Package ‘dccpp’
March 2, 2022

Type Package
Title Fast Computation of Distance Correlations
Version 0.0.2
Date 2022-03-01

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) <arXiv:1810.11332> <doi:10.1016/j.csda.2019.01.016>). The functions are written entirely in C++ to speed up the computation.

License GPL (>= 3)

SystemRequirements C++11


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

Encoding UTF-8
Imports Rcpp (>= 1.0.8)
LinkingTo Rcpp, RcppArmadillo
RoxygenNote 7.1.2
Suggests testthat (>= 3.0.0)
Config/testthat/editon 3
NeedsCompilation yes

Author Jonathan Berrisch [aut, cre] (<https://orcid.org/0000-0002-4944-9074>)
Maintainer Jonathan Berrisch <Jonathan@Berrisch.biz>
Repository CRAN
Date/Publication 2022-03-02 08:50:12 UTC

R topics documented:

dcor ................................................................. 2
dcov ................................................................. 2

Index 4
**dcor**

*Distance Correlation*

**Description**
Distance Correlation

**Usage**

dcor(x, y)

**Arguments**

- x: numeric vector
- y: numeric vector

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

**Examples**

```r
## 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)

**Examples**

```r
## Not run:
set.seed(1)
x <- rnorm(1000)
y <- -x^2
dcov(x, y) # dcor shows dependence between x and y
cov(x, y) # cor does not detect any dependence due to nonlinearity
```

## End(Not run)
Arguments

x numeric vector
y numeric vector

Details

Implements the algorithm described in Chaudhuri, Hu (2019) doi: 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)
dcov(x, x)
dcov(y, y)

## End(Not run)
Index

dcor, 2
dcov, 2