Package ‘mnonr’

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Type Package

Title A Generator of Multivariate Non-Normal Random Numbers

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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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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).
unonr

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)

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


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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