shredCVL ML Notebook

Using the template of the machine learning module in datacamp.

```
##  [1] "forcats"       "stringr"       "dplyr"         "purrr"
##  [5] "readr"         "tidyr"         "tibble"        "tidyverse"
##  [9] "rpart"         "caretEnsemble" "C50"           "caTools"
## [13] "mlbench"       "caret"         "ggplot2"       "lattice"
## [17] "e1071"         "ranger"        "stats"         "graphics"
## [21] "grDevices"     "utils"         "datasets"      "methods"
## [25] "base"
```

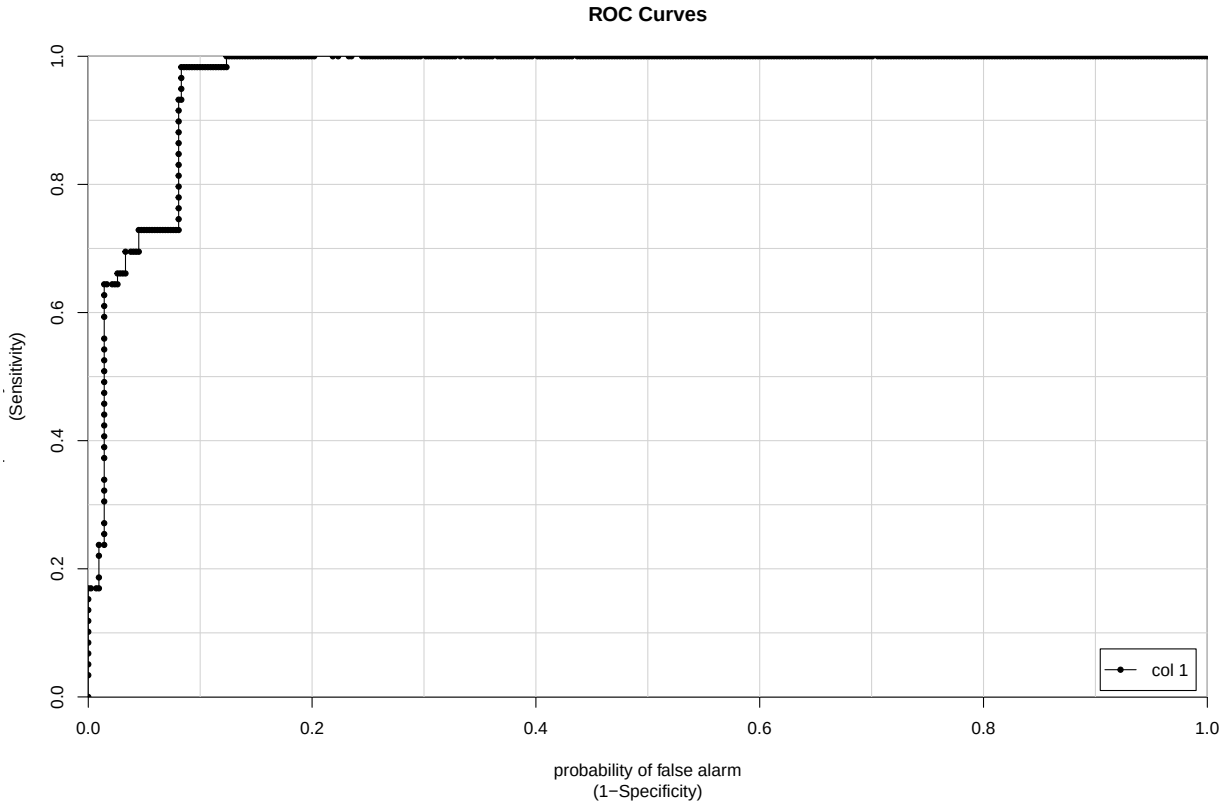
```
##
##    0    1
## 2107  294
```

```
## 'data.frame':    1802 obs. of  9 variables:
##  $ statusesCount         : num  2646 7941 61939 61939 15338 ...
##  $ friendsCount          : num  392 104 395 395 432 95 378 608 608 883 ...
##  $ followersCount        : num  209 144 6937 6937 537 ...
##  $ listedCount           : num  0 0 13 13 3 351 0 21 21 4 ...
##  $ acct_age              : num  499010 2314876 1293856 1293856 1917603 ...
##  $ langDiv               : num  0.872 0.878 0.851 0.851 0.915 ...
##  $ mean_time_betwn_tweets: num  188.6 291.5 20.9 20.9 125 ...
##  $ mCount                : int  1 1 2 2 1 2 2 2 2 2 ...
##  $ bot                   : Factor w/ 2 levels "0","1": 2 2 2 2 2 2 2 2 2 2 ...
```

```
##
##   0   1
## 526  73
```

```
##
##    0    1
## 1581  221
```

```
## [1] 0.2523
```




```
##           [,1]
## 0 vs. 1 0.9677
```

```
## [1] 0.2585
```

```
## + Fold01: parameter=none
## - Fold01: parameter=none
## + Fold02: parameter=none
## - Fold02: parameter=none
## + Fold03: parameter=none
## - Fold03: parameter=none
## + Fold04: parameter=none
## - Fold04: parameter=none
## + Fold05: parameter=none
## - Fold05: parameter=none
## + Fold06: parameter=none
## - Fold06: parameter=none
## + Fold07: parameter=none
## - Fold07: parameter=none
## + Fold08: parameter=none
## - Fold08: parameter=none
## + Fold09: parameter=none
## - Fold09: parameter=none
## + Fold10: parameter=none
## - Fold10: parameter=none
## Aggregating results
## Fitting final model on full training set
```

```
## Generalized Linear Model
```

```
##
## 2401 samples
##    8 predictor
##    2 classes: '0', '1'
##
## No pre-processing
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2160, 2160, 2162, 2161, 2161, 2161, ...
## Resampling results:
##
##   Accuracy  Kappa
##   0.9967    0.9847

## + Fold1: parameter=none
## - Fold1: parameter=none
## + Fold2: parameter=none
## - Fold2: parameter=none
## + Fold3: parameter=none
## - Fold3: parameter=none
## + Fold4: parameter=none
## - Fold4: parameter=none
## + Fold5: parameter=none
## - Fold5: parameter=none
## Aggregating results
## Fitting final model on full training set

## Generalized Linear Model
##
## 2401 samples
##    8 predictor
##    2 classes: '0', '1'
##
## No pre-processing
## Resampling: Cross-Validated (5 fold)
## Summary of sample sizes: 1921, 1921, 1920, 1921, 1921
## Resampling results:
##
##   Accuracy  Kappa
##   0.995     0.977

## + Fold1: parameter=none
## - Fold1: parameter=none
## + Fold2: parameter=none
## - Fold2: parameter=none
## + Fold3: parameter=none
## - Fold3: parameter=none
## + Fold4: parameter=none
## - Fold4: parameter=none
## + Fold5: parameter=none
## - Fold5: parameter=none
## Aggregating results
## Fitting final model on full training set

## Generalized Linear Model
##
## 2401 samples
```

```
##    8 predictor
##    2 classes: '0', '1'
##
## No pre-processing
## Resampling: Cross-Validated (5 fold)
## Summary of sample sizes: 1921, 1920, 1921, 1922, 1920
## Resampling results:
##
##   Accuracy  Kappa
##   0.9858    0.9385
```

```
##    [1] 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
##   [35] 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
##   [69] 0 0 1 0 1 0 0 0 0 0 0 1 1 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
##  [103] 0 0 0 0 0 0 0 0 1 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
##  [137] 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
##  [171] 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0
##  [205] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0
##  [239] 0 0 0 0 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 0
##  [273] 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0
##  [307] 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0
##  [341] 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 1 0 0 1 0
##  [375] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
##  [409] 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0
##  [443] 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 1 1
##  [477] 0 0 0 1 0 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
##  [511] 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
##  [545] 0 0 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0
##  [579] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
##  [613] 0 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
##  [647] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1
##  [681] 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 1
##  [715] 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0
##  [749] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
##  [783] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 1 1 0 0 0 1 0
##  [817] 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0
##  [851] 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
##  [885] 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 1 0 0 1
##  [919] 0 0 0 0 0 1 0 1 0 0 0 0 0 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
##  [953] 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
##  [987] 0 0 0 0 0 0 1 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1021] 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 1 0 1 0 0 0 0 0
## [1055] 0 0 1 0 1 0 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0
## [1089] 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1123] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1157] 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 1
## [1191] 0 0 0 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1225] 0 0 0 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
## [1259] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0
## [1293] 1 0 0 0 0 0 0 0 1 1 0 0 0 1 1 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0
## [1327] 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 1 1 1 0 0 0 0 0 0 0 0 1 0 0 0
## [1361] 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
## [1395] 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
## [1429] 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0
```

```
## [1463] 1 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1497] 0 0 0 0 0 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1531] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1565] 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1599] 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 1
## [1633] 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
## [1667] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
## [1701] 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1735] 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
## [1769] 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 1 0
## [1803] 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1837] 0 0 1 0 1 0 0 0 1 1 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
## [1871] 1 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [1905] 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
## [1939] 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
## [1973] 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 1 0 0 1 0 0 0 0 0 1 0 0 0 0 1 0 0
## [2007] 0 0 0 0 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
## [2041] 0 0 0 0 0 0 0 0 1 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
## [2075] 0 0 1 0 0 0 1 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0
## [2109] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [2143] 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 1
## [2177] 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 1
## [2211] 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [2245] 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [2279] 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [2313] 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
## [2347] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
## [2381] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## Levels: 0 1
```

```
##         [,1]
## 0 vs. 1    1
```

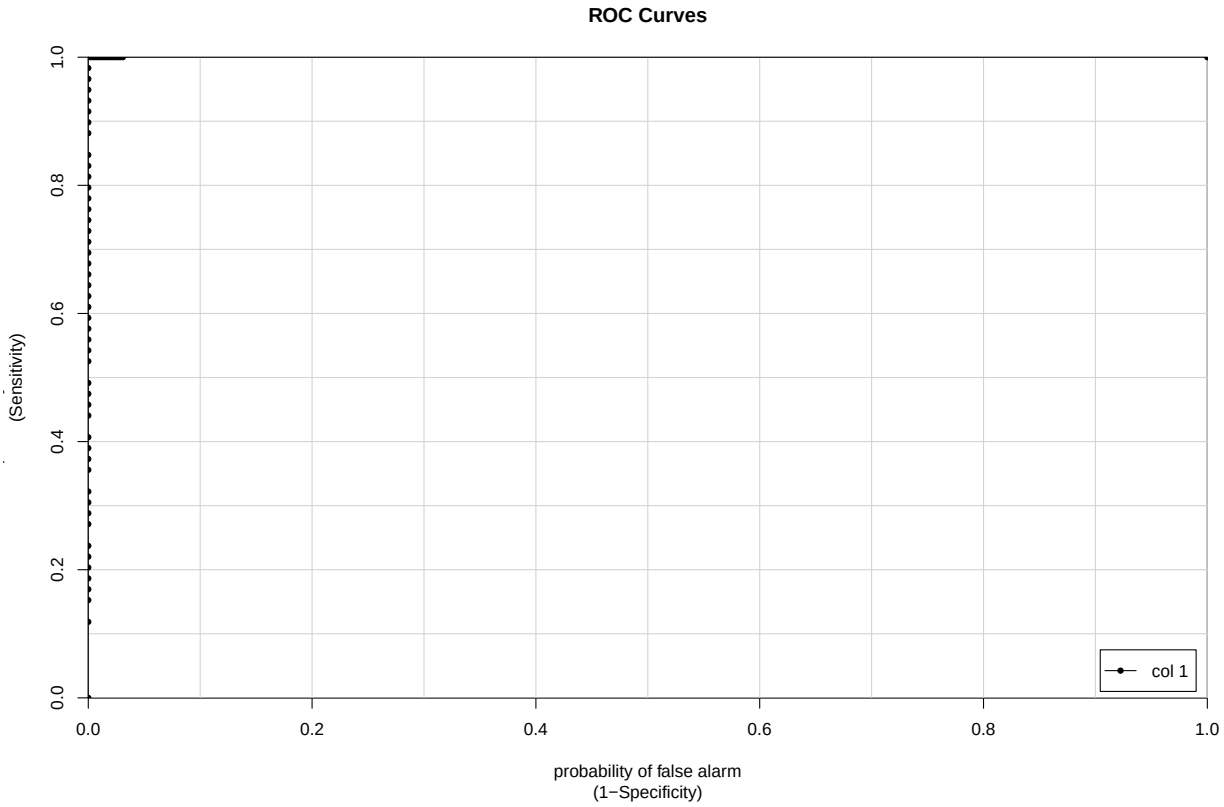
```
## Confusion Matrix and Statistics
##
##           Reference
## Prediction   0   1
##          0 420   0
##          1   1  59
##
##                Accuracy : 0.998
##                  95% CI : (0.988, 1)
##     No Information Rate : 0.877
##     P-Value [Acc > NIR] : <2e-16
##
##                   Kappa : 0.99
##  Mcnemar's Test P-Value : 1
##
##             Sensitivity : 0.998
##             Specificity : 1.000
##          Pos Pred Value : 1.000
##          Neg Pred Value : 0.983
##              Prevalence : 0.877
##          Detection Rate : 0.875
##    Detection Prevalence : 0.875
```

```
##       Balanced Accuracy : 0.999
##
##        'Positive' Class : 0
##
```

```
## Confusion Matrix and Statistics
##
##           Reference
## Prediction   0   1
##          0 420   0
##          1   1  59
##
##                Accuracy : 0.998
##                  95% CI : (0.988, 1)
##     No Information Rate : 0.877
##     P-Value [Acc > NIR] : <2e-16
##
##                   Kappa : 0.99
##  Mcnemar's Test P-Value : 1
##
##             Sensitivity : 0.998
##             Specificity : 1.000
##          Pos Pred Value : 1.000
##          Neg Pred Value : 0.983
##              Prevalence : 0.877
##          Detection Rate : 0.875
##    Detection Prevalence : 0.875
##       Balanced Accuracy : 0.999
##
##        'Positive' Class : 0
##
```

```
## Confusion Matrix and Statistics
##
##           Reference
## Prediction   0   1
##          0 420   0
##          1   1  59
##
##                Accuracy : 0.998
##                  95% CI : (0.988, 1)
##     No Information Rate : 0.877
##     P-Value [Acc > NIR] : <2e-16
##
##                   Kappa : 0.99
##  Mcnemar's Test P-Value : 1
##
##             Sensitivity : 0.998
##             Specificity : 1.000
##          Pos Pred Value : 1.000
##          Neg Pred Value : 0.983
##              Prevalence : 0.877
##          Detection Rate : 0.875
##    Detection Prevalence : 0.875
##       Balanced Accuracy : 0.999
```

```
##
##        'Positive' Class : 0
##
```




```
##         [,1]
## 0 vs. 1    1
```

```
## + Fold01: parameter=none
## - Fold01: parameter=none
## + Fold02: parameter=none
## - Fold02: parameter=none
## + Fold03: parameter=none
## - Fold03: parameter=none
## + Fold04: parameter=none
## - Fold04: parameter=none
## + Fold05: parameter=none
## - Fold05: parameter=none
## + Fold06: parameter=none
## - Fold06: parameter=none
## + Fold07: parameter=none
## - Fold07: parameter=none
## + Fold08: parameter=none
## - Fold08: parameter=none
## + Fold09: parameter=none
## - Fold09: parameter=none
## + Fold10: parameter=none
## - Fold10: parameter=none
## Aggregating results
```

```
## Fitting final model on full training set
```

```
## Generalized Linear Model
##
## 2401 samples
##    8 predictor
##    2 classes: 'X0', 'X1'
##
## No pre-processing
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2162, 2161, 2161, 2160, 2160, 2161, ...
## Resampling results:
##
##   ROC     Sens    Spec
##   0.9988  0.9957  0.9864
```

```
## + Fold1: mtry=2, min.node.size=1, splitrule=gini
## - Fold1: mtry=2, min.node.size=1, splitrule=gini
## + Fold1: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold1: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=2, min.node.size=1, splitrule=gini
## - Fold2: mtry=2, min.node.size=1, splitrule=gini
## + Fold2: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=2, min.node.size=1, splitrule=gini
## - Fold3: mtry=2, min.node.size=1, splitrule=gini
## + Fold3: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=2, min.node.size=1, splitrule=gini
## - Fold4: mtry=2, min.node.size=1, splitrule=gini
## + Fold4: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold4: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=2, min.node.size=1, splitrule=gini
## - Fold5: mtry=2, min.node.size=1, splitrule=gini
## + Fold5: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=2, min.node.size=1, splitrule=extratrees
## Aggregating results
## Selecting tuning parameters
## Fitting mtry = 2, splitrule = gini, min.node.size = 1 on full training set
```

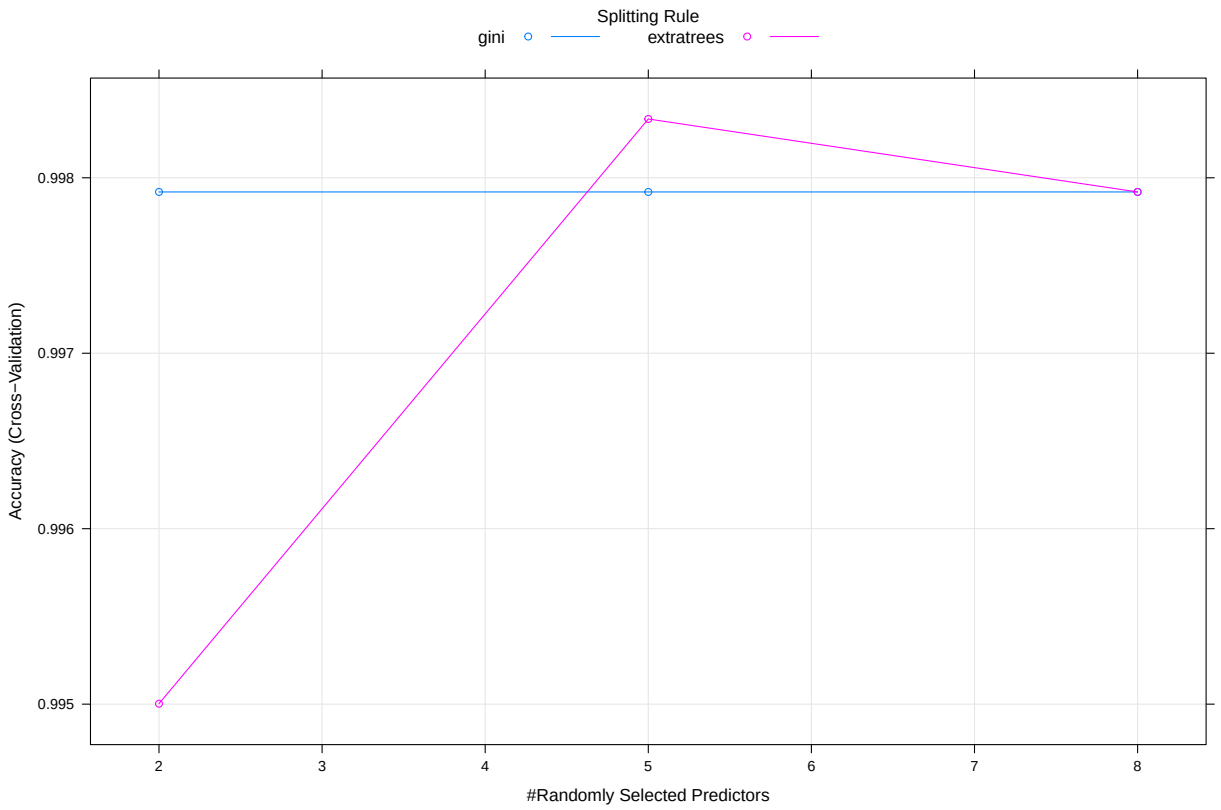
```
## Random Forest
##
## 2401 samples
##    8 predictor
##    2 classes: '0', '1'
##
## No pre-processing
## Resampling: Cross-Validated (5 fold)
## Summary of sample sizes: 1921, 1921, 1920, 1921, 1921
## Resampling results across tuning parameters:
##
##   splitrule   Accuracy  Kappa
##   gini        0.9979    0.9905
##   extratrees  0.9950    0.9765
##
```

```
## Tuning parameter 'mtry' was held constant at a value of 2
## Tuning
##  parameter 'min.node.size' was held constant at a value of 1
## Accuracy was used to select the optimal model using the largest value.
## The final values used for the model were mtry = 2, splitrule = gini
##  and min.node.size = 1.
```

```
## + Fold1: mtry=2, min.node.size=1, splitrule=gini
## - Fold1: mtry=2, min.node.size=1, splitrule=gini
## + Fold1: mtry=5, min.node.size=1, splitrule=gini
## - Fold1: mtry=5, min.node.size=1, splitrule=gini
## + Fold1: mtry=8, min.node.size=1, splitrule=gini
## - Fold1: mtry=8, min.node.size=1, splitrule=gini
## + Fold1: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold1: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold1: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold1: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold1: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold1: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=2, min.node.size=1, splitrule=gini
## - Fold2: mtry=2, min.node.size=1, splitrule=gini
## + Fold2: mtry=5, min.node.size=1, splitrule=gini
## - Fold2: mtry=5, min.node.size=1, splitrule=gini
## + Fold2: mtry=8, min.node.size=1, splitrule=gini
## - Fold2: mtry=8, min.node.size=1, splitrule=gini
## + Fold2: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=2, min.node.size=1, splitrule=gini
## - Fold3: mtry=2, min.node.size=1, splitrule=gini
## + Fold3: mtry=5, min.node.size=1, splitrule=gini
## - Fold3: mtry=5, min.node.size=1, splitrule=gini
## + Fold3: mtry=8, min.node.size=1, splitrule=gini
## - Fold3: mtry=8, min.node.size=1, splitrule=gini
## + Fold3: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=2, min.node.size=1, splitrule=gini
## - Fold4: mtry=2, min.node.size=1, splitrule=gini
## + Fold4: mtry=5, min.node.size=1, splitrule=gini
## - Fold4: mtry=5, min.node.size=1, splitrule=gini
## + Fold4: mtry=8, min.node.size=1, splitrule=gini
## - Fold4: mtry=8, min.node.size=1, splitrule=gini
## + Fold4: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold4: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold4: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=8, min.node.size=1, splitrule=extratrees
```

```
## - Fold4: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=2, min.node.size=1, splitrule=gini
## - Fold5: mtry=2, min.node.size=1, splitrule=gini
## + Fold5: mtry=5, min.node.size=1, splitrule=gini
## - Fold5: mtry=5, min.node.size=1, splitrule=gini
## + Fold5: mtry=8, min.node.size=1, splitrule=gini
## - Fold5: mtry=8, min.node.size=1, splitrule=gini
## + Fold5: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=8, min.node.size=1, splitrule=extratrees
## Aggregating results
## Selecting tuning parameters
## Fitting mtry = 5, splitrule = extratrees, min.node.size = 1 on full training set
```

```
## Random Forest
##
## 2401 samples
##    8 predictor
##    2 classes: '0', '1'
##
## No pre-processing
## Resampling: Cross-Validated (5 fold)
## Summary of sample sizes: 1921, 1922, 1920, 1921, 1920
## Resampling results across tuning parameters:
##
##   mtry  splitrule   Accuracy  Kappa
##   2     gini        0.9979    0.9904
##   2     extratrees  0.9950    0.9762
##   5     gini        0.9979    0.9904
##   5     extratrees  0.9983    0.9923
##   8     gini        0.9979    0.9904
##   8     extratrees  0.9979    0.9904
##
## Tuning parameter 'min.node.size' was held constant at a value of 1
## Accuracy was used to select the optimal model using the largest value.
## The final values used for the model were mtry = 5, splitrule =
##  extratrees and min.node.size = 1.
```




```
## + Fold01: alpha=0.10, lambda=0.03425
## - Fold01: alpha=0.10, lambda=0.03425
## + Fold01: alpha=0.55, lambda=0.03425
## - Fold01: alpha=0.55, lambda=0.03425
## + Fold01: alpha=1.00, lambda=0.03425
## - Fold01: alpha=1.00, lambda=0.03425
## + Fold02: alpha=0.10, lambda=0.03425
## - Fold02: alpha=0.10, lambda=0.03425
## + Fold02: alpha=0.55, lambda=0.03425
## - Fold02: alpha=0.55, lambda=0.03425
## + Fold02: alpha=1.00, lambda=0.03425
## - Fold02: alpha=1.00, lambda=0.03425
## + Fold03: alpha=0.10, lambda=0.03425
## - Fold03: alpha=0.10, lambda=0.03425
## + Fold03: alpha=0.55, lambda=0.03425
## - Fold03: alpha=0.55, lambda=0.03425
## + Fold03: alpha=1.00, lambda=0.03425
## - Fold03: alpha=1.00, lambda=0.03425
## + Fold04: alpha=0.10, lambda=0.03425
## - Fold04: alpha=0.10, lambda=0.03425
## + Fold04: alpha=0.55, lambda=0.03425
## - Fold04: alpha=0.55, lambda=0.03425
## + Fold04: alpha=1.00, lambda=0.03425
## - Fold04: alpha=1.00, lambda=0.03425
## + Fold05: alpha=0.10, lambda=0.03425
## - Fold05: alpha=0.10, lambda=0.03425
## + Fold05: alpha=0.55, lambda=0.03425
```

```
## - Fold05: alpha=0.55, lambda=0.03425
## + Fold05: alpha=1.00, lambda=0.03425
## - Fold05: alpha=1.00, lambda=0.03425
## + Fold06: alpha=0.10, lambda=0.03425
## - Fold06: alpha=0.10, lambda=0.03425
## + Fold06: alpha=0.55, lambda=0.03425
## - Fold06: alpha=0.55, lambda=0.03425
## + Fold06: alpha=1.00, lambda=0.03425
## - Fold06: alpha=1.00, lambda=0.03425
## + Fold07: alpha=0.10, lambda=0.03425
## - Fold07: alpha=0.10, lambda=0.03425
## + Fold07: alpha=0.55, lambda=0.03425
## - Fold07: alpha=0.55, lambda=0.03425
## + Fold07: alpha=1.00, lambda=0.03425
## - Fold07: alpha=1.00, lambda=0.03425
## + Fold08: alpha=0.10, lambda=0.03425
## - Fold08: alpha=0.10, lambda=0.03425
## + Fold08: alpha=0.55, lambda=0.03425
## - Fold08: alpha=0.55, lambda=0.03425
## + Fold08: alpha=1.00, lambda=0.03425
## - Fold08: alpha=1.00, lambda=0.03425
## + Fold09: alpha=0.10, lambda=0.03425
## - Fold09: alpha=0.10, lambda=0.03425
## + Fold09: alpha=0.55, lambda=0.03425
## - Fold09: alpha=0.55, lambda=0.03425
## + Fold09: alpha=1.00, lambda=0.03425
## - Fold09: alpha=1.00, lambda=0.03425
## + Fold10: alpha=0.10, lambda=0.03425
## - Fold10: alpha=0.10, lambda=0.03425
## + Fold10: alpha=0.55, lambda=0.03425
## - Fold10: alpha=0.55, lambda=0.03425
## + Fold10: alpha=1.00, lambda=0.03425
## - Fold10: alpha=1.00, lambda=0.03425
## Aggregating results
## Selecting tuning parameters
## Fitting alpha = 1, lambda = 0.000343 on full training set
```

```
## glmnet
##
## 2401 samples
##    8 predictor
##    2 classes: 'no', 'yes'
##
## No pre-processing
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2161, 2162, 2160, 2160, 2162, 2160, ...
## Resampling results across tuning parameters:
##
##   alpha  lambda     ROC     Sens    Spec
##   0.10   0.0003425  0.9994  0.9943  0.9933
##   0.10   0.0034251  0.9983  0.9953  0.8034
##   0.10   0.0342512  0.9921  0.9991  0.7049
##   0.55   0.0003425  0.9995  0.9948  0.9933
##   0.55   0.0034251  0.9987  0.9943  0.9497
```

```
##   0.55   0.0342512  0.9965  0.9991  0.7185
##   1.00   0.0003425  0.9999  0.9962  1.0000
##   1.00   0.0034251  0.9994  0.9929  1.0000
##   1.00   0.0342512  0.9987  0.9981  0.7185
##
## ROC was used to select the optimal model using the largest value.
## The final values used for the model were alpha = 1 and lambda = 0.0003425.
```

```
## [1] 1
```

```
## + Fold01: alpha=0, lambda=1
## - Fold01: alpha=0, lambda=1
## + Fold01: alpha=1, lambda=1
## - Fold01: alpha=1, lambda=1
## + Fold02: alpha=0, lambda=1
## - Fold02: alpha=0, lambda=1
## + Fold02: alpha=1, lambda=1
## - Fold02: alpha=1, lambda=1
## + Fold03: alpha=0, lambda=1
## - Fold03: alpha=0, lambda=1
## + Fold03: alpha=1, lambda=1
## - Fold03: alpha=1, lambda=1
## + Fold04: alpha=0, lambda=1
## - Fold04: alpha=0, lambda=1
## + Fold04: alpha=1, lambda=1
## - Fold04: alpha=1, lambda=1
## + Fold05: alpha=0, lambda=1
## - Fold05: alpha=0, lambda=1
## + Fold05: alpha=1, lambda=1
## - Fold05: alpha=1, lambda=1
## + Fold06: alpha=0, lambda=1
## - Fold06: alpha=0, lambda=1
## + Fold06: alpha=1, lambda=1
## - Fold06: alpha=1, lambda=1
## + Fold07: alpha=0, lambda=1
## - Fold07: alpha=0, lambda=1
## + Fold07: alpha=1, lambda=1
## - Fold07: alpha=1, lambda=1
## + Fold08: alpha=0, lambda=1
## - Fold08: alpha=0, lambda=1
## + Fold08: alpha=1, lambda=1
## - Fold08: alpha=1, lambda=1
## + Fold09: alpha=0, lambda=1
## - Fold09: alpha=0, lambda=1
## + Fold09: alpha=1, lambda=1
## - Fold09: alpha=1, lambda=1
## + Fold10: alpha=0, lambda=1
## - Fold10: alpha=0, lambda=1
## + Fold10: alpha=1, lambda=1
## - Fold10: alpha=1, lambda=1
## Aggregating results
## Selecting tuning parameters
## Fitting alpha = 1, lambda = 1e-04 on full training set
```

```
## glmnet
```

```
##
## 2401 samples
##    8 predictor
##    2 classes: 'no', 'yes'
##
## No pre-processing
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2162, 2162, 2160, 2161, 2161, 2160, ...
## Resampling results across tuning parameters:
##
##   alpha  lambda   ROC     Sens    Spec
##   0      0.00010  0.9947  0.9976  0.71425
##   0      0.05273  0.9881  0.9991  0.27517
##   0      0.10535  0.9827  1.0000  0.27517
##   0      0.15798  0.9796  1.0000  0.08161
##   0      0.21061  0.9775  1.0000  0.08161
##   0      0.26323  0.9755  1.0000  0.03747
##   0      0.31586  0.9741  1.0000  0.00000
##   0      0.36848  0.9730  1.0000  0.00000
##   0      0.42111  0.9720  1.0000  0.00000
##   0      0.47374  0.9712  1.0000  0.00000
##   0      0.52636  0.9707  1.0000  0.00000
##   0      0.57899  0.9702  1.0000  0.00000
##   0      0.63162  0.9698  1.0000  0.00000
##   0      0.68424  0.9694  1.0000  0.00000
##   0      0.73687  0.9692  1.0000  0.00000
##   0      0.78949  0.9690  1.0000  0.00000
##   0      0.84212  0.9688  1.0000  0.00000
##   0      0.89475  0.9686  1.0000  0.00000
##   0      0.94737  0.9685  1.0000  0.00000
##   0      1.00000  0.9684  1.0000  0.00000
##   1      0.00010  0.9999  0.9976  0.99667
##   1      0.05273  0.9982  0.9995  0.40437
##   1      0.10535  0.9980  1.0000  0.00000
##   1      0.15798  0.9999  1.0000  0.00000
##   1      0.21061  0.5000  1.0000  0.00000
##   1      0.26323  0.5000  1.0000  0.00000
##   1      0.31586  0.5000  1.0000  0.00000
##   1      0.36848  0.5000  1.0000  0.00000
##   1      0.42111  0.5000  1.0000  0.00000
##   1      0.47374  0.5000  1.0000  0.00000
##   1      0.52636  0.5000  1.0000  0.00000
##   1      0.57899  0.5000  1.0000  0.00000
##   1      0.63162  0.5000  1.0000  0.00000
##   1      0.68424  0.5000  1.0000  0.00000
##   1      0.73687  0.5000  1.0000  0.00000
##   1      0.78949  0.5000  1.0000  0.00000
##   1      0.84212  0.5000  1.0000  0.00000
##   1      0.89475  0.5000  1.0000  0.00000
##   1      0.94737  0.5000  1.0000  0.00000
##   1      1.00000  0.5000  1.0000  0.00000
##
## ROC was used to select the optimal model using the largest value.
## The final values used for the model were alpha = 1 and lambda = 1e-04.
```

```
## [1] 0.9999
```

```
## + Fold01: parameter=none
## - Fold01: parameter=none
## + Fold02: parameter=none
## - Fold02: parameter=none
## + Fold03: parameter=none
## - Fold03: parameter=none
## + Fold04: parameter=none
## - Fold04: parameter=none
## + Fold05: parameter=none
## - Fold05: parameter=none
## + Fold06: parameter=none
## - Fold06: parameter=none
## + Fold07: parameter=none
## - Fold07: parameter=none
## + Fold08: parameter=none
## - Fold08: parameter=none
## + Fold09: parameter=none
## - Fold09: parameter=none
## + Fold10: parameter=none
## - Fold10: parameter=none
## Aggregating results
## Fitting final model on full training set
```

```
## Generalized Linear Model
##
## 2401 samples
##    8 predictor
##    2 classes: 'no', 'yes'
##
## Pre-processing: median imputation (8)
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2161, 2160, 2161, 2161, 2161, 2162, ...
## Resampling results:
##
##   ROC     Sens    Spec
##   0.9964  0.9919  0.9898
```

```
## + Fold01: parameter=none
## - Fold01: parameter=none
## + Fold02: parameter=none
## - Fold02: parameter=none
## + Fold03: parameter=none
## - Fold03: parameter=none
## + Fold04: parameter=none
## - Fold04: parameter=none
## + Fold05: parameter=none
## - Fold05: parameter=none
## + Fold06: parameter=none
## - Fold06: parameter=none
## + Fold07: parameter=none
## - Fold07: parameter=none
## + Fold08: parameter=none
## - Fold08: parameter=none
```

```
## + Fold09: parameter=none
## - Fold09: parameter=none
## + Fold10: parameter=none
## - Fold10: parameter=none
## Aggregating results
## Fitting final model on full training set
```

```
## Generalized Linear Model
##
## 2401 samples
##    8 predictor
##    2 classes: 'no', 'yes'
##
## Pre-processing: nearest neighbor imputation (8), centered (8), scaled (8)
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2161, 2162, 2161, 2161, 2161, 2160, ...
## Resampling results:
##
##   ROC     Sens    Spec
##   0.9991  0.9967  0.99
```

```
## + Fold01: parameter=none
## - Fold01: parameter=none
## + Fold02: parameter=none
## - Fold02: parameter=none
## + Fold03: parameter=none
## - Fold03: parameter=none
## + Fold04: parameter=none
## - Fold04: parameter=none
## + Fold05: parameter=none
## - Fold05: parameter=none
## + Fold06: parameter=none
## - Fold06: parameter=none
## + Fold07: parameter=none
## - Fold07: parameter=none
## + Fold08: parameter=none
## - Fold08: parameter=none
## + Fold09: parameter=none
## - Fold09: parameter=none
## + Fold10: parameter=none
## - Fold10: parameter=none
## Aggregating results
## Fitting final model on full training set
```

```
## Generalized Linear Model
##
## 2401 samples
##    8 predictor
##    2 classes: 'no', 'yes'
##
## Pre-processing: median imputation (8)
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2160, 2162, 2162, 2161, 2160, 2161, ...
## Resampling results:
##
```

```
##   ROC     Sens   Spec
##   0.9939  0.991  0.9866
```

```
## + Fold01: parameter=none
## - Fold01: parameter=none
## + Fold02: parameter=none
## - Fold02: parameter=none
## + Fold03: parameter=none
## - Fold03: parameter=none
## + Fold04: parameter=none
## - Fold04: parameter=none
## + Fold05: parameter=none
## - Fold05: parameter=none
## + Fold06: parameter=none
## - Fold06: parameter=none
## + Fold07: parameter=none
## - Fold07: parameter=none
## + Fold08: parameter=none
## - Fold08: parameter=none
## + Fold09: parameter=none
## - Fold09: parameter=none
## + Fold10: parameter=none
## - Fold10: parameter=none
## Aggregating results
## Fitting final model on full training set
```

```
## Generalized Linear Model
##
## 2401 samples
##    8 predictor
##    2 classes: 'no', 'yes'
##
## Pre-processing: median imputation (8), centered (8), scaled (8)
## Resampling: Cross-Validated (10 fold)
## Summary of sample sizes: 2162, 2161, 2161, 2161, 2161, 2161, ...
## Resampling results:
##
##   ROC     Sens    Spec
##   0.9994  0.9976  0.9898
```

```
## Generalized Linear Model
##
## 2401 samples
##    7 predictor
##    2 classes: 'no', 'yes'
##
## No pre-processing
## Resampling: Bootstrapped (25 reps)
## Summary of sample sizes: 2401, 2401, 2401, 2401, 2401, 2401, ...
## Resampling results:
##
##   Accuracy  Kappa
##   0.996     0.9812
```

```
## Generalized Linear Model
##
```

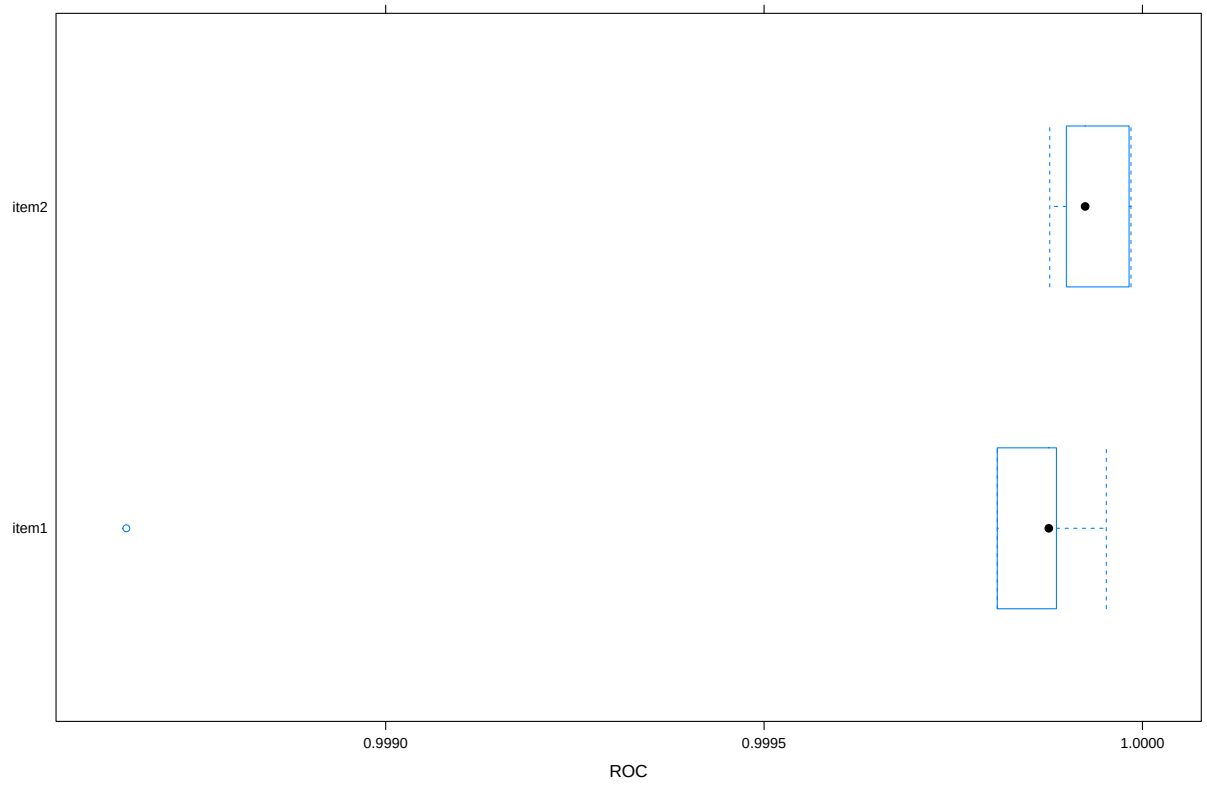
```
## 2401 samples
##    7 predictor
##    2 classes: 'no', 'yes'
##
## No pre-processing
## Resampling: Bootstrapped (25 reps)
## Summary of sample sizes: 2401, 2401, 2401, 2401, 2401, 2401, ...
## Resampling results:
##
##   Accuracy  Kappa
##   0.9779    0.8689
```

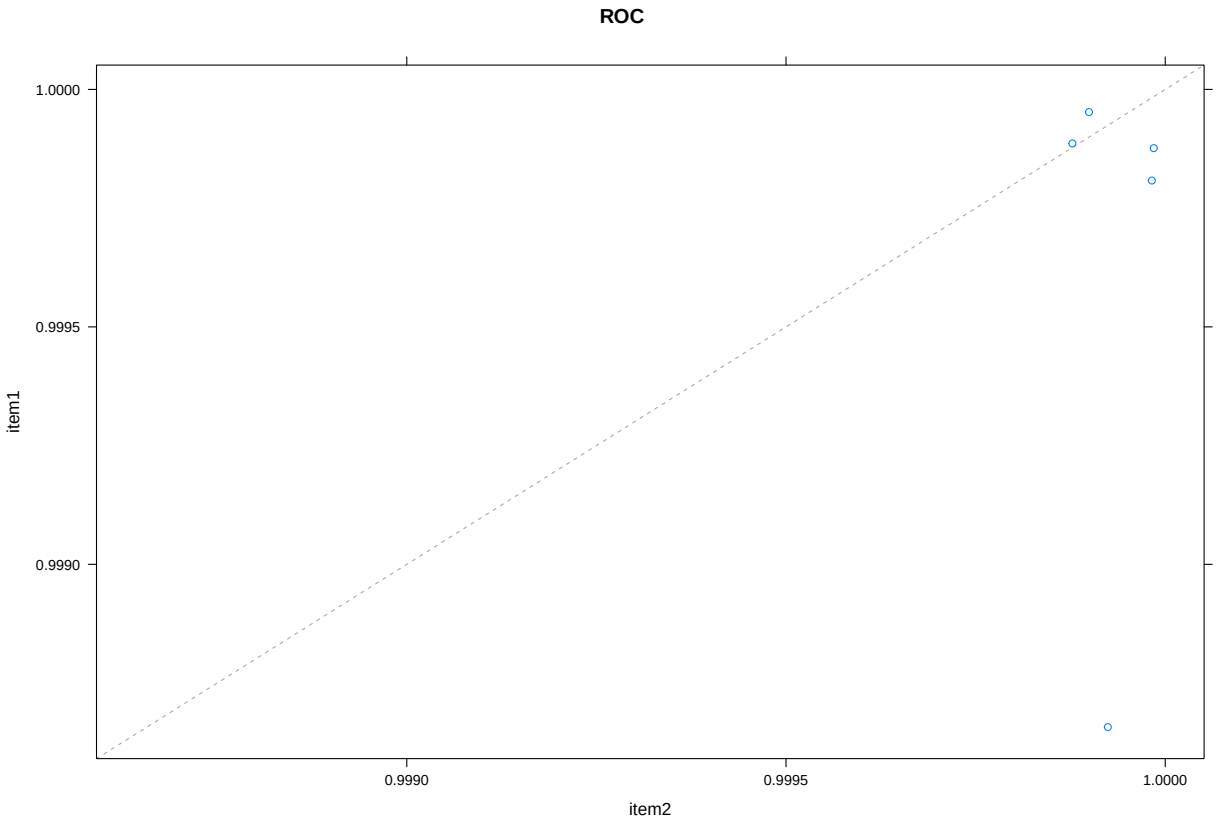
```
## + Fold1: alpha=0.10, lambda=0.03425
## - Fold1: alpha=0.10, lambda=0.03425
## + Fold1: alpha=0.55, lambda=0.03425
## - Fold1: alpha=0.55, lambda=0.03425
## + Fold1: alpha=1.00, lambda=0.03425
## - Fold1: alpha=1.00, lambda=0.03425
## + Fold2: alpha=0.10, lambda=0.03425
## - Fold2: alpha=0.10, lambda=0.03425
## + Fold2: alpha=0.55, lambda=0.03425
## - Fold2: alpha=0.55, lambda=0.03425
## + Fold2: alpha=1.00, lambda=0.03425
## - Fold2: alpha=1.00, lambda=0.03425
## + Fold3: alpha=0.10, lambda=0.03425
## - Fold3: alpha=0.10, lambda=0.03425
## + Fold3: alpha=0.55, lambda=0.03425
## - Fold3: alpha=0.55, lambda=0.03425
## + Fold3: alpha=1.00, lambda=0.03425
## - Fold3: alpha=1.00, lambda=0.03425
## + Fold4: alpha=0.10, lambda=0.03425
## - Fold4: alpha=0.10, lambda=0.03425
## + Fold4: alpha=0.55, lambda=0.03425
## - Fold4: alpha=0.55, lambda=0.03425
## + Fold4: alpha=1.00, lambda=0.03425
## - Fold4: alpha=1.00, lambda=0.03425
## + Fold5: alpha=0.10, lambda=0.03425
## - Fold5: alpha=0.10, lambda=0.03425
## + Fold5: alpha=0.55, lambda=0.03425
## - Fold5: alpha=0.55, lambda=0.03425
## + Fold5: alpha=1.00, lambda=0.03425
## - Fold5: alpha=1.00, lambda=0.03425
## Aggregating results
## Selecting tuning parameters
## Fitting alpha = 1, lambda = 0.000343 on full training set
```

```
## + Fold1: mtry=2, min.node.size=1, splitrule=gini
## - Fold1: mtry=2, min.node.size=1, splitrule=gini
## + Fold1: mtry=5, min.node.size=1, splitrule=gini
## - Fold1: mtry=5, min.node.size=1, splitrule=gini
## + Fold1: mtry=8, min.node.size=1, splitrule=gini
## - Fold1: mtry=8, min.node.size=1, splitrule=gini
## + Fold1: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold1: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold1: mtry=5, min.node.size=1, splitrule=extratrees
```

```
## - Fold1: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold1: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold1: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=2, min.node.size=1, splitrule=gini
## - Fold2: mtry=2, min.node.size=1, splitrule=gini
## + Fold2: mtry=5, min.node.size=1, splitrule=gini
## - Fold2: mtry=5, min.node.size=1, splitrule=gini
## + Fold2: mtry=8, min.node.size=1, splitrule=gini
## - Fold2: mtry=8, min.node.size=1, splitrule=gini
## + Fold2: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold2: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold2: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=2, min.node.size=1, splitrule=gini
## - Fold3: mtry=2, min.node.size=1, splitrule=gini
## + Fold3: mtry=5, min.node.size=1, splitrule=gini
## - Fold3: mtry=5, min.node.size=1, splitrule=gini
## + Fold3: mtry=8, min.node.size=1, splitrule=gini
## - Fold3: mtry=8, min.node.size=1, splitrule=gini
## + Fold3: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold3: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold3: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=2, min.node.size=1, splitrule=gini
## - Fold4: mtry=2, min.node.size=1, splitrule=gini
## + Fold4: mtry=5, min.node.size=1, splitrule=gini
## - Fold4: mtry=5, min.node.size=1, splitrule=gini
## + Fold4: mtry=8, min.node.size=1, splitrule=gini
## - Fold4: mtry=8, min.node.size=1, splitrule=gini
## + Fold4: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold4: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold4: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold4: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold4: mtry=8, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=2, min.node.size=1, splitrule=gini
## - Fold5: mtry=2, min.node.size=1, splitrule=gini
## + Fold5: mtry=5, min.node.size=1, splitrule=gini
## - Fold5: mtry=5, min.node.size=1, splitrule=gini
## + Fold5: mtry=8, min.node.size=1, splitrule=gini
## - Fold5: mtry=8, min.node.size=1, splitrule=gini
## + Fold5: mtry=2, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=2, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=5, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=5, min.node.size=1, splitrule=extratrees
## + Fold5: mtry=8, min.node.size=1, splitrule=extratrees
## - Fold5: mtry=8, min.node.size=1, splitrule=extratrees
## Aggregating results
## Selecting tuning parameters
## Fitting mtry = 2, splitrule = gini, min.node.size = 1 on full training set
```

```
##
## Call:
## summary.resamples(object = resamples)
##
## Models: item1, item2
## Number of resamples: 5
##
## ROC
##         Min. 1st Qu. Median   Mean 3rd Qu. Max. NA's
## item1 0.9987  0.9998 0.9999 0.9996  0.9999    1    0
## item2 0.9999  0.9999 0.9999 0.9999  1.0000    1    0
##
## Sens
##         Min. 1st Qu. Median   Mean 3rd Qu.   Max. NA's
## item1 0.9852  0.9953 0.9953 0.9938  0.9964 0.9970    0
## item2 0.9976  0.9976 0.9982 0.9985  0.9994 0.9994    0
##
## Spec
##         Min. 1st Qu. Median   Mean 3rd Qu. Max. NA's
## item1 0.9957  1.0000 1.0000 0.9991       1    1    0
## item2 0.9830  0.9957 0.9957 0.9949       1    1    0
```

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