 0.800 0.125 0.216 0.313 0.646 0.174 D

Weighted Avg. 0.658 0.340 0.649 0.658 0.646 0.337 0.706 0.609

=== Confusion Matrix ===

a b c d <-- classified as

925 201 53 0 | a = B

286 349 2 1 | b = C

116 0 45 0 | c = A

2 26 0 4 | d = D

**SET 7 with k = 10**

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 3 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: full\_set7-weka.filters.unsupervised.attribute.Remove-R10

Instances: 2010

Attributes: 10

Word count limit ratio

Long sentences

Voice

Tense

Spell errors

Grammatical Errors

SS Essay

SS Topic Essay

Vocabulary

Grade

Test mode: 10-fold cross-validation

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

IB1 instance-based classifier

using 3 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 1303 64.8259 %

Incorrectly Classified Instances 707 35.1741 %

Kappa statistic 0.3239

Mean absolute error 0.2024

Root mean squared error 0.3669

Relative absolute error 73.7265 %

Root relative squared error 99.0871 %

Total Number of Instances 2010

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.772 0.490 0.691 0.772 0.729 0.292 0.670 0.691 B

0.544 0.167 0.602 0.544 0.572 0.388 0.752 0.535 C

0.261 0.037 0.378 0.261 0.309 0.266 0.723 0.227 A

0.125 0.001 0.667 0.125 0.211 0.284 0.629 0.149 D

Weighted Avg. 0.648 0.343 0.637 0.648 0.637 0.320 0.699 0.596

=== Confusion Matrix ===

a b c d <-- classified as

910 202 66 1 | a = B

287 347 3 1 | b = C

118 1 42 0 | c = A

2 26 0 4 | d = D

**SET 8 with k = 4**

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 3 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: full\_set8-weka.filters.unsupervised.attribute.Remove-R10

Instances: 956

Attributes: 10

Word count limit ratio

Long sentences

Voice

Tense

Spell errors

Grammatical Errors

SS Essay

SS Topic Essay

Vocabulary

Grade

Test mode: 4-fold cross-validation

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

IB1 instance-based classifier

using 3 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 823 86.0879 %

Incorrectly Classified Instances 133 13.9121 %

Kappa statistic 0.2009

Mean absolute error 0.095

Root mean squared error 0.2504

Relative absolute error 78.0005 %

Root relative squared error 102.0561 %

Total Number of Instances 956

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.969 0.828 0.883 0.969 0.924 0.219 0.640 0.901 B

0.081 0.018 0.273 0.081 0.125 0.112 0.631 0.125 A

0.283 0.012 0.577 0.283 0.380 0.381 0.777 0.318 C

0.000 0.000 ? 0.000 ? ? 0.500 0.001 D

Weighted Avg. 0.861 0.719 ? 0.861 ? ? 0.647 0.807

=== Confusion Matrix ===

a b c d <-- classified as

802 16 10 0 | a = B

68 6 0 0 | b = A

38 0 15 0 | c = C

0 0 1 0 | d = D

**SET 8 with k = 10**

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 3 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: full\_set8-weka.filters.unsupervised.attribute.Remove-R10

Instances: 956

Attributes: 10

Word count limit ratio

Long sentences

Voice

Tense

Spell errors

Grammatical Errors

SS Essay

SS Topic Essay

Vocabulary

Grade

Test mode: 10-fold cross-validation

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

IB1 instance-based classifier

using 3 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 816 85.3556 %

Incorrectly Classified Instances 140 14.6444 %

Kappa statistic 0.1935

Mean absolute error 0.0967

Root mean squared error 0.2523

Relative absolute error 79.5102 %

Root relative squared error 102.8166 %

Total Number of Instances 956

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.959 0.820 0.883 0.959 0.920 0.199 0.646 0.904 B

0.095 0.024 0.250 0.095 0.137 0.112 0.649 0.137 A

0.283 0.016 0.517 0.283 0.366 0.357 0.781 0.321 C

0.000 0.000 ? 0.000 ? ? 0.699 0.002 D

Weighted Avg. 0.854 0.713 ? 0.854 ? ? 0.653 0.812

=== Confusion Matrix ===

a b c d <-- classified as

794 21 13 0 | a = B

67 7 0 0 | b = A

38 0 15 0 | c = C

0 0 1 0 | d = D