Package 'rdcor'

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Type Package

Title Rank Distance Correlation Coefficient

Version 1.1

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Depends R (>= 4.0)

Imports dcov, rangen, Rfast

Suggests Rfast2

Description The rank distance correlation <doi:10.1080/01621459.2020.1782223> is computed. Included also is a function to perform permutation based testing.

License GPL (>= 2)

NeedsCompilation no

Repository CRAN

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Contents

`rdcor-package` *Rank Distance Correlation Coefficient*

Description

The rank distance correlation of Shi H., Drton M. and Han F. (2022) is computed. Included also is a function to perform permutation based testing.

Details

Package:	rdcor
Type:	Package
Version:	1.1
Date:	2026-03-25
License:	GPL-2

Maintainers

Michail Tsagris <mtsagris@uoc.gr>.

Author(s)

Michail Tsagris <mtsagris@uoc.gr>.

References

Shi H., Drton M. and Han F. (2022). Distribution-free consistent independence tests via center-outward ranks and signs. Journal of the American Statistical Association, 117(537): 395–410.

Zhang Q. (2025). On the connections between Chatterjee's correlation and rank distance correlation. Journal of Nonparametric Statistics, 1–18.

`Permutation-based hypothesis testing for the rank distance correlation`

Permutation-based hypothesis testing for the rank distance correlation

Description

Permutation-based hypothesis testing for the rank distance correlation.

Usage

```
rdcor.test(y, x, B = 499)
```

Arguments

y	A numerical vector.
x	A numerical vector or a numerical matrix.
B	The number of permutations to implement.

Details

Permutation-based hypothesis testing between y and x or between y and each column of x is performed.

Value

If x is a vector a vector with the rank distance correlation and the permuation-based p-value. If x is a matrix, this returns a matrix with two columns: the rank distance correlation and the permutation-based p-value.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Shi H., Drton M. and Han F. (2022). Distribution-free consistent independence tests via center-outward ranks and signs. Journal of the American Statistical Association, 117(537): 395–410.

Zhang Q. (2025). On the connections between Chatterjee's correlation and rank distance correlation. Journal of Nonparametric Statistics, 1–18.

See Also

rdcor, rdcor.mat

Examples

```
y <- iris[, 1]
x <- matrix( rnorm(150 * 10), ncol = 10 )
rdcor.test(y, x)
```

Rank distance correlation

Rank distance correlation

Description

Rank distance correlation.

Usage

```
rdcor(y, x)
```

Arguments

y	A numerical vector.
x	A numerical vector or a numerical matrix.

Details

This computes the rank distance correlation between y and x, or between y and each column of x.

Value

A vector with the rank distance correlation().

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Shi H., Drton M. and Han F. (2022). Distribution-free consistent independence tests via center-outward ranks and signs. Journal of the American Statistical Association, 117(537): 395–410.

Zhang Q. (2025). On the connections between Chatterjee's correlation and rank distance correlation. Journal of Nonparametric Statistics, 1–18.

See Also

rdcor.test, rdcor.mat

Examples

```
y <- iris[, 1]
x <- matrix( rnorm(150 * 10), ncol = 10 )
rdcor(y, x)
```

`Rank distance correlation matrix`
Rank distance correlation matrix

Description

Rank distance correlation matrix.

Usage

```
rdcor.mat(x, B = 1)
```

Arguments

`x`	A numerical matrix.
`B`	The number of permutations to implement to compute the p-value. If B = 1, no p-value is returned.

Details

The function computes the rank distance correlation matrix and optionally performs permutation-based hypothesis testing.

Value

A list including:

`r`	The rank distance correlation matrix.
`pvalue`	A matrix with the associated p-values, if B>1, otherwise NULL.

Author(s)

Michail Tsagris and Nikolaos Kontemeniotis .

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Shi H., Drton M. and Han F. (2022). Distribution-free consistent independence tests via center-outward ranks and signs. Journal of the American Statistical Association, 117(537): 395–410.

Zhang Q. (2025). On the connections between Chatterjee's correlation and rank distance correlation. Journal of Nonparametric Statistics, 1–18.

See Also

`rdcor`, `rdcor.test`

Examples

```
x <- as.matrix(iris[, 1:4])
rdcor.mat(x)
```

Index