

Package ‘rdcor’

December 8, 2025

Type Package

Title Rank Distance Correlation Coefficient

Version 1.0

Date 2025-12-01

Author Michail Tsagris [aut, cre]

Maintainer Michail Tsagris <mtsagris@uoc.gr>

Depends R (>= 4.0)

Imports dcov, Rfast, Rfast2

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

License GPL (>= 2)

NeedsCompilation no

Repository CRAN

Date/Publication 2025-12-08 08:20:02 UTC

Contents

rdcor-package	2
Permutation-based hypothesis testing for the rank distance correlation	2
Rank distance correlation	4
Rank distance correlation matrix	5

Index

7

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:	1.0
Date:	2025-12-01
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 permutation-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

- | | |
|----------------|---|
| <code>y</code> | A numerical vector. |
| <code>x</code> | 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

Permutation-based hypothesis testing
for the rank distance
correlation, [2](#)

Rank distance correlation, [4](#)
Rank distance correlation matrix, [5](#)
`rdcor`, [3](#), [5](#)
`rdcor` (Rank distance correlation), [4](#)
`rdcor-package`, [2](#)
`rdcor.mat`, [3](#), [4](#)
`rdcor.mat` (Rank distance correlation
matrix), [5](#)
`rdcor.test`, [4](#), [5](#)
`rdcor.test` (Permutation-based
hypothesis testing for the
rank distance correlation), [2](#)