Package 'flexIC'

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Type Package

Title Flexible Rank-Preserving Correlation Engine

Version 0.1.3

Description Implements a fast, flexible method for simulating continuous variables with specified rank correlations using the Iman–Conover transformation (Iman & Conover, 1982 <doi:10.1080/03610918208812265>) and back-ranking. Includes plotting tools and error-diagnostics.

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Encoding UTF-8

RoxygenNote 7.3.2

Imports ggplot2, stats

Suggests knitr, rmarkdown, mvtnorm, microbenchmark

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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`flexIC` *Run the flexible Iman–Conover (flexIC) transform*

Description

Applies the "best-of-m" Iman–Conover algorithm to coerce a data matrix to a target Spearman rank-correlation structure while preserving each column's marginal distribution.

Usage

```
flexIC(x, target_r = NULL, eps = 0.04, max_iter = 50)
```

Arguments

`x`	Numeric matrix or data frame to transform.
`target_r`	Optional target rank-correlation matrix; defaults to `cor(x, method = "spearman")`.
`eps`	Convergence tolerance for the maximum absolute r-difference.
`max_iter`	Maximum number of candidate draws to evaluate.

Value

A list with three components

data Numeric matrix with transformed columns.

max_abs_diff Largest absolute difference between achieved and target correlations.

iter Index of the candidate draw that achieved `max_abs_diff`.

Examples

```
set.seed(1)
x <- matrix(rnorm(300), ncol = 3)
target <- matrix(c(1, .6, .3,
                   .6, 1, .4,
                   .3, .4, 1), 3)
out <- flexIC(x, target, eps = 0.02, max_iter = 10)
str(out)
```

ic_exact *One-Shot Iman–Conover Transformation*

Description

One-Shot Iman–Conover Transformation

Usage

```
ic_exact(x, target_r = NULL)
```

Arguments

x	A numeric matrix or data.frame.
target_r	Target rank correlation matrix (optional).

plot_marginals_grid *Facetted histograms of marginals before and after flexIC*

Description

Facetted histograms of marginals before and after flexIC

Arguments

original	Matrix or data frame of the original variables.
flex_out	Either the list returned by `flexIC()` or the transformed numeric matrix itself.
bins	Number of histogram bins.
after_lab	Facet-strip label for the post-flexIC panel.

Value

A ggplot object (returned invisibly).

Examples

```
set.seed(1)
x  <- matrix(rnorm(300), ncol = 3)
fo <- flexIC(x, eps = 0.02, max_iter = 5)
plot_marginals_grid(x, fo, bins = 30)
```

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