Package 'RCyjs'

October 9, 2015

Type Package

Title Display and manipulate graphs in Cytoscape.js

Version 1.0.0

Date 2015-04-09

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Depends R (>= 3.1.0), BrowserViz, graph (>= 1.44.0)

Imports methods, httpuv (>= 1.3.2), Rcpp (>= 0.11.5), jsonlite (>= 0.9.15), igraph, BiocGenerics

Suggests RUnit, BiocStyle, RefNet

Description Interactvive viewing and exploration of graphs, connecting R to Cytoscape.js

License GPL-2

URL http://rcytoscape.systemsbiology.net

LazyLoad yes

biocViews Visualization, GraphAndNetwork, ThirdPartyClient

NeedsCompilation no

R topics documented:

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RCyjsClass *RCyjs: Interactive R/browser network visualization, using cytoscape.js*

Description

A "Cytoscape ecosystem" exists, with the desktop Cytoscape 3.x as the heavyweight tool, and the browser-based cytoscape.js a very nice and somewhat compatible alternative. The current package, RCyjs, provides programmatic control of cytoscape.js from an R session using the BrowserViz base class. This ensures that both R and the cytoscape.js sessions retain full interactivity. A large portion of the RCyjs API is taken from the RCytoscape package.

Usage

```
RCyjs(portRange, host="localhost", title="RCyjs", graph=graphNEL(), quiet=TRUE)
simpleDemoGraph()
createTestGraph(nodeCount, edgeCount)
biocGraphToCytoscapeJSON(graph)
noa(graph, node.attribute.name)
eda(graph, edge.attribute.name)
noaNames(graph)
edaNames(graph)


## S4 method for signature 'RCyjsClass'
setGraph(obj, graph)
## S4 method for signature 'RCyjsClass'
getNodes(obj)
## S4 method for signature 'RCyjsClass'
getSelectedNodes(obj)
## S4 method for signature 'RCyjsClass'
clearSelection(obj)
## S4 method for signature 'RCyjsClass'
redraw(obj)
## S4 method for signature 'RCyjsClass'
setNodeLabelRule(obj, attribute)
## S4 method for signature 'RCyjsClass'
setNodeLabelAlignment(obj, horizontal, vertical)
## S4 method for signature 'RCyjsClass'
setNodeSizeRule(obj, attribute, control.points, node.sizes)
## S4 method for signature 'RCyjsClass'
setNodeColorRule(obj, attribute, control.points, colors, mode)
## S4 method for signature 'RCyjsClass'
setNodeShapeRule(obj, attribute, control.points, node.shapes)
## S4 method for signature 'RCyjsClass'
setEdgeColorRule(obj, attribute, control.points, colors, mode)
```

```
## S4 method for signature 'RCyjsClass'
setEdgeWidthRule(obj, attribute, control.points, widths, mode)
## S4 method for signature 'RCyjsClass'
setEdgeTargetArrowShapeRule(obj, attribute, control.points, shapes)
## S4 method for signature 'RCyjsClass'
setEdgeTargetArrowColorRule(obj, attribute, control.points, colors, mode)
## S4 method for signature 'RCyjsClass'
setEdgeSourceArrowShapeRule(obj, attribute, control.points, shapes)
## S4 method for signature 'RCyjsClass'
setEdgeSourceArrowColorRule(obj, attribute, control.points, colors, mode)
## S4 method for signature 'RCyjsClass'
layout(obj, strategy)
## S4 method for signature 'RCyjsClass'
layoutStrategies(obj)
## S4 method for signature 'RCyjsClass'
getPosition(obj, nodeIDs=NA)
## S4 method for signature 'RCyjsClass'
setPosition(obj, tbl.pos)
## S4 method for signature 'RCyjsClass'
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saveLayout(obj, filename)
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restoreLayout(obj, filename)
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setZoom(obj, newValue)
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getZoom(obj)
## S4 method for signature 'RCyjsClass'
setBackgroundColor(obj, newValue)
## S4 method for signature 'RCyjsClass'
fitContent(obj)
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fitSelectedContent(obj)
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selectNodes(obj, nodeIDs)
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setDefaultNodeSize(obj, newValue)
## S4 method for signature 'RCyjsClass'
setDefaultNodeHeight(obj, newValue)
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## S4 method for signature 'RCyjsClass'
setDefaultNodeFontSize(obj, newValue)
## S4 method for signature 'RCyjsClass'
setDefaultNodeBorderColor(obj, newValue)
## S4 method for signature 'RCyjsClass'
setDefaultEdgeTargetArrowShape(obj, newValue)
```

```
## S4 method for signature 'RCyjsClass'
setDefaultEdgeColor(obj, newValue)
## S4 method for signature 'RCyjsClass'
setDefaultEdgeTargetArrowColor(obj, newValue)
## S4 method for signature 'RCyjsClass'
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setDefaultEdgeOpacity(obj, newValue)
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setDefaultEdgeSourceArrowColor(obj, newValue)
## S4 method for signature 'RCyjsClass'
setDefaultEdgeSourceArrowShape(obj, newValue)
```

Arguments

portRange	One or more consecutive integers in the range 1025-65535. A typical choice is 9000:9024. The BrowserViz class constructor will try these one at a time in succession until a free port is found and the connection to your web browser is established. If no open ports are found in the supplied range, an error is reported.
host	Nearly always left to its default value, "localhost" but included as a parameter supporting remote computers for future flexibility.
title	The constructor creates a new window (or a new tab, depending on how you web browser is configured). This title is displayed at the top of the window or tab.
graph	A graphNEL object.
quiet	Trace and tracking messages are written to the R console if this variable is set to FALSE.
obj	The RCyjsClass object returned by the class constructor.
newValue	A new size, color, shape (etc.) value to be used in rendering the network.
horizontal	"left", "right", "center": specifies node label position.
vertical	"top", "bottom", "center": specifies node label position.
attribute	Many network rendering rules are controlled by the value of a node or edge attribute. This characacter string is the name of that controlling attribute.
control.points	Values (2 or more) of an edge or node attribute at which color, size (etc) rendering changes.

node.sizes	A list of pixel values.
colors	A list of colors. Well-known names (e.g., "red") can be used. An RGB triplet (red, green blue) will always work, and provides more specificity: "rgb(0, 255, 128)"
mode	either "lookup" for when the controlling node or edge attribute is categorical, or "interpolate" when the attribute is continous.
node.shapes	One of "ellipse", "triangle", "pentagon", "hexagon", "heptagon", "octagon", "star", "rectangle", "roundrectangle".
widths	The width, in pixels, for edges.
shapes	For edge "decorations" – the arrow (and etcetera) that decorates the ends of edges, as they connect to nodes. Currently supported values are "arrow", "tee" and "none" (the default).
strategy	A character string, this names a network layout strategy. Currently supported: "breadthfirst", "circle", "concentric", "cose", "grid", "random".
nodeIDs	Nodes as identified by the "id" field in their cytoscape.js data.
tbl.pos	A 3-column data.frame describing node positions: "id", "x", "y"
filename	A character string representing a valid path in your filesystem.
nodeCount	An integer value for the requested graph.
edgeCount	An integer value for the requested graph.
node.attribute.name	a character string.
edge.attribute.name	a character string.

Author(s)

Paul Shannon

Examples

```
library(RCyjs)

g <- simpleDemoGraph()  # a 3-node, 3-edge graph with some node and edge attributes
noaNames(g)
edaNames(g)

rcy <- RCyjs(portRange=9047:9057, quiet=TRUE, graph=g);

title <- "demo"
setBrowserWindowTitle(rcy, title)

tbl.nodes <- getNodes(rcy)

setNodeLabelRule(rcy, "label");
setNodeSizeRule(rcy, "count", c(0, 30, 110), c(20, 50, 100));
setNodeColorRule(rcy, "count", c(0, 100), c("rgb(0,255,0)", "rgb(255,0,0)"), mode="interpolate")
```

```
redraw(rcy)
layout(rcy, "cose")
closeWebSocket(rcy)
```

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