

Package ‘multiCorr’

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Type Package

Title Multicovariance and Multicorrelation for p-Variables

Version 0.1.0

Description Implements the multicorrelation coefficient for p-variables as described in Cankaya (2023). The package provides a numerically stable implementation using logarithmic transformations and a log-sum-exp approach to reduce numerical overflow and underflow when calculations involve a large number of variables.

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Encoding UTF-8

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NeedsCompilation no

Author Mehmet Niyazi Cankaya [aut, cre]

Maintainer Mehmet Niyazi Cankaya <mehmet.cankaya@usak.edu.tr>

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multicorrelation	<i>Calculate Multicorrelation for p-Variables</i>
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Description

Computes the multicorrelation coefficient for p variables.

Usage

```
multicorrelation(x, r = 1)
```

Arguments

x	A numeric matrix or data frame.
r	A positive numeric power parameter. Default is 1.

Details

Each variable is centered by its arithmetic mean and scaled by its mean absolute deviation from the mean. Logarithmic transformations and a log-sum-exp approach are used to improve numerical stability.

Value

A numeric multicorrelation coefficient.

References

Cankaya, M. N. (2023). Multicovariance and Multicorrelation for p-variables. In Mathematical Methods for Engineering Applications (ICMASE 2022), pp. 273-284. Cham: Springer International Publishing.

Examples

```
set.seed(123)
X <- matrix(rnorm(1000), nrow = 100, ncol = 10)
multicorrelation(X)

multicorrelation(X, r = 2)
```

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