Package 'RGraphSpace'

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Type Package

Version 1.0.8

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, ggplot2

Imports grDevices, scales, grid, igraph

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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Repository CRAN

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Accessors for fetching slots from a GraphSpace object

Description

`getGraphSpace` retrives 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, mar = 0.075, layout = NULL, image = NULL, verbose = TRUE)
```

Arguments

g	An igraph object. It must include coordinates and names assigned to x, y, and name vertex attributes.
mar	A single numeric value (in [0,1]) indicating the size of the outer margins as a fraction of the graph space. Note: mar is ignored when an image is provided.
layout	An optional numeric matrix with two columns for x and y coordinates.
image	An optional matrix, array, or raster image object. For this option, x and y coordinates must represent pixel positions in the image space.
verbose	A single logical value specifying to display detailed messages (when verbose=TRUE) or not (when verbose=FALSE).

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 *GraphSpace: An S4 class for igraph objects*

Description

GraphSpace: An S4 class for igraph objects

Value

An S4 class object.

Slots

`nodes` A data frame with xy-vertex coordinates.

`edges` A data frame with edges.

`graph` An igraph object.

`image` An image matrix or array object.

`pars` A list with parameters.

`misc` A list with intermediate objects for downstream methods.

Constructor

see `GraphSpace` constructor.

gtoys *Toy 'igraph' objects*

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

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, ..., 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.
mark.color	A color passed to geom_text.
...	Additional arguments passed to the plotGraphSpace function.
mar	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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