

# Package ‘RGraphSpace’

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**Type** Package

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

**Version** 1.0.5

**Depends** R(>= 4.3), methods, igraph, ggplot2

**Imports** grDevices, scales, grid

**Suggests** knitr, rmarkdown, RUnit, RedeR

## 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.

**License** Artistic-2.0

**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

**Encoding** UTF-8

**RoxygenNote** 7.3.1

**NeedsCompilation** no

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**R topics documented:**

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getGraphSpace, GraphSpace-method

*Accessors for fetching slots from a GraphSpace object*

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**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 <a href="#">GraphSpace</a> 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*

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### 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      *GraphSpace: An S4 class for PathwaySpace graphics*

---

**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.

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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 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 <a href="#">GraphSpace</a> class object. If gs is an igraph, then it must include x, y, and name vertex attributes (see <a href="#">GraphSpace</a> ).
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 <a href="#">geom_text</a> .

<code>mark.color</code>	A color passed to <a href="#">geom_text</a> .
<code>...</code>	Additional arguments passed to the <a href="#">plotGraphSpace</a> 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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