Package 'tidyboot'

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Type Package

Title Tidyverse-Compatible Bootstrapping

Version 0.1.1

Description Compute arbitrary non-parametric bootstrap statistics on data in
tidy data frames.

Depends R (>= 3.4.0)

License GPL-3

URL https://github.com/langcog/tidyboot

BugReports http://github.com/langcog/tidyboot/issues

Encoding UTF-8

LazyData true

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Imports dplyr (>= 0.7.4), modelr (>= 0.1.1), purrr (>= 0.2.4), rlang
(>= 0.1.6), tidyr (>= 0.7.2)

NeedsCompilation no

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R topics documented:

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ci_lower   *Confidence interval (lower 2.5%)*

Description

Confidence interval (lower 2.5%)

Usage

```
ci_lower(x, na.rm = FALSE)
```

Arguments

x   A numeric vector

na.rm   A logical value indicating whether NA values should be stripped before the computation proceeds.

Value

2.5

Examples

```
x <- rnorm(1000, mean = 0, sd = 1)
ci_lower(x)
```

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ci_upper   *Confidence interval (upper 97.5%)*

Description

Confidence interval (upper 97.5%)

Usage

```
ci_upper(x, na.rm = FALSE)
```

Arguments

x   A numeric vector

na.rm   A logical value indicating whether NA values should be stripped before the computation proceeds.

Value

97.5

Examples

```
x <- rnorm(1000, mean = 0, sd = 1)
ci_upper(x)
```

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tidyboot	*Non-parametric bootstrap with multiple sample statistics*

Description

`tidyboot` is a generic function for bootstrapping on various data structures. The function invokes particular methods which depend on the class of the first argument.

Usage

```
tidyboot(data, ...)
```

Arguments

data   A data structure containing the data to bootstrap.

...   Additional arguments passed to particular methods.

Examples

```
## List of available methods
methods(tidyboot)
```

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tidyboot.data.frame	*Non-parametric bootstrap for data frames*

Description

Computes arbitrary bootstrap statistics on univariate data.

Usage

```
## S3 method for class 'data.frame'
tidyboot(data, column = NULL, summary_function = mean,
  statistics_functions, nboot = 1000, ...)
```

Arguments

`data`	A data frame.
`column`	A column of `data` to bootstrap over (if not supplied, summary_function and statistic_function must operate over the appropriate data frame).
`summary_function`	A function to be computed over each set of samples as a data frame, or a function to be computed over each set of samples as a single column of a data frame indicated by `column` (defaults to `mean`).
`statistics_functions`	A function to be computed over each set of samples as a data frame, or a named list of functions to be computed over each set of samples as a single column of a data frame indicated by `column`.
`nboot`	The number of bootstrap samples to take (defaults to `1000`).
`...`	Other arguments passed from generic.

Examples

```
## Mean and 95% confidence interval for 500 samples from two different normal distributions
require(dplyr)
gauss1 <- data_frame(value = rnorm(500, mean = 0, sd = 1), condition = 1)
gauss2 <- data_frame(value = rnorm(500, mean = 2, sd = 3), condition = 2)
df <- bind_rows(gauss1, gauss2)
df %>% group_by(condition) %>%
  tidyboot(summary_function = function(x) x %>% summarise(mean = mean(value)),
           statistics_functions = function(x) x %>%
           summarise_at(vars(mean), funs(ci_upper, mean, ci_lower)))
```

`tidyboot.logical`	*Non-parametric bootstrap for logical vector data*

Description

Computes arbitrary bootstrap statistics on univariate data.

Usage

```
## S3 method for class 'logical'
tidyboot(data, summary_function = mean,
  statistics_functions, nboot = 1000, size = 1, replace = TRUE, ...)
```

Arguments

`data`	A logical vector of data to bootstrap over.
`summary_function`	A function to be computed over each set of samples. This function needs to take a vector and return a single number (defaults to `mean`).

```
statistics_functions
                  A named list of functions to be computed over the set of summary values from
                  all samples.
nboot             The number of bootstrap samples to take (defaults to 1000).
size              The fraction of items to sample (defaults to 1).
replace           Logical indicating whether to sample with replacement (defaults to TRUE).
...               Other arguments passed from generic.
```

Examples

```
## Mean and 95% confidence interval for 500 samples from a binomial distribution
x <- as.logical(rbinom(500, 1, 0.5))
tidyboot(x, statistics_functions = c(ci_lower, mean, ci_upper))
```

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  tidyboot.numeric   *Non-parametric bootstrap for numeric vector data*

Description

Computes arbitrary bootstrap statistics on univariate data.

Usage

```
## S3 method for class 'numeric'
tidyboot(data, summary_function = mean,
  statistics_functions, nboot = 1000, size = 1, replace = TRUE, ...)
```

Arguments

```
data              A numeric vector of data to bootstrap over.
summary_function
                  A function to be computed over each set of samples. This function needs to take
                  a vector and return a single number (defaults to mean).
statistics_functions
                  A named list of functions to be computed over the set of summary values from
                  all samples.
nboot             The number of bootstrap samples to take (defaults to 1000).
size              The fraction of items to sample (defaults to 1).
replace           Logical indicating whether to sample with replacement (defaults to TRUE).
...               Other arguments passed from generic.
```

Examples

```
## Mean and 95% confidence interval for 500 samples from a normal distribution
x <- rnorm(500, mean = 0, sd = 1)
tidyboot(x, statistics_functions = list("ci_lower" = ci_lower,
                                        "mean" = mean,
                                        "ci_upper" = ci_upper))
```

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tidyboot_mean	*Non-parametric bootstrap and empirical central tendency for data frames Designed to make standard use of* `tidyboot.data.frame` *easier*

Description

Computes arbitrary bootstrap statistics on univariate data. NOTE: Both empirical functions and bootstrapping functions will be computed over the grouping variables currently specified for the data frame.

Usage

```
tidyboot_mean(data, column, nboot = 1000, na.rm = FALSE)
```

Arguments

data	A data frame.
column	A column of `data` to bootstrap over.
nboot	The number of bootstrap samples to take (defaults to `1000`).
na.rm	A logical value indicating whether NA values should be stripped before the computation proceeds.

Examples

```
## Mean and 95% confidence interval for 500 samples from two different normal distributions
require(dplyr)
gauss1 <- data_frame(value = rnorm(500, mean = 0, sd = 1), condition = 1)
gauss2 <- data_frame(value = rnorm(500, mean = 2, sd = 3), condition = 2)
df <- bind_rows(gauss1, gauss2)
df %>%
 group_by(condition) %>%
 tidyboot_mean(column = value)
```

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