Package 'smvgraph'

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Type Package

Title Various Multivariate Graphics with Variable Choice in Shiny Apps

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Description

Mosaic diagram, scatterplot matrix, Andrews curves, parallel coordinate diagram, radar diagram, and Chernoff plots as a Shiny app, which allow the order of variables to be changed interactively. The apps are intended as teaching examples.

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Encoding UTF-8

Imports MASS, fmsb, DescTools, shiny, shinydashboard, sortable

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NeedsCompilation no

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R topics documented:

andrews *andrews*

Description

Andrews curves for visualization of multidimensional data. `step` determines the number of line segments for each curve. If `ymax==NA` then the maximum y coordinate will be determined from the curves. Note that for `type==3` the x range is $[0, 4 * pi]$ otherwise $[-pi, pi]$.

Usage

```
andrews(x, type = 1, step = 100, ..., normalize = 1, ymax = NA)
```

Arguments

`x`	data frame or matrix
`type`	type of curve (default: `1`) • 1: $f(t) = x1/(2^0.5) + x2 * sin(t) + x3 * cos(t) + x4 * sin(2 * t) + x5 * cos(2 * t) + ...$ • 2: $f(t) = x1 * sin(t) + x2 * cos(t) + x3 * sin(2 * t) + x4 * cos(2 * t) + ...$ • 3: $f(t) = x1 * cos(t) + x2 * cos((2 * t)^0.5) + x3 * cos((3 * t)^0.5) + ...$ • 4: $f(t) = 1/(2^0.5) * (x1 + x2 * (sin(t) + cos(t)) + x3 * (sin(t) - cos(t)) + x4 * (sin(2 * t) + cos(2 * t)) + x5 * (sin(2 * t) - cos(2 * t)) + ...)$
`step`	smoothness of curves
`...`	further parameters given to graphics::plot and `graphics::lines()`
`normalize`	integer: normalization method (default: `1`) • 0: no rescaling • 1: $(x - min(x))/(max(x) - min(x))$ • 2: $(x - mean(x))/sd(x)$
`ymax`	numeric: maximum of y coordinate (default: `NA`)

Value

nothing

References

- Andrews, D. F. (1972) Plots of High-Dimensional Data. Biometrics, vol. 28, no. 1, pp. 125-136.
- Khattree, R., Naik, D. N. (2002) Andrews Plots for Multivariate Data: Some New Suggestions and Applications. Journal of Statistical Planning and Inference, vol. 100, no. 2, pp. 411-425.

See Also

In package `andrews` or at CRAN

Examples

```
andrews(iris[,-5], col=as.factor(iris[,5]))
andrews(iris[,-5], type=4, col=as.factor(iris[,5]), ymax=2)
```

`normalize` *normalize*

Description

Extracts the numeric vectors from a data frame and normalizes each vector.

Usage

```
normalize(x, method = 1)
```

Arguments

`x`	data.frame or matrix
`method`	integer: normalization method (default: `1`)

- 0: no rescaling
- 1: $(x - min(x))/(max(x) - min(x))$
- 2: $(x - mean(x))/sd(x)$

Value

numeric matrix

See Also

In package `normalize` or at CRAN

Examples

```
normalize(iris, 2)
```

order_andrews *order_andrews*

Description

Returns a reording of the columns of `x` to visualize outliers or clusters better. If no colum names are given then `V1`, `V2`, ... will be used.

Usage

```
order_andrews(x, method = 1)
```

Arguments

`x`	data matrix
`method`	numeric: order method (default: `1`) • 1: interquartile range • 2: $max(x - median(x))/IQR(x)$ (outlier) • 3: fit to a Ward cluster solution with euclidean distance

Value

order of column vectors

Examples

```
order_andrews(iris)
```

order_parcoord *order_parcoord*

Description

Returns a reordering of the columns of `x` to visualize highly correlated variable pairs based on a cluster analysis of the correlation matrix. If no colum names are given then `V1`, `V2`, ... will be used.

Usage

```
order_parcoord(x, method = "spearman", ...)
```

Arguments

`x`	data matrix
`method`	numeric: order method (default: `"spearman"`)
`...`	further parameters given to `stats::cor()`

Value

order of column vectors

Examples

```
order_parcoord(iris)
```

`sandrews` *sandrews*

Description

Shiny app for creating an Andrews curve diagram with interactive variable selection.

Usage

```
sandrews(data, xvar = character(0), ...)
```

Arguments

`data`	matrix or data.frame
`xvar`	character: names of selected variables for the plot
`...`	further parameters given to `andrews()`

Value

nothing

Examples

```
if (interactive()) sandrews(iris)
```

`schernoff` *schernoff*

Description

Shiny app for creating a Chernoff faces plot with interactive variable selection.

Usage

```
schernoff(data, xvar = character(0), ...)
```

Arguments

data	matrix or data.frame
xvar	character: names of selected variables for the plot
...	further parameters given to DescTools::PlotFaces()

Value

nothing

Examples

```
if (interactive()) schernoff(normalize(iris))
```

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smosaic *smosaic*

Description

Shiny app for creating a Mosaic plot with interactive variable selection.

Usage

```
smosaic(data, xvar = character(0), yvar = character(0), ...)
```

Arguments

data	table or data.frame
xvar	character: names of selected variables for x-axis
yvar	character: names of selected variables for y-axis
...	further parameters given to graphics::mosaicplot()

Value

nothing

Examples

```
if (interactive()) smosaic(Titanic)
dfTitanic <- table2dataframe(Titanic)
if (interactive()) smosaic(dfTitanic)
```

spairs *spairs*

Description

Shiny app for creating a scatterplot matrix with interactive variable selection.

Usage

```
spairs(data, xvar = character(0), ...)
```

Arguments

data	matrix or data.frame
xvar	character: names of selected variables for the plot
...	further parameters given to graphics::pairs()

Value

nothing

Examples

```
if (interactive()) spairs(iris, col=as.factor(iris$Species))
```

sparcoord *sandrews*

Description

Shiny app for creating a Parallel Coordinate plot with interactive variable selection.

Usage

```
sparcoord(data, xvar = character(0), ...)
```

Arguments

data	matrix or data.frame
xvar	character: names of selected variables for the plot
...	further parameters given to MASS::parcoord()

Value

nothing

Examples

```
if (interactive()) sparcoord(iris, col=as.factor(iris$Species))
```

`sradar` *sradar*

Description

Shiny app for creating radar charts with interactive variable selection.

Usage

```
sradar(data, xvar = character(0), ...)
```

Arguments

`data`	matrix or data.frame
`xvar`	character: names of selected variables for the plot
`...`	further parameters given to `fmsb::radarchart()`

Value

nothing

Examples

```
if (interactive()) sradar(normalize(iris))
```

`table2dataframe` *table2dataframe*

Description

Converts a table to a full data frame.

Usage

```
table2dataframe(tab, ...)
```

Arguments

`tab`	table: contingency table
`...`	further parameters given to `base::as.data.frame.table()`

Value

a data frame with `sum(tab)` rows and `length(dim(tab))` cols

Examples

```
table2dataframe(Titanic)
```

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