Package 'gencor'

November 17, 2021

Type Package

Title Generate Customized Correlation Matrices

Version 1.0.0

Depends base,

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Description Provides a function that generates customized correlation matrix based on limit values and proportions for intervals composed by its limits. Can also generate random correlation matrices, matrices with low, medium and high correlations, which low, medium and high thresholds are user-defined.

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Encoding UTF-8

Suggests testthat (>= 3.0.0)

RoxygenNote 7.1.1

Config/testthat/edition 3

NeedsCompilation no

Repository CRAN

Date/Publication 2021-11-17 20:00:02 UTC

R topics documented:

gencor *Generates custom correlation matrices*

Description

Generates custom correlation matrices based on user defined limits and/or proportions.

Usage

```
gencor(
  d = 10,
  method = c("random", "low", "medium", "high", "custom"),
  custom_prop = NULL,
  nsim = 1000,
  lim_low = 0.3,
  lim_medium = 0.6,
  custom_lim = NULL,
  signal = c("random", "positive"),
  custom_precision = 0.03,
  custom_nrep = 1000,
  sort_intensity = F,
  random_liminf = 0.01
)
```

Arguments

d	Dimension of generated matrix. If not informed, d = 10
method	The method of matrix generation. • "random": generates a random matrix with the given dimension; • "low": generates a matrix of values between -lim_low and lim_low; • "medium": generates a matrix of values in the interval $[-lim_medium, -lim_low)U(lim_low, lim_med$ • "high": generates a matrix os values between lim_medium and 1. • "custom": Generates a matrix given the custom limits and custom proportions on each band defined by the limits.
custom_prop	A vector with custom proportions for every band defined by lim_low and lim_medium or custom_lim. If not defined, the proportions will be equally distributed among the correlation bands.
nsim	Size of vectors used to generate the correlation matrix.
lim_low	Defines the lower limit of generated correlations. Applied in low and medium methods by standard and in custom method if custom_lim are not informed.
lim_medium	Defines the medium limit of generated correlations. Applied in low and medium methods and in custom method if custom_lim are not informed.
custom_lim	A number or numeric vector with customized limits to generate the correlation matrix.

`signal` Defines if the signals of correlation matrix must be choosed at random or all must be positive.

- "`positive`": generates a correlation matrix with all correlations positive. Some negative signals may occur for correlations sufficiently near zero.
- "`random`": generates a correlation matrix with random signals

`custom_precision` The precision used in `custom` method. it's the maximum difference between `custom_prop` and the proportions generated by the function

`custom_nrep` Number of iterations in optimization method used to generate custom correlation matrices.

`sort_intensity` Sorts the correlation matrix by intensity.

`random_liminf` Sets the lower limit of uniform distribution that generates the standard deviations used in random correlation matrix generation. Must be greater than zero due convergence problems.

Details

This method generates correlation matrices based on the correlations among random normal variables with mean 0 and specified standard deviation values. These specified standard deviation values makes possible the control of the correlation coefficients intensity.

Examples

```
gencor()

gencor(15, method = "low", lim_low = 0.3)

gencor(15, method = "medium", lim_low = 0.3, lim_medium = 0.7)

gencor(30, method = "high", lim_medium = 0.75)

gencor(20, method = "custom", custom_lim = c(0.2, 0.5, 0.8), custom_prop = c(0.3, 0.3, 0.2, 0.2))
```

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