

Package: prcbench (via r-universe)

September 2, 2024

Type Package

Title Testing Workbench for Precision-Recall Curves

Version 1.1.8

Date 2023-03-12

Description A testing workbench to evaluate tools that calculate precision-recall curves. Saito and Rehmsmeier (2015) <[doi:10.1371/journal.pone.0118432](https://doi.org/10.1371/journal.pone.0118432)>.

URL <https://evalclass.github.io/prcbench/>,
<https://github.com/evalclass/prcbench>

BugReports <https://github.com/evalclass/prcbench/issues>

Depends R (>= 3.2.3)

License GPL-3

Language en-US

LazyData TRUE

LinkingTo Rcpp

Imports Rcpp (>= 1.0.9), R6 (>= 2.1.1), assertthat (>= 0.1), grid, gridExtra (>= 2.0.0), graphics, ggplot2 (>= 2.1.0), methods, memoise (>= 1.0.0), ROCR (>= 1.0-7), PRROC (>= 1.1), precrec (>= 0.1)

RoxygenNote 7.2.3

Encoding UTF-8

Suggests microbenchmark (>= 1.4-2.1), rJava (>= 0.9-7), testthat (>= 0.11.0), knitr (>= 1.11), rmarkdown (>= 0.8.1), vdiff (>= 1.0.0), patchwork (>= 1.1.2)

VignetteBuilder knitr

Repository <https://evalclass.r-universe.dev>

RemoteUrl <https://github.com/evalclass/prcbench>

RemoteRef HEAD

RemoteSha 012ac61f5a250224023ef0d7e0c5c1bb58987445

Contents

| | |
|---------------------|-----------|
| autoplot | 2 |
| C1DATA | 3 |
| C2DATA | 4 |
| C3DATA | 4 |
| C4DATA | 4 |
| create_example_func | 5 |
| create_testset | 5 |
| create_toolset | 7 |
| create_usrdata | 8 |
| create_usrtool | 9 |
| prcbench | 11 |
| run_benchmark | 11 |
| run_evalcurve | 12 |
| TestDataB | 13 |
| TestDataC | 15 |
| ToolAUCCalculator | 18 |
| ToolIFBase | 19 |
| ToolPerfMeas | 22 |
| Toolprecrec | 23 |
| ToolPRROC | 24 |
| ToolROCR | 26 |
| Index | 27 |

autoplot

Plot the result of Precision-Recall curve evaluation

Description

The `plot_eval_results` function validates Precision-Recall curves and creates a plot.

Usage

```
## S3 method for class 'evalcurve'
autoplot(
  object,
  base_plot = TRUE,
  ret_grob = FALSE,
  ncol = NULL,
  nrow = NULL,
  use_category = FALSE,
  multiplot_lib = "patchwork",
  ...
)
```

Arguments

| | |
|----------------------------|---|
| <code>object</code> | An S3 object that contains evaluation results of Precision-Recall curves. |
| <code>base_plot</code> | A Boolean value to specify whether the base points are plotted. |
| <code>ret_grob</code> | A Boolean value to specify whether the function returns a grob object. |
| <code>ncol</code> | An integer used for the column size of multiple panes. |
| <code>nrow</code> | An integer used for the row size of multiple panes. |
| <code>use_category</code> | A Boolean value to specify whether the categorical summary instead of the total summary. |
| <code>multiplot_lib</code> | A string to decide which library is used to combine multiple plots. Either "patchwork" or "grid". |
| <code>...</code> | Not used by this function. |

Value

A data frame with validation results.

Examples

```
library(ggplot2)

## Plot evaluation results on test datasets r1, r2, and r3
testset <- create_testset("curve", c("c1", "c2", "c3"))
toolset <- create_toolset(set_names = "crv5")
eres1 <- run_evalcurve(testset, toolset)
autoplot(eres1)
```

C1DATA

C1: Pre-calculated Precision-Recall curve

Description

A list contains scores, labels, and pre-calculated recall and precision values as x and y.

Usage

```
data(C1DATA)
```

Format

A list with 5 items.

scores input scores

labels input labels

bp_x pre-calculated recall values for curve evaluation

bp_y pre-calculated precision values for curve evaluation

tp_x x position for displaying the test result in a plot

tp_y y position for displaying the test result in a plot

C2DATA

C2: Pre-calculated Precision-Recall curve

Description

A list contains scores, labels, and pre-calculated recall and precision values as x and y.

Usage

```
data(C2DATA)
```

Format

See [C1DATA](#).

C3DATA

C3: Pre-calculated Precision-Recall curve

Description

A list contains scores, labels, and pre-calculated recall and precision values as x and y.

Usage

```
data(C3DATA)
```

Format

See [C1DATA](#).

C4DATA

C4: Pre-calculated Precision-Recall curve

Description

A list contains scores, labels, and pre-calculated recall and precision values as x and y.

Usage

```
data(C4DATA)
```

Format

See [C1DATA](#).

create_example_func *Create an example for the func argument of the create_usrtool function*

Description

The create_example_func function creates an example for the [create_usrtool](#) function.

Usage

```
create_example_func()
```

Value

A function as an example for [create_usrtool](#)

See Also

[create_usrtool](#) requires the same format. [create_testset](#) for testset.

Examples

```
## Create a function
func <- create_example_func()
func
```

create_testset *Create a list of test datasets*

Description

The create_testset function creates test datasets either for benchmarking or curve evaluation.

Usage

```
create_testset(test_type, set_names = NULL)
```

Arguments

| | |
|-----------|--|
| test_type | A single string to specify the type of dataset generated by this function. "bench" Create test datasets for benchmarking "curve" Create test datasets for curve evaluation |
| set_names | A character vector to specify the names of test datasets. |

1. For benchmarking (`test_type = "bench"`)
This function uses a naming convention for randomly generated data for benchmarking. The format is a prefix ('i' or 'b') followed by the number of dataset. The prefix 'i' indicates a balanced dataset, whereas 'b' indicates an imbalanced dataset. The number can be used with a suffix 'k' or 'm', indicating respectively 1000 or 1 million.

Below are some examples.

"b100" A balanced data set with 50 positives and 50 negatives.

"b10k" A balanced data set with 5000 positives and 5000 negatives.

"b1m" A balanced data set with 500,000 positives and 500,000 negatives.

"i100" An imbalanced data set with 25 positives and 75 negatives.

The function returns a list of `TestDataB` objects.

2. For curve evaluation (`test_type = "curve"`)
The following three predefined datasets can be specified for curve evaluation.

| set name | S3 object | data source |
|----------|------------------------|---------------------|
| c1 or C1 | <code>TestDataC</code> | <code>C1DATA</code> |
| c2 or C2 | <code>TestDataC</code> | <code>C2DATA</code> |
| c3 or C3 | <code>TestDataC</code> | <code>C3DATA</code> |
| c4 or C4 | <code>TestDataC</code> | <code>C4DATA</code> |

The function returns a list of `TestDataC` objects.

Value

A list of R6 test dataset objects.

See Also

`run_benchmark` and `run_evalcurve` require the list of the datasets generated by this function. `TestDataB` for benchmarking test data. `TestDataC`, `C1DATA`, `C2DATA`, `C3DATA`, and `C4DATA` for curve evaluation test data. `create_usrdata` for creating a user-defined test set.

Examples

```
## Create a balanced data set with 50 positives and 50 negatives
tset1 <- create_testset("bench", "b100")
tset1

## Create an imbalanced data set with 25 positives and 75 negatives
tset2 <- create_testset("bench", "i100")
tset2

## Create P1 dataset
tset3 <- create_testset("curve", "c1")
tset3

## Create P1 dataset
tset4 <- create_testset("curve", c("c1", "c2"))
```

tset4

create_toolset *Create a set of tools*

Description

The `create_toolset` function takes names of predefined tools and generates a list of wrapper functions for Precision-Recall curve calculations.

Usage

```
create_toolset(
  tool_names = NULL,
  set_names = NULL,
  calc_auc = TRUE,
  store_res = TRUE
)
```

Arguments

| | |
|-------------------------|---|
| <code>tool_names</code> | A character vector to specify the names of performance evaluation tools. The names for the following five tools can be currently used. <ul style="list-style-type: none"> • ROCR • AUCCalculator • PerfMeas • PRROC • precrec |
| <code>set_names</code> | A character vector to specify a predefined set name. Following six sets are currently available. <ul style="list-style-type: none"> "def5" A set of 5 tools with <code>calc_auc = TRUE</code> and <code>store_res = TRUE</code> "auc5" A set of 5 tools with <code>calc_auc = TRUE</code> and <code>store_res = FALSE</code> "crv5" A set of 5 tools with <code>calc_auc = FALSE</code> and <code>store_res = TRUE</code> "def4" A set of 4 tools with <code>calc_auc = TRUE</code> and <code>store_res = TRUE</code> "auc4" A set of 4 tools with <code>calc_auc = TRUE</code> and <code>store_res = FALSE</code> "crv4" A set of 4 tools with <code>calc_auc = FALSE</code> and <code>store_res = TRUE</code> |
| <code>calc_auc</code> | A Boolean value to specify whether the AUC score should be calculated. |
| <code>store_res</code> | A Boolean value to specify whether the calculated curve is retrieved and stored |

Value

A list of R6 tool objects.

See Also

[run_benchmark](#) and [run_evalcurve](#) require the list of the tools generated by this function [ToolROCR](#), [ToolAUCCalculator](#), [ToolPerfMeas](#), [ToolPRROC](#), and [Toolprecrec](#) as R6 tool classes.

Examples

```
## Create ROCR and precrec
toolset1 <- create_toolset(c("ROCR", "precrec"))
toolset1

## Create auc5 tools
toolset2 <- create_toolset(set_names = "auc5")
toolset2
```

| | |
|-----------------------------|---|
| <code>create_usrdata</code> | <i>Create a user-defined test dataset</i> |
|-----------------------------|---|

Description

The `create_usrdata` function creates various types of test datasets.

Usage

```
create_usrdata(
  test_type,
  scores = NULL,
  labels = NULL,
  tsname = NULL,
  base_x = NULL,
  base_y = NULL,
  text_x = NULL,
  text_y = NULL,
  text_x2 = text_x,
  text_y2 = text_y
)
```

Arguments

| | |
|------------------------|--|
| <code>test_type</code> | A single string to specify the type of dataset generated by this function. "bench" Create a test dataset for benchmarking "curve" Create a test dataset for curve evaluation |
| <code>scores</code> | A numeric vector to set scores. |
| <code>labels</code> | A numeric vector to set labels. |
| <code>tsname</code> | A single string to specify the name of the dataset. |
| <code>base_x</code> | A numeric vector to set pre-calculated recall values for curve evaluation. |

| | |
|---------|---|
| base_y | A numeric vector to set pre-calculated precision values for curve evaluation. |
| text_x | A single numeric value to set the x position for displaying the test result in a plot |
| text_y | A single numeric value to set the y position for displaying the test result in a plot |
| text_x2 | A single numeric value to set the x position for displaying the test result (group into categories) in a plot |
| text_y2 | A single numeric value to set the y position for displaying the test result (group into categories) in a plot |

Value

A list of R6 test dataset objects.

See Also

[create_testset](#) for creating a predefined test set. [TestDataB](#) for benchmarking test data. [TestDataC](#) for curve evaluation test data.

Examples

```
## Create a test dataset for benchmarking
testset2 <- create_usrdata("bench",
  scores = c(0.1, 0.2), labels = c(1, 0),
  tsname = "m1"
)
testset2

## Create a test dataset for curve evaluation
testset <- create_usrdata("curve",
  scores = c(0.1, 0.2), labels = c(1, 0),
  base_x = c(0, 1.0), base_y = c(0, 0.5)
)
testset
```

create_usrtool

Create a set of tools

Description

The `create_toolset` function takes names of predefined tools and generates a list of wrapper functions for Precision-Recall curve calculations.

Usage

```
create_usrtool(
  tool_name,
  func,
  calc_auc = TRUE,
  store_res = TRUE,
  x = NA,
  y = NA
)
```

Arguments

| | |
|------------------------|--|
| <code>tool_name</code> | A single string to specify the name of a user-defined tool. |
| <code>func</code> | A function to calculate a Precision-Recall curve and the AUC. It should take an element of the test dataset generated by create_testset as an argument. It also should return a list with three elements - 'x', 'y', and 'auc' that represent calculated recall and precision values plus the AUC score. See create_example_func for an example. |
| <code>calc_auc</code> | A Boolean value to specify whether the AUC score should be calculated. |
| <code>store_res</code> | A Boolean value to specify whether the calculated curve is retrieved and stored. |
| <code>x</code> | Set pre-calculated recall values. |
| <code>y</code> | Set pre-calculated precision values. |

Value

A list of R6 tool objects.

See Also

[create_toolset](#) to create a predefined tool set. [create_testset](#) for testset. [create_example_func](#) to create an example function.

Examples

```
## Create a new tool interface called "xyz"
efunc <- create_example_func()
toolset1 <- create_usrtool("xyz", efunc)
toolset1

## Example function with a correct argument
testset <- create_usrdata("bench", scores = c(0.1, 0.2), labels = c(1, 0))
retf <- efunc(testset[[1]])
retf
```

| | |
|----------|---|
| prcbench | <i>prcbench: A package to provide a testing workbench for precision-recall curves</i> |
|----------|---|

Description

The prcbench package provides four categories of important functions: tool interface, test data interface, benchmarking, and curve evaluation.

Tool interface

The `create_toolset` function creates a common interface for five different tools that calculate Precision-Recall curves. These tools are `ROCR`, `AUCCalculator`, `PerfMeas`, `PRROC`, and `precrec`.

The `create_usrtool` function helps users to make the same interface of the predefined ones for their own tools.

Test data interface

The `create_testset` function creates two different types of test data sets. The first type is for benchmarking, and the second type is for curve evaluation.

The `create_usrdata` function helps users to make their own test data sets.

Benchmarking

The `run_benchmark` function takes a tool set and a test data set and run `microbenchmark` for them.

Curve evaluation

The `run_evalcurve` function takes a tool set and a test data set and evaluates the accuracy of Precision-Recall curves for them.

| | |
|---------------|--|
| run_benchmark | <i>Run microbenchmark with specified tools and test sets</i> |
|---------------|--|

Description

The `run_benchmark` function runs `microbenchmark` for specified tools and test datasets

Usage

```
run_benchmark(testset, toolset, times = 5, unit = "ms", use_sys_time = FALSE)
```

Arguments

| | |
|--------------|--|
| testset | A character vector to specify a test set generated by create_testset . |
| toolset | A character vector to specify a tool set generated by create_toolset . |
| times | The number of iteration used in microbenchmark . |
| unit | A single string to specify the unit used in summary.microbenchmark . |
| use_sys_time | A Boolean value to specify system.time is used instead of summary.microbenchmark . |

Value

A data frame of microbenchmark results with additional columns.

See Also

[create_testset](#) to generate a test dataset. [create_toolset](#) to generate a tool set. [microbenchmark](#) for benchmarking details.

Examples

```
## Not run:
## Benchmarking for b10 and i10 test sets and crv5, auc5, and def5 tool sets
testset <- create_testset("bench", c("b10", "i10"))
toolset <- create_toolset(set_names = "def5")
res1 <- run_benchmark(testset, toolset)
res1

## End(Not run)
```

run_evalcurve

Evaluate Precision-Recall curves with specified tools and test sets

Description

The run_evalcurve function runs several tests to evaluate the accuracy of Precision-Recall curves.

Usage

```
run_evalcurve(testset, toolset, auto_combo = TRUE)
```

Arguments

| | |
|------------|--|
| testset | A character vector to specify a test set generated by create_testset . |
| toolset | A character vector to specify a tool set generated by create_toolset . |
| auto_combo | A Boolean value to specify whether a combination of test and tool sets is automatically created. |

Value

A data frame with validation results.

See Also

[create_testset](#) to generate a test dataset. [create_toolset](#) to generate a tool set.

Examples

```
## Evaluate curves for c1, c2, c3 test sets and crv5 tool set
testset <- create_testset("curve", c("c1", "c2", "c3"))
toolset <- create_toolset(set_names = "crv5")
res1 <- run_evalcurve(testset, toolset)
res1
```

TestDataB

TestDataB

Description

R6 class of test data set for performance evaluation tools.

Format

An R6 class object.

Details

TestDataB is a class that contains scores and label for performance evaluation tools. It provides necessary methods for benchmarking.

Methods**Public methods:**

- [TestDataB\\$new\(\)](#)
- [TestDataB\\$get_tsname\(\)](#)
- [TestDataB\\$get_scores\(\)](#)
- [TestDataB\\$get_labels\(\)](#)
- [TestDataB\\$get_fg\(\)](#)
- [TestDataB\\$get_bg\(\)](#)
- [TestDataB\\$get_fname\(\)](#)
- [TestDataB\\$del_file\(\)](#)
- [TestDataB\\$print\(\)](#)
- [TestDataB\\$clone\(\)](#)

Method `new()`: Default class initialization method.

Usage:

```
TestDataB$new(scores = NULL, labels = NULL, tsname = NA)
```

Arguments:

scores A vector of scores.

labels A vector of labels.

tsname A dataset name.

Method `get_tsname()`: Get the dataset name.

Usage:

```
TestDataB$get_tsname()
```

Method `get_scores()`: Get a vector of scores.

Usage:

```
TestDataB$get_scores()
```

Method `get_labels()`: Get a vector of labels.

Usage:

```
TestDataB$get_labels()
```

Method `get_fg()`: Get a vector of positive scores.

Usage:

```
TestDataB$get_fg()
```

Method `get_bg()`: Get a vector of negative scores.

Usage:

```
TestDataB$get_bg()
```

Method `get_fname()`: Get a file name that contains scores and labels.

Usage:

```
TestDataB$get_fname()
```

Method `del_file()`: Delete the file with scores and labels.

Usage:

```
TestDataB$del_file()
```

Method `print()`: Pretty print of the test dataset.

Usage:

```
TestDataB$print(...)
```

Arguments:

... Not used.

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
TestDataB$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

See Also

[create_testset](#) for creating a list of test datasets. [TestDataC](#) is derived from this class for curve evaluation.

Examples

```
## Initialize with scores, labels, and a dataset name
testset <- TestDataB$new(c(0.1, 0.2, 0.3), c(0, 1, 1), "m1")
testset
```

TestDataC

TestDataC

Description

R6 class of test dataset for Precision-Recall curve evaluation.

Format

An R6 class object.

Details

TestDataC is a class that contains scores and label for performance evaluation tools. It provides necessary methods for curve evaluation.

Super class

[prcbench::TestDataB](#) -> TestDataC

Methods**Public methods:**

- [TestDataC\\$set_basepoints_x\(\)](#)
- [TestDataC\\$set_basepoints_y\(\)](#)
- [TestDataC\\$get_basepoints_x\(\)](#)
- [TestDataC\\$get_basepoints_y\(\)](#)
- [TestDataC\\$set_textpos_x\(\)](#)
- [TestDataC\\$set_textpos_y\(\)](#)
- [TestDataC\\$set_textpos_x2\(\)](#)
- [TestDataC\\$set_textpos_y2\(\)](#)
- [TestDataC\\$get_textpos_x\(\)](#)
- [TestDataC\\$get_textpos_y\(\)](#)
- [TestDataC\\$get_textpos_x2\(\)](#)
- [TestDataC\\$get_textpos_y2\(\)](#)

- [TestDataC\\$clone\(\)](#)

Method `set_basepoints_x()`: Set pre-calculated recall values for curve evaluation.

Usage:

```
TestDataC$set_basepoints_x(x)
```

Arguments:

x A recall value.

Method `set_basepoints_y()`: Set pre-calculated precision values for curve evaluation.

Usage:

```
TestDataC$set_basepoints_y(y)
```

Arguments:

y A precision value.

Method `get_basepoints_x()`: Get pre-calculated recall values for curve evaluation.

Usage:

```
TestDataC$get_basepoints_x()
```

Method `get_basepoints_y()`: Get pre-calculated precision values for curve evaluation.

Usage:

```
TestDataC$get_basepoints_y()
```

Method `set_textpos_x()`: Set the position x for displaying the test result in a plot.

Usage:

```
TestDataC$set_textpos_x(x)
```

Arguments:

x Position x of the test result.

Method `set_textpos_y()`: Set the y position for displaying the test result in a plot.

Usage:

```
TestDataC$set_textpos_y(y)
```

Arguments:

y Position y of the test result.

Method `set_textpos_x2()`: Set the x position for displaying the test result in a plot.

Usage:

```
TestDataC$set_textpos_x2(x)
```

Arguments:

x Position x of the test result.

Method `set_textpos_y2()`: Set the y position for displaying the test result in a plot.

Usage:

```
TestDataC$set_textpos_y2(y)
```


Arguments:

y Position y of the test result.

Method `get_textpos_x()`: Get the position x for displaying the test result in a plot.

Usage:

```
TestDataC$get_textpos_x()
```

Method `get_textpos_y()`: Get the position y for displaying the test result in a plot.

Usage:

```
TestDataC$get_textpos_y()
```

Method `get_textpos_x2()`: Get the x position for displaying the test result in a plot.

Usage:

```
TestDataC$get_textpos_x2()
```

Method `get_textpos_y2()`: Get the y position for displaying the test result in a plot.

Usage:

```
TestDataC$get_textpos_y2()
```

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
TestDataC$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

See Also

[create_testset](#) for creating a list of test datasets. It is derived from [TestDataB](#).

Examples

```
## Initialize with scores, labels, and a dataset name
testset <- TestDataC$new(c(0.1, 0.2), c(1, 0), "c4")
testset

## Set base points
testset$set_basepoints_x(c(0.13, 0.2))
testset$set_basepoints_y(c(0.5, 0.6))
testset
```

ToolAUCCalculator *ToolAUCCalculator*

Description

R6 class of the AUCCalculator tool

Format

An R6 class object.

Details

ToolAUCCalculator is a wrapper class for the **AUCCalculator** tool, which is a Java library that provides calculations of ROC and Precision-Recall curves.

Super class

`prcbench::ToolIFBase` -> ToolAUCCalculator

Methods

Public methods:

- `ToolAUCCalculator$new()`
- `ToolAUCCalculator$set_jarpath()`
- `ToolAUCCalculator$set_curvetype()`
- `ToolAUCCalculator$set_aucvetype()`
- `ToolAUCCalculator$clone()`

Method `new()`: Default class initialization method.

Usage:

```
ToolAUCCalculator$new(...)
```

Arguments:

... set value for jarpath.

Method `set_jarpath()`: It sets an AUCCalculator jar file.

Usage:

```
ToolAUCCalculator$set_jarpath(jarpath = NULL)
```

Arguments:

jarpath File path of the AUCCalculator jar file, e.g. `"/path1/path2/auc2.jar"`.

Method `set_curvetype()`: It sets the type of curve.

Usage:

```
ToolAUCCalculator$set_curvetype(curvetype = "SPR")
```

Arguments:

curvetype "SPR", "PR", or "ROC"

Method `set_auc_type()`: It sets the type of calculation method

Usage:

```
ToolAUCCalculator$set_auc_type(auctype)
```

Arguments:

auctype "java" or "r"

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
ToolAUCCalculator$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

See Also

This class is derived from [ToolIFBase.create_toolset](#) for creating a list of tools.

Examples

```
## Initialization
toolauccalc <- ToolAUCCalculator$new()

## Show object info
toolauccalc

## create_toolset should be used for benchmarking and curve evaluation
toolauccalc2 <- create_toolset("AUCCalculator")
```

ToolIFBase

ToolIFBase

Description

Base class of performance evaluation tools.

Format

An R6 class object

Details

ToolIFBase is an abstract class to provide a uniform interface for performance evaluation tools.

Methods

Public methods:

- `ToolIFBase$new()`
- `ToolIFBase$call()`
- `ToolIFBase$get_toolname()`
- `ToolIFBase$set_toolname()`
- `ToolIFBase$get_setname()`
- `ToolIFBase$set_setname()`
- `ToolIFBase$get_result()`
- `ToolIFBase$get_x()`
- `ToolIFBase$get_y()`
- `ToolIFBase$get_auc()`
- `ToolIFBase$print()`
- `ToolIFBase$clone()`

Method `new()`: Default class initialization method.

Usage:

```
ToolIFBase$new(...)
```

Arguments:

... set value for `setname`, `calc_auc`, `store_res`, `x`, `y`.

Method `call()`: It calls the tool to calculate precision-recall curves.

Usage:

```
ToolIFBase$call(testset, calc_auc, store_res)
```

Arguments:

`testset` R6 object generated by the `create_testset` function.

`calc_auc` A Boolean value to specify whether the AUC score should be calculated.

`store_res` A Boolean value to specify whether the calculated curve is retrieved and stored.

Method `get_toolname()`: Get the name of the tool.

Usage:

```
ToolIFBase$get_toolname()
```

Method `set_toolname()`: Set the name of the tool.

Usage:

```
ToolIFBase$set_toolname(toolname)
```

Arguments:

`toolname` Name of the tool.

Method `get_setname()`: Get the name of the tool set.

Usage:

```
ToolIFBase$get_setname()
```

Method `set_setname()`: Set the name of the tool set.

Usage:

```
ToolIFBase$set_setname(setname)
```

Arguments:

`setname` Name of the tool set.

Method `get_result()`: Get a list with curve values and the AUC score.

Usage:

```
ToolIFBase$get_result()
```

Method `get_x()`: Get calculated recall values.

Usage:

```
ToolIFBase$get_x()
```

Method `get_y()`: Get calculated precision values.

Usage:

```
ToolIFBase$get_y()
```

Method `get_auc()`: Get the AUC score.

Usage:

```
ToolIFBase$get_auc()
```

Method `print()`: Pretty print of the tool interface

Usage:

```
ToolIFBase$print(...)
```

Arguments:

`...` Not used.

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
ToolIFBase$clone(deep = FALSE)
```

Arguments:

`deep` Whether to make a deep clone.

See Also

[ToolROCR](#), [ToolAUCCalculator](#), [ToolPerfMeas](#), [ToolPRROC](#), and [Toolprecrec](#) are derived from this class. [create_toolset](#) for creating a list of tools.

ToolPerfMeas

ToolPerfMeas

Description

R6 class of the PerfMeas tool

Format

An R6 class object.

Details

ToolPerfMeas is a wrapper class for the [PerfMeas](#) tool, which is an R library that provides several performance measures.

Super class

[prcbench::ToolIFBase](#) -> ToolPerfMeas

Methods

Public methods:

- [ToolPerfMeas\\$clone\(\)](#)

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
ToolPerfMeas$clone(deep = FALSE)
```

Arguments:

`deep` Whether to make a deep clone.

See Also

This class is derived from [ToolIFBase](#). [create_toolset](#) for creating a list of tools.

Examples

```
## Initialization
toolperf <- ToolPerfMeas$new()

## Show object info
toolperf

## create_toolset should be used for benchmarking and curve evaluation
toolperf2 <- create_toolset("PerfMeas")
```

Toolprecrec

Toolprecrec

Description

R6 class of the precrec tool

Format

An R6 class object.

Details

Toolprecrec is a wrapper class for the **precrec** tool, which is an R library that provides calculations of ROC and Precision-Recall curves.

Super class

`prcbench::ToolIFBase` -> Toolprecrec

Methods

Public methods:

- `Toolprecrec$new()`
- `Toolprecrec$set_x_bins()`
- `Toolprecrec$clone()`

Method `new()`: Default class initialization method.

Usage:

```
Toolprecrec$new(...)
```

Arguments:

... set value for x_bins.

Method `set_x_bins()`: Set the number of supporting points as the number of bins.

Usage:

```
Toolprecrec$set_x_bins(x_bins)
```

Arguments:

x_bins set value for x_bins.

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
Toolprecrec$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

See Also

This class is derived from [ToolIFBase](#). [create_toolset](#) for creating a list of tools.

Examples

```
## Initialization
toolprecrec <- Toolprecrec$new()

## Show object info
toolprecrec

## create_toolset should be used for benchmarking and curve evaluation
toolprecrec2 <- create_toolset("precrec")
```

ToolPRROC

ToolPRROC

Description

R6 class of the PRROC tool

Format

An R6 class object.

Details

ToolPRROC is a wrapper class for the **PRROC** tool, which is an R library that provides calculations of ROC and Precision-Recall curves.

Super class

[prcbench::ToolIFBase](#) -> ToolPRROC

Methods**Public methods:**

- [ToolPRROC\\$new\(\)](#)
- [ToolPRROC\\$set_curve\(\)](#)
- [ToolPRROC\\$set_minStepSize\(\)](#)
- [ToolPRROC\\$set_aucType\(\)](#)
- [ToolPRROC\\$clone\(\)](#)

Method `new()`: Default class initialization method.

Usage:

`ToolPRROC$new(...)`

Arguments:

... set value for curve, minStepSize, aucType.

Method `set_curve()`: A Boolean value to specify whether precision-recall curve is calculated.

Usage:

```
ToolPRROC$set_curve(val)
```

Arguments:

val TRUE: calculate, FALSE: not calculate.

Method `set_minStepSize()`: A numeric value to specify the minimum step size between two intermediate points.

Usage:

```
ToolPRROC$set_minStepSize(val)
```

Arguments:

val Step size between two points.

Method `set_aucType()`: Set the AUC calculation method

Usage:

```
ToolPRROC$set_aucType(val)
```

Arguments:

val 1: integral, 2: Davis Goadrich

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
ToolPRROC$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

See Also

This class is derived from [ToolIFBase](#). `create_toolset` for creating a list of tools.

Examples

```
## Initialization
toolprroc <- ToolPRROC$new()

## Show object info
toolprroc

## create_toolset should be used for benchmarking and curve evaluation
toolprroc2 <- create_toolset("PRROC")
```

ToolROCR

ToolROCR

Description

R6 class of the ROCR tool

Format

An R6 class object.

Details

ToolROCR is a wrapper class for the **ROCR** tool, which is an R library that provides calculations of various performance evaluation measures.

Super class

`prcbench::ToolIFBase` -> ToolROCR

Methods

Public methods:

- `ToolROCR$clone()`

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
ToolROCR$clone(deep = FALSE)
```

Arguments:

`deep` Whether to make a deep clone.

See Also

This class is derived from `ToolIFBase`. `create_toolset` for creating a list of tools.

Examples

```
## Initialization
toolrocr <- ToolROCR$new()

## Show object info
toolrocr

## create_toolset should be used for benchmarking and curve evaluation
toolrocr2 <- create_toolset("ROCR")
```

Index

* datasets

C1DATA, 3
C2DATA, 4
C3DATA, 4
C4DATA, 4

autoplot, 2

C1DATA, 3, 4, 6

C2DATA, 4, 6

C3DATA, 4, 6

C4DATA, 4, 6

create_example_func, 5, 10

create_testset, 5, 5, 9–13, 15, 17

create_toolset, 7, 10–13, 19, 21, 22, 24–26

create_usrdata, 6, 8, 11

create_usrtool, 5, 9, 11

microbenchmark, 11, 12

prcbench, 11

prcbench::TestDataB, 15

prcbench::ToolIFBase, 18, 22–24, 26

run_benchmark, 6, 8, 11, 11

run_evalcurve, 6, 8, 11, 12

summary.microbenchmark, 12

system.time, 12

TestDataB, 6, 9, 13, 17

TestDataC, 6, 9, 15, 15

ToolAUCCalculator, 8, 18, 21

ToolIFBase, 19, 19, 22, 24–26

ToolPerfMeas, 8, 21, 22

Toolprecrec, 8, 21, 23

ToolPPROC, 8, 21, 24

ToolROCR, 8, 21, 26