Package 'pecora'

October 7, 2021

Type Package

Title Permutation Conditional Random Tests

Version 0.1.0

Date 2021-10-06

Description It provides functions to perform permutation conditional random one-sample and two-samples t-tests in a multivariate framework.

License GPL (>= 2)

Imports Rcpp (>= 1.0.3), matrixStats, stats

LinkingTo Rcpp, RcppArmadillo

RoxygenNote 7.1.1

Encoding UTF-8

Language en-US

NeedsCompilation yes

Author Angela Andreella [aut, cre] (Main author, <https://orcid.org/0000-0002-1141-3041>)

Maintainer Angela Andreella <angela.andreella@unipd.it>

Repository CRAN

Date/Publication 2021-10-07 10:40:02 UTC

R topics documented:

`oneSample` *Permutatation-based one sample t-test*

Description

Performs sign-flipped one-sample t-tests.

Usage

```
oneSample(X, B = 1000, alternative, seed = 1234,
rand = FALSE, permReturn = FALSE)
```

Arguments

`X`	data matrix where rows represent the `m` variables and columns the `n` observations.
`B`	numeric value, number of permutations to be performed, including the identity. Default is 1000.
`alternative`	character string referring to the alternative hypothesis (`greater`, `lower`, `two.sided`).
`seed`	numeric value, specify seed. Default is 1234.
`rand`	logical value, `TRUE` to compute p-values by permutation distribution.
`permReturn`	logical value, `TRUE` to return the t-tests and p-values permutation distribution.

Value

Returns a list with the following objects:

Test Vector of m observed one-sample t-tests

Test_H0 Matrix with dimensions $m \times B$ of permuted one-sample t-tests

pv Vector of m observed p-values

pv_H0 Matrix with dimensions $m \times B$ of permuted p-values

if `permReturn = TRUE` otherwise returns a list with the following objects:

Test Vector of m observed one-sample t-tests

pv Vector of m observed p-values

Author(s)

Angela Andreella

Examples

```
X <- matrix(rnorm(100*20), ncol=20)
out <- oneSample(X = X, alternative = "two.sided")
```

rowVariance *Rows Variance*

Description

Performs the variance for each row in a matrix

Usage

```
rowVariance(X,na.rm = TRUE)
```

Arguments

X	data where rows represents the variables and columns the observations
na.rm	remove na?

Value

rows variance

Author(s)

Angela Andreella

twoSamples *Permutatation-based two sample t-test*

Description

Performs two-sample t-tests by permutations.

Usage

```
twoSamples(X, B = 1000, alternative, seed = 1234,
rand = FALSE, permReturn = FALSE, label = NULL)
```

Arguments

X	data matrix where rows represent the m variables and columns the n observations. The columns' name defines the groups' label.
B	numeric value, number of permutations to be performed, including the identity. Default is 1000.
alternative	character string referring to the alternative hypothesis (greater, lower, two.sided).
seed	numeric value, specify seed. Default is 1234.
rand	logical value, TRUE to compute p-values by permutation distribution.

permReturn	logical value, TRUE to return the t-tests and p-values permutation distribution.
label	by default label = NULL. Labels of the observations, if NULL the columns's name are considered.

Value

Returns a list with the following objects:

Test Vector of m observed one-sample t-tests

Test_H0 Matrix with dimensions $m \times B$ of permuted one-sample t-tests

pv Vector of m observed p-values

pv_H0 Matrix with dimensions $m \times B$ of permuted p-values

if permReturn = TRUE otherwise returns a list with the following objects:

Test Vector of m observed one-sample t-tests

pv Vector of m observed p-values

Author(s)

Angela Andreella

Examples

```
X <- matrix(rnorm(100*20), ncol=20)
colnames(X) <- c(rep(0, 10), rep(1,10))
out<- twoSamples(X = X)
```

Index