Ordinal Forest

janhavi

2025-03-04

```
knitr::opts_chunk$set(echo = FALSE)
library(ordinalForest)
```

```
## Warning: package 'ordinalForest' was built under R version 4.3.3
```

```
library(verification)
```

```
## Warning: package 'verification' was built under R version 4.3.3
```

```
## Loading required package: fields
```

```
## Warning: package 'fields' was built under R version 4.3.3
```

```
## Loading required package: spam
```

```
## Warning: package 'spam' was built under R version 4.3.3
```

```
## Spam version 2.11-1 (2025-01-20) is loaded.
## Type 'help( Spam)' or 'demo( spam)' for a short introduction
## and overview of this package.
## Help for individual functions is also obtained by adding the
## suffix '.spam' to the function name, e.g. 'help( chol.spam)'.
```

```
##
## Attaching package: 'spam'
```

```
## The following objects are masked from 'package:base':
##
##     backsolve, forwardsolve
```

```
## Loading required package: viridisLite
```

```
##
## Try help(fields) to get started.
```

```
## Loading required package: boot
```

```
## Loading required package: CircStats
```

```
## Warning: package 'CircStats' was built under R version 4.3.3
```

```
## Loading required package: MASS
```

```
## Loading required package: dtw
```

```
## Warning: package 'dtw' was built under R version 4.3.3
```

```
## Loading required package: proxy
```

```
##
## Attaching package: 'proxy'
```

```
## The following object is masked from 'package:spam':
##
##     as.matrix
```

```
## The following objects are masked from 'package:stats':
##
##     as.dist, dist
```

```
## The following object is masked from 'package:base':
##
##     as.matrix
```

```
## Loaded dtw v1.23-1. See ?dtw for help, citation("dtw") for use in publication.
```

Import train and test splits that were created in python –> keeping it consistent

Change one-hot encoded variables back to nominal variables –> R natively handles factors so this is needed so that i can keep it simple and reduce dimension of the feature set before performing GA

```
## [1] "gender_F"      "gender_M"      "race_ASIAN"    "race_BLACK"
## [5] "race_HISPANIC" "race_NATIVE"   "race_OTHER"    "race_UNKNOWN"
## [9] "race_WHITE"
```

keep indexes of train-test split separately, clean data for model, combine X and Y of train and split into train and test dataframes

set race and gender as factors, aki_stage as ordered variable

```
## [1] "ASIAN"    "BLACK"    "HISPANIC" "NATIVE"   "OTHER"    "UNKNOWN"  "WHITE"
```

```
## [1] "F" "M"
```

```
## [1] "ASIAN"    "BLACK"    "HISPANIC" "NATIVE"   "OTHER"    "UNKNOWN"  "WHITE"
```

```
## [1] "F" "M"
```

```
## [1] "0" "1" "2" "3"
```

```
## [1] "0" "1" "2" "3"
```

try ordinal forest just to see

```
## Growing trees.. Progress: 60%. Estimated remaining time: 20 seconds.
## Computing permutation importance.. Progress: 25%. Estimated remaining time: 1 minu
te, 35 seconds.
## Computing permutation importance.. Progress: 49%. Estimated remaining time: 1 minu
te, 3 seconds.
## Computing permutation importance.. Progress: 74%. Estimated remaining time: 32 sec
onds.
## Computing permutation importance.. Progress: 99%. Estimated remaining time: 1 seco
nds.
```

Calculate RPS

```
## [1] 0.1616889
```

Calculate accuracy

```
## [1] "Accuracy: 0.49806"
```

Calculate precision, recall, f1 metrics to compare with the other models - load packages then calculate

```
## Warning: package 'caret' was built under R version 4.3.3
```

```
## Loading required package: ggplot2
```

```
## Loading required package: lattice
```

```
##
## Attaching package: 'lattice'
```

```
## The following object is masked from 'package:boot':
##
##     melanoma
```

```
## Registered S3 method overwritten by 'pROC':
##   method    from
##   lines.roc verification
```

```
##
## Attaching package: 'MLmetrics'
```

```
## The following objects are masked from 'package:caret':
##
##     MAE, RMSE
```

```
## The following object is masked from 'package:base':
##
##     Recall
```

```
## [1] "Class specific metrics:"
```

```
## [1] "Precision:"
```

```
## Class: 1 Class: 2 Class: 3 Class: 4
##     0.55     0.41     0.44     0.55
```

```
## [1] "Recall:"
```

```
## Class: 1 Class: 2 Class: 3 Class: 4
##     0.67     0.01     0.66     0.42
```

```
## [1] "F1:"
```

```
## Class: 1 Class: 2 Class: 3 Class: 4
##     0.60     0.02     0.53     0.47
```

```
## [1] "Macro metrics:"
```

```
## [1] "Precision:0.49"
```

```
## [1] "Recall:0.44"
```

```
## [1] "F1:0.41"
```

```
## [1] "Weighted metrics:"
```

```
## [1] "Precision:0.49"
```

```
## [1] "Recall:0.5"
```

```
## [1] "F1:0.45"
```