Package 'coda.plot'

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Type Package

Title Plots for Compositional Data

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Description Provides a collection of easy-to-use functions for creating
visualizations of compositional data using 'ggplot2'. Includes support
for common plotting techniques in compositional data analysis.

Depends R (>= 3.5), coda.base (>= 0.5)

License GPL

Encoding UTF-8

Imports ggplot2 (>= 3.5.0), ggtern (>= 3.5.0)

RoxygenNote 7.3.2

NeedsCompilation no

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Contents

balance_dendrogram   *Compositional Balance Dendrogram*

Description

Plots a balance dendrogram based on a compositional data set and a corresponding balance matrix. This visualization helps interpret the structure of balances in compositional data analysis.

Usage

```
balance_dendrogram(X, B, group = NULL)
```

Arguments

X	A numeric matrix or data frame representing the compositional data. Rows are observations and columns are components (must be strictly positive).
B	A numeric matrix representing the balance basis (e.g., an isometric log-ratio (ilr) balance matrix).
group	Show boxplot by groups

Details

The dendrogram shows the hierarchical structure of balances derived from the balance matrix B. Each internal node corresponds to a balance, and the height or color may reflect the variance explained or other statistics.

Value

A 'ggplot2' object representing the balance dendrogram.

Examples

```
# Simulated compositional data and balances
X = matrix(runif(50, 1, 10), ncol = 5)
colnames(X) = LETTERS[1:5]
B = pb_basis(X, method = 'exact')
balance_dendrogram(X, B)
```

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clr_biplot   *Compositional CLR Biplot*

Description

Generates a centered log-ratio (CLR) biplot for compositional data.

Usage

```
clr_biplot(
  X,
  group = NULL,
  biplot_type = "covariance",
  alpha = NULL,
  shape_group = NULL
)
```

Arguments

X	A matrix or data frame containing compositional data.
group	factor used to color the observations.
biplot_type	Character string specifying the type of biplot. Either '"covariance"' (default) or '"form"'.
alpha	Optional numeric value between 0 and 1. If provided, this overrides `biplot_type`. Controls the type of biplot: • 0 = covariance biplot • 1 = form biplot
shape_group	Optional factor used to assign shapes to the observations.

Value

A `ggplot` object displaying the biplot.

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coda.plot   *coda.plot*

Description

Easy to run function to built visualisations by means of 'ggplot2' objects.

Author(s)

Marc Comas-Cufí

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geometric_mean_barplot

Geometric Mean Barplot for Compositional Data

Description

Generates a barplot based on the geometric mean of compositional parts. Optionally, it can compare groups, display the parts on the x-axis, overlay boxplots, or use centered log-ratio (clr) transformation.

Usage

```
geometric_mean_barplot(
  X,
  group,
  x_show_parts = TRUE,
  include_boxplot = FALSE,
  clr_scale = FALSE
)
```

Arguments

X	A numeric matrix or data frame representing compositional data. Each row is an observation and each column is a part (must be strictly positive).
group	An optional factor or character vector indicating group membership for each observation.
x_show_parts	Logical. If TRUE, the x-axis displays parts instead of group labels. Default is TRUE.
include_boxplot	
	Logical. If TRUE, a boxplot is overlaid on top of the barplot. Default is FALSE.
clr_scale	Logical. If TRUE, the data are transformed to clr coordinates before computing geometric means. Default is FALSE.

Details

The function computes geometric means for each compositional part, optionally stratified by groups. If clr_scale = TRUE, the data are transformed using the centered log-ratio transformation before computing means. Overlaying a boxplot can help visualize within-group variability.

Value

A 'ggplot2' object representing the geometric mean barplot.

Examples

```
# Example with simulated compositional data
X = matrix(runif(30, 1, 10), ncol = 3)
colnames(X) = c("A", "B", "C")
group = rep(c("G1", "G2"), each = 5)
geometric_mean_barplot(X, group, include_boxplot = TRUE)
```

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ternary_diagram   *Ternary Diagram*

Description

Generates a ternary diagram from compositional data, with options to center, scale, and color the points by group. Optionally overlays principal components.

Usage

```
ternary_diagram(
  X,
  group = NULL,
  center = FALSE,
  scale = FALSE,
  show_pc = FALSE
)
```

Arguments

X	A numeric matrix or data frame of compositional data with exactly three columns.
group	A factor or character vector indicating groups for color coding (optional).
center	Logical. Should the data be centered before plotting? Default is FALSE.
scale	Logical. Should the data be scaled to unit variance? Default is FALSE.
show_pc	Logical. If TRUE, principal components are overlaid. Default is FALSE.

Value

A ggtern plot object (inherits from ggplot).

Examples

```
X = milk_cows[,5:7]
group = milk_cows$group
ternary_diagram(X, group = group)
```

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