

Package ‘RGraphSpace’

November 12, 2024

Type Package

Version 1.0.7

Title A Lightweight Interface Between 'ggplot2' and 'igraph' Objects

Description

Interface to integrate 'igraph' and 'ggplot2' graphics within spatial maps. 'RGraphSpace' implements new geometric objects using 'ggplot2' prototypes, customized for representing large 'igraph' objects in a normalized coordinate system. By scaling shapes and graph elements, 'RGraphSpace' can provide a framework for layered visualizations.

Depends R(>= 4.4), methods, igraph, ggplot2

Imports grDevices, scales, grid

Suggests knitr, rmarkdown, testthat

Enhances RedeR

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VignetteBuilder knitr

URL <https://github.com/sysbiolab/RGraphSpace>

BugReports <https://github.com/sysbiolab/RGraphSpace/issues>

Collate gspaceChecks.R gspaceValidation.R gspaceSupplements.R
gspaceMisc.R gspacePlots.R gspaceClasses.R gspaceGenerics.R
gspaceMethods.R

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Author Victor Apolonio [ctb],
Vinicius Chagas [ctb],
Mauro Castro [aut, cre] (<<https://orcid.org/0000-0003-4942-8131>>)

Maintainer Mauro Castro <mauro.a.castro@gmail.com>

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getGraphSpace, GraphSpace-method

Accessors for fetching slots from a GraphSpace object

Description

getGraphSpace retrieves information from individual slots available in a GraphSpace object.

Usage

```
## S4 method for signature 'GraphSpace'
getGraphSpace(gs, what = "summary")
```

Arguments

gs	A preprocessed GraphSpace class object
what	A single character value specifying which information should be retrieved from the slots. Options: 'graph', 'gxy', 'gxyz', 'pars', 'misc', 'status', 'summits', 'summit_mask', and 'summit_contour'.

Value

Content from slots in the [GraphSpace](#) object.

Examples

```
# Load a demo igraph
data('gtoy1', package = 'RGraphSpace')

# Create a new GraphSpace object
gs <- GraphSpace(gtoy1)

# Get the 'summary' slot in gs
getGraphSpace(gs, what = 'summary')
```

GraphSpace

Constructor of GraphSpace-class objects

Description

GraphSpace is a constructor of GraphSpace-class objects.

Usage

```
GraphSpace(g, layout = NULL, mar = 0.075, verbose = TRUE)
```

Arguments

<code>g</code>	An igraph object. It must include coordinates and names assigned to x, y, and name vertex attributes.
<code>layout</code>	an optional numeric matrix with two columns for x and y coordinates.
<code>mar</code>	A single numeric value (in $[0, 1]$) indicating the size of the outer margins as a fraction of the graph space.
<code>verbose</code>	A single logical value specifying to display detailed messages (when <code>verbose=TRUE</code>) or not (when <code>verbose=FALSE</code>).

Value

A [GraphSpace](#) class object.

Author(s)

Sysbiolab.

See Also

[plotGraphSpace](#)

Examples

```
# Load a demo igraph
data('gtoy1', package = 'RGraphSpace')

gs <- GraphSpace(gtoy1)
```

GraphSpace-class	<i>GraphSpace: An S4 class for PathwaySpace graphics</i>
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Description

GraphSpace: An S4 class for PathwaySpace graphics

Value

An S4 class object.

Slots

nodes A data frame with xy-vertex coordinates.
edges A data frame with edges.
graph An igraph object.
pars A list with parameters.
misc A list with intermediate objects for downstream methods.

Constructor

see [GraphSpace](#) constructor.

gtoys	<i>Toy 'igraph' objects</i>
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Description

Small 'igraph' objects used for workflow demonstrations. All graphs include 'x', 'y', and 'name' vertex attributes.

Usage

```
data(gtoy1)
```

Format

igraph

Value

A pre-processed igraph object.

Source

This package.

Examples

```
data(gtoy1)
data(gtoy2)
```

```
plotGraphSpace, GraphSpace-method
```

Plotting igraph objects with RGraphSpace package

Description

plotGraphSpace is a wrapper function to create dedicated ggplot graphics for igraph- and GraphSpace-class objects.

Usage

```
## S4 method for signature 'GraphSpace'
plotGraphSpace(
  gs,
  xlab = "Graph coordinates 1",
  ylab = "Graph coordinates 2",
  font.size = 1,
  theme = c("th1", "th2", "th3"),
  bg.color = "grey95",
  marks = FALSE,
  mark.size = 3,
  mark.color = "grey20"
)

## S4 method for signature 'igraph'
plotGraphSpace(gs, ..., layout = NULL, mar = 0.075)
```

Arguments

gs	Either an igraph or GraphSpace class object. If gs is an igraph, then it must include x, y, and name vertex attributes (see GraphSpace).
xlab	The title for the 'x' axis of a 2D-image space.
ylab	The title for the 'y' axis of a 2D-image space.
font.size	A single numeric value passed to ggplot themes.
theme	Name of a custom RGraphSpace theme. These themes (from 'th1' to 'th3') consist mainly of preconfigured ggplot settings, which the user can subsequently fine-tune within the resulting ggplot object.
bg.color	A single color for background.
marks	A logical value indicating whether to add 'marks' to vertex positions. Alternatively, this could be a vector listing vertex names.
mark.size	A font size argument passed to geom_text .

<code>mark.color</code>	A color passed to geom_text .
<code>...</code>	Additional arguments passed to the plotGraphSpace function.
<code>layout</code>	an optional numeric matrix with two columns for x and y coordinates.
<code>mar</code>	A single numeric value (in $[0, 1]$) indicating the size of the outer margins as a fraction of the graph space.

Value

A ggplot-class object.

Author(s)

Sysbiolab.

See Also

[GraphSpace](#)

Examples

```
# Load a demo igraph
data('gtoy1', package = 'RGraphSpace')

# Generate a ggplot for gtoy1
plotGraphSpace(gtoy1)

# Create a GraphSpace object
gs <- GraphSpace(gtoy1)

# Generate a ggplot for gs
plotGraphSpace(gs)
```

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