Package ‘JMI’

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Type Package

Title Jackknife Mutual Information

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Description Computes the Jackknife Mutual Information (JMI) between two random vectors and provides the p-value for dependence tests. See Zeng, X., Xia, Y. and Tong, H. (2018) <doi:10.1073/pnas.1715593115>.

License GPL (>= 2)

Encoding UTF-8

LazyData true

Imports Rcpp

LinkingTo Rcpp, RcppArmadillo

RoxygenNote 6.0.1

NeedsCompilation yes

Repository CRAN

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Contents

`JMI` *Jackknife Mutual Information*

Description

This function provides method for dependence test. It uses permutation test to determine the rejection region.

Usage

```
JMI(x, y, BN = 1000)
```

Arguments

`x`	n by p sample matrix.
`y`	n by q sample matrix.
`BN`	Number of permutations, the default value is 1000.

Value

the output is a list which contains:

- mi: the value of Jackknife Mutual information
- pvalue: the p-value of independence test that based on the permutation of JMI, the value is not provided if BN=0.

References

Zeng, X., Xia, Y., & Tong, H. (2018). Jackknife approach to the estimation of mutual information[J]. Proceedings of the National Academy of Sciences, 201715593.

Examples

```
x <- matrix(rnorm(50*3),50,3)
y <- matrix(rnorm(50*2),50,2)
#calculate the Jackknife Mutual information between x and y.
JMI(x,y,0)$mi
#calculate the p-value of independent test between x and y that based on 500 permutations.
JMI(x,y,500)$pvalue
```

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