

Package ‘dccpp’

July 22, 2025

Type Package

Title Fast Computation of Distance Correlations

Version 0.1.0

Date 2023-09-27

Description Fast computation of the distance covariance 'dcov' and distance correlation 'dcor'. The computation cost is only $O(n \log(n))$ for the distance correlation (see Chaudhuri, Hu (2019) <[doi:10.48550/arXiv.1810.11332](https://doi.org/10.48550/arXiv.1810.11332)> <[doi:10.1016/j.csda.2019.01.016](https://doi.org/10.1016/j.csda.2019.01.016)>). The functions are written entirely in C++ to speed up the computation.

License GPL (>= 3)

URL <https://dccpp.berrisch.biz/>, <https://github.com/BerriJ/dccpp>

BugReports <https://github.com/BerriJ/dccpp/issues>

Encoding UTF-8

Imports Rcpp (>= 1.0.8)

LinkingTo Rcpp, RcppArmadillo

RoxygenNote 7.2.3

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation yes

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Repository CRAN

Date/Publication 2023-09-27 08:30:07 UTC

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`dcor`*Distance Correlation*

Description

Distance Correlation

Usage`dcor(x,y)`**Arguments**

<code>x</code>	numeric vector
<code>y</code>	numeric vector

Value

Returns a numeric value: the distance correlation between x and y.

Examples

```
## Not run:

set.seed(1)
x <- rnorm(1000)
y <- -x ^ 2

dcor(x, y) # dcor shows dependence between x and y
cor(x, y) # cor does not detect any dependence due to nonlinearity

## End(Not run)
```

`dcov`*Distance Covariance*

Description

Distance Covariance

Usage`dcov(x,y)`

Arguments

x	numeric vector
y	numeric vector

Details

Implements the algorithm described in Chaudhuri, Hu (2019) [doi:10.1016/j.csda.2019.01.016](https://doi.org/10.1016/j.csda.2019.01.016) which only has $O(n \log(n))$ complexity.

Value

Returns a numeric value: the distance covariance between x and y.

Examples

```
## Not run:

set.seed(1)
x <- rnorm(1000)
y <- -x ^ 2

dcov(x, y)
dvov(x, x)
dvov(y, y)

## End(Not run)
```

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