Package ‘dccpp’

September 27, 2023

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) <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)
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)
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NeedsCompilation yes
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**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)
dcov

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
  d cov(x, y)
  dv ov(x, x)
  dv ov(y, y)

  ## End(Not run)
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