For Trilinos with Anamod features , all features after "removeuseless filter"

With 54 features: with 66% split

=== Run information ===

Time taken to build model: 0.73 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances 4575 93.7884 %

Incorrectly Classified Instances 303 6.2116 %

Kappa statistic 0.706

Mean absolute error 0.0721

Root mean squared error 0.2347

Relative absolute error 33.393 %

Root relative squared error 71.3969 %

Total Number of Instances 4878

=== Detailed Accuracy By Class ===

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

0.722 0.032 0.761 0.722 0.741 0.89 good

0.968 0.278 0.961 0.968 0.965 0.89 bad

Weighted Avg. 0.938 0.248 0.937 0.938 0.937 0.89

=== Confusion Matrix ===

a b <-- classified as

434 167 | a = good

136 4141 | b = bad

With n-fold cross validation:

=== Confusion Matrix ===

a b <-- classified as

1267 498 | a = good

389 12194 | b = bad

For Trilinos with Anamod features ,

With RS1 features:7 features : with 66% split

=== Run information ===

Scheme:weka.classifiers.trees.RandomForest -I 100 -K 0 -S 1

Relation: petsc\_data-weka.filters.unsupervised.attribute.RemoveUseless-M99.0-weka.filters.unsupervised.attribute.Remove-R1,3,5-12,14-18,20-23,25,27-32,34-54

Instances: 14348

Attributes: 9

avgdistfromdiag

blocksize

left-bandwidth

diagonal-dominance

col-variability

nnzeros

row-variability

solver

class

Test mode:split 66.0% train, remainder test

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

Random forest of 100 trees, each constructed while considering 4 random features.

Out of bag error: 0.0535

Time taken to build model: 3.49 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances 4601 94.3214 %

Incorrectly Classified Instances 277 5.6786 %

Kappa statistic 0.7292

Mean absolute error 0.0809

Root mean squared error 0.205

Relative absolute error 37.4608 %

Root relative squared error 62.372 %

Total Number of Instances 4878

=== Detailed Accuracy By Class ===

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

0.735 0.028 0.789 0.735 0.761 0.97 good

0.972 0.265 0.963 0.972 0.968 0.97 bad

Weighted Avg. 0.943 0.235 0.942 0.943 0.942 0.97

=== Confusion Matrix ===

a b <-- classified as

442 159 | a = good

118 4159 | b = bad

With n-fold cross validation:

=== Confusion Matrix ===

a b <-- classified as

1323 442 | a = good

308 12275 | b = bad

For Trilinos with Anamod features ,

With RS2 features:6 features : with 66% split

=== Run information ===

Scheme:weka.classifiers.trees.RandomForest -I 100 -K 0 -S 1

Relation: petsc\_data-weka.filters.unsupervised.attribute.RemoveUseless-M99.0-weka.filters.unsupervised.attribute.Remove-R1,3,5-12,14-18,20-23,25,27-32,34-54-weka.filters.unsupervised.attribute.Remove-R6

Instances: 14348

Attributes: 8

avgdistfromdiag

blocksize

left-bandwidth

diagonal-dominance

col-variability

row-variability

solver

class

Test mode:split 66.0% train, remainder test

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

Random forest of 100 trees, each constructed while considering 3 random features.

Out of bag error: 0.0549

Time taken to build model: 2.92 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances 4587 94.0344 %

Incorrectly Classified Instances 291 5.9656 %

Kappa statistic 0.7096

Mean absolute error 0.0843

Root mean squared error 0.2078

Relative absolute error 39.024 %

Root relative squared error 63.2212 %

Total Number of Instances 4878

=== Detailed Accuracy By Class ===

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

0.7 0.026 0.791 0.7 0.743 0.967 good

0.974 0.3 0.959 0.974 0.966 0.967 bad

Weighted Avg. 0.94 0.266 0.938 0.94 0.939 0.967

=== Confusion Matrix ===

a b <-- classified as

421 180 | a = good

111 4166 | b = bad

With n-fold cross validation:

=== Confusion Matrix ===

a b <-- classified as

1291 474 | a = good

326 12257 | b = bad

**Trilinos with Trilinos computed features**

VFI

For all 38 features , all features after "removeuseless filter"

With 38 features: with 66% split

=== Run information ===

=== Run information ===

Scheme:weka.classifiers.misc.VFI -B 0.6

Relation: petsc\_data

Instances: 39388

Attributes: 38

Dummy Rows

Diagonal Sign

Eigen LM Re

Total No match %

Frob. Norm

One Norm

Trace

Eigen LR Im

Eigen SM Im

Upper Bandwidth

Max Nonzeros / Row

Abs Trace

Antisymm Inf Norm

Col Variance

Inf Norm

Antisymm Frob Norm

Eigen SM Re

Col Diag Dominance

Row Diag Dominance

Symm Inf Norm

Avg Nonzeros / Row

Diagonal Nonzeros

Min Nonzeros / Rows

Eigen LM Im

Dimension

Nonzeros

Lower Bandwidth

Eigen SR Re

Diag Variance

Eigen LR Re

Diagonal Mean

Eigen SR Im

Total Matching %

Row Variance

Symm Frob Norm

Total DNE %

solver

class

Test mode:split 66.0% train, remainder test

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

Voting feature intervals classifier

Time taken to build model: 0.09 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances 11139 83.1765 %

Incorrectly Classified Instances 2253 16.8235 %

Kappa statistic 0.3899

Mean absolute error 0.2265

Root mean squared error 0.3343

Relative absolute error 160.8491 %

Root relative squared error 125.1276 %

Total Number of Instances 13392

=== Detailed Accuracy By Class ===

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

0.93 0.176 0.306 0.93 0.461 0.95 good

0.824 0.07 0.993 0.824 0.9 0.95 bad

Weighted Avg. 0.832 0.079 0.94 0.832 0.866 0.95

=== Confusion Matrix ===

a b <-- classified as

963 73 | a = good

2180 10176 | b = bad

With n-cross validation:

=== Confusion Matrix ===

a b <-- classified as

2764 222 | a = good

6245 30157 | b = bad

For RS1 with 7 features:

With 66% data split:

=== Run information ===

Scheme:weka.classifiers.misc.VFI -B 0.6

Relation: petsc\_data-weka.filters.unsupervised.attribute.Remove-R2-6,8-17,20-21,23-30,32-35

Instances: 39388

Attributes: 9

Dummy Rows

Trace

Col Diag Dominance

Row Diag Dominance

Diagonal Nonzeros

Diagonal Mean

Total DNE %

solver

class

Test mode:split 66.0% train, remainder test

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

Voting feature intervals classifier

Time taken to build model: 0.02 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances 11357 84.8044 %

Incorrectly Classified Instances 2035 15.1956 %

Kappa statistic 0.4123

Mean absolute error 0.2172

Root mean squared error 0.3233

Relative absolute error 154.2483 %

Root relative squared error 121.0029 %

Total Number of Instances 13392

=== Detailed Accuracy By Class ===

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

0.903 0.157 0.326 0.903 0.479 0.949 good

0.843 0.097 0.99 0.843 0.911 0.949 bad

Weighted Avg. 0.848 0.101 0.939 0.848 0.878 0.949

=== Confusion Matrix ===

a b <-- classified as

936 100 | a = good

1935 10421 | b = bad

With n-cross validation:

=== Confusion Matrix ===

a b <-- classified as

2690 296 | a = good

5602 30800 | b = bad

For RS2 with 6 features:

With 66% data split:

== Run information ===

Scheme:weka.classifiers.misc.VFI -B 0.6

Relation: petsc\_data-weka.filters.unsupervised.attribute.Remove-R2-6,8-17,20-21,23-30,32-35-weka.filters.unsupervised.attribute.Remove-R5

Instances: 39388

Attributes: 8

Dummy Rows

Trace

Col Diag Dominance

Row Diag Dominance

Diagonal Mean

Total DNE %

solver

class

Test mode:split 66.0% train, remainder test

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

Voting feature intervals classifier

Time taken to build model: 0.03 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances 11357 84.8044 %

Incorrectly Classified Instances 2035 15.1956 %

Kappa statistic 0.4123

Mean absolute error 0.2157

Root mean squared error 0.3219

Relative absolute error 153.1919 %

Root relative squared error 120.4772 %

Total Number of Instances 13392

=== Detailed Accuracy By Class ===

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

0.903 0.157 0.326 0.903 0.479 0.949 good

0.843 0.097 0.99 0.843 0.911 0.949 bad

Weighted Avg. 0.848 0.101 0.939 0.848 0.878 0.949

=== Confusion Matrix ===

a b <-- classified as

936 100 | a = good

1935 10421 | b = bad

With n-cross validation:

=== Confusion Matrix ===

a b <-- classified as

2693 293 | a = good

5636 30766 | b = bad