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
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VignetteBuilder knitr
RoxygenNote 6.1.1
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**mardia**

*Univariate and Multivariate skewness and kurtosis checker*

**Description**

Univariate and Multivariate skewness and kurtosis checker

**Usage**

```r
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.

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**mnonr**

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

**Description**

Multivariate Non-normal Random Number Generator based on Multivariate Measures

**Usage**

```r
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
unonr::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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