Package ‘mnonr’

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Type Package

Title A Generator of Multivariate Non-Normal Random Numbers

Version 1.0.0

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Description A data generator of multivariate non-normal data in R. It combines two different methods to generate non-normal data, one with user-specified multivariate skewness and kurtosis (more details can be found in the paper: Qu, Liu, & Zhang, 2019 <doi:10.3758/s13428-019-01291-5>), and the other with the given marginal skewness and kurtosis. The latter one is the widely-used Vale and Maurelli's method. It also contains a function to calculate univariate and multivariate (Mardia's Test) skew and kurtosis.

Depends R (>= 3.1.0)

License GPL-2 | GPL-3

Encoding UTF-8

LazyData true

Imports stats

Suggests MASS, knitr, rmarkdown, semTools

VignetteBuilder knitr

RoxygenNote 6.1.1

NeedsCompilation no

Repository CRAN

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R topics documented:

mardia	*Univariate and Multivariate skewness and kurtosis checker*

Description

Univariate and Multivariate skewness and kurtosis checker

Usage

```
mardia(x, na.rm = TRUE)
```

Arguments

x	A data matrix
na.rm	An indication of the missing data, the default value is True

Value

Data information: sample size and number of variables. The marginal and multivariate test (Mardia's Test) of skewness and kurtosis.

mnonr	*Multivariate Non-normal Random Number Generator based on Multivariate Measures*

Description

Multivariate Non-normal Random Number Generator based on Multivariate Measures

Usage

```
mnonr(n, p, ms, mk, Sigma, initial = NULL)
```

Arguments

n	Sample size
p	Number of variables
ms	A value of multivariate skewness
mk	A value of multivariate kurtosis
Sigma	A covariance matrix (In this function, the generated data are standarized. A correlation matrix is equal to its corresponding covariance matrix.)
initial	A vector with 3 numbers for initial polynominal coefficients' (b,c,d). The default setting is (0.9,0.4,0).

Value

A data matrix (multivariate data)

Examples

```
mnonr::mnonr(n=10000,p=2,ms=3,mk=61,Sigma=matrix(c(1,0.5,0.5,1),2,2),initial=NULL)
```

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unonr *Multivariate Non-normal Random Number Generator based on Marginal Measures (Vale and Maurelli's method)*

Description

Generate Multivariate Non-normal Data using Vale and Maurelli (1983) method. The codes are copied from mvrnonnorm function in the semTools package.

Usage

```
unonr(n, mu, Sigma, skewness = NULL, kurtosis = NULL, empirical = FALSE)
```

Arguments

`n`	Sample size
`mu`	A mean vector
`Sigma`	A covariance matrix
`skewness`	A skewness vector
`kurtosis`	A kurtosis vector
`empirical`	If TRUE, mu and Sigma specify the empirical not population mean and covariance matrix

Value

A data matrix (multivariate data)

References

Vale, C. D. & Maurelli, V. A. (1983) Simulating multivariate nonormal distributions. Psychometrika, 48, 465-471.

Examples

```
unonr(1000, c(1, 2), matrix(c(10, 2, 2, 5), 2, 2), skewness = c(1, 2), kurtosis = c(3, 8))
```

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