

Package ‘gencor’

August 19, 2022

Type Package

Title Generate Customized Correlation Matrices

Version 1.0.1

Depends base,

Author Helgem de Souza Ribeiro Martins[aut, cre], Anderson Ribeiro Duarte[aut]

Maintainer Helgem de Souza Ribeiro Martins <helgem.souza@gmail.com>

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

License GPL-3

Encoding UTF-8

Suggests testthat (>= 3.0.0)

RoxygenNote 7.2.1

Config/testthat/edition 3

NeedsCompilation no

Repository CRAN

Date/Publication 2022-08-19 13:50:02 UTC

R topics documented:

gencor 2

Index 4

gencor

*Generates custom correlation matrices***Description**

This method 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_limin = 0.01,
  seed = NULL
)
```

Arguments

d	Dimension of the generated matrix. If not informed, d = 10
method	The method of matrix generation. <ul style="list-style-type: none"> • "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 $[-lim_medium, -lim_low) \cup (lim_low, lim_medium]$; • "high": generates a matrix of values between lim_medium and 1. • "custom": Generates a matrix given the custom limits and proportions of each band defined by the limits.
custom_prop	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	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	The medium limit of generated correlations. Applied in low and medium methods and in custom method if custom_lim are not informed.

custom_lim	Number or numeric vector with customized limits to generate the correlation matrix.
signal	Defines if the signals of the correlation matrix must be chosen at random or all must be positive. <ul style="list-style-type: none">• "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 is the maximum difference between custom_prop and the proportions generated by the function
custom_nrep	The number of iterations in the 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 to convergence problems.
seed	Enables seed definition.

Details

This method generates correlation matrices based on the correlations among normal random variables with mean 0 and specified standard deviation values. These specified standard deviation values make possible the control of the correlation coefficient 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))
```

Index

gencor, [2](#)