# visDAG

July 22, 2015

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| visDAG | *Function to visualise a direct acyclic graph (DAG) with node colorings according to a named input data vector (if provided)* |

## Description

visDAG is supposed to visualise a direct acyclic graph (DAG) with node colorings according to a named input data vector (if provided)

## Usage

```
visDAG(g, data = NULL, height = 7, width = 7, margin = rep(0.1, 4),
colormap = c("yr", "bwr", "jet", "gbr", "wyr", "br", "rainbow", "wb",
"lightyellow-orange"), ncolors = 40, zlim = NULL, colorbar = T,
colorbar.fraction = 0.1, newpage = T,
layout.orientation = c("left_right", "top_bottom", "bottom_top",
"right_left"), node.info = c("none", "term_id", "term_name", "both",
"full_term_name"), graph.node.attrs = NULL, graph.edge.attrs = NULL,
node.attrs = NULL)
```

## Arguments

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| g | an object of class "igraph" |
| data | a named input data verctor used to color-code vertices/nodes. The input data vector must have names, and these names should include all node names of input graph, i.e. V(g)$name, since there is a mapping operation. The way of how to color-code is to map values in the data onto the whole colormap (see the next arguments: colormap, ncolors, zlim and colorbar) |
| height | a numeric value specifying the height of device |
| width | a numeric value specifying the width of device |
| margin | margins as units of length 4 or 1 |
| colormap | short name for the colormap. It can be one of "jet" (jet colormap), "bwr" (blue-white-red colormap), "gbr" (green-black-red colormap), "wyr" (white-yellow-red colormap), "br" (black-red colormap), "yr" (yellow-red colormap), "wb" (white-black colormap), and "rainbow" (rainbow colormap, that is, red-yellow-green-cyan-blue-magenta). Alternatively, any hyphen-separated HTML color names, e.g. "lightyellow-orange" (by default), "blue-black-yellow", "royalblue-white-sandybrown", "darkgreen-white-darkviolet". A list of standard color names can be found in http://html-color-codes.info/color-names |

`ncolors` the number of colors specified over the colormap

`zlim` the minimum and maximum z/data values for which colors should be plotted, defaulting to the range of the finite values of z. Each of the given colors will be used to color an equispaced interval of this range. The midpoints of the intervals cover the range, so that values just outside the range will be plotted

`colorbar` logical to indicate whether to append a colorbar. If data is null, it always sets to false

`colorbar.fraction` the relative fraction of colorbar block against the device size

`newpage` logical to indicate whether to open a new page. By default, it sets to true for opening a new page

`layout.orientation` the orientation of the DAG layout. It can be one of "left_right" for the left-right layout (viewed from the DAG root point), "top_bottom" for the top-bottom layout, "bottom_top" for the bottom-top layout, and "right_left" for the right-left layout

`node.info` tells the ontology term information used to label nodes. It can be one of "none" for no node labeling, "term_id" for using Term ID, "term_name" for using Term Name (the first 15 characters), "both" for using both of Term ID and Name (the first 15 characters), and "full_term_name" for using the full Term Name

`graph.node.attrs` a list of global node attributes. These node attributes will be changed globally. See 'Note' below for details on the attributes

`graph.edge.attrs` a list of global edge attributes. These edge attributes will be changed globally. See 'Note' below for details on the attributes

`node.attrs` a list of local edge attributes. These node attributes will be changed locally; as such, for each attribute, the input value must be a named vector (i.e. using Term ID as names). See 'Note' below for details on the attributes

## Value

An object of class 'Ragraph'

## Note

A list of global node attributes used in "graph.node.attrs":

- "shape": the shape of the node: "circle", "rectangle", "rect", "box" and "ellipse"
- "fixedsize": the logical to use only width and height attributes. By default, it sets to true for not expanding for the width of the label
- "fillcolor": the background color of the node
- "color": the color for the node, corresponding to the outside edge of the node
- "fontcolor": the color for the node text/labelings
- "fontsize": the font size for the node text/labelings
- "height": the height (in inches) of the node: 0.5 by default
- "width": the width (in inches) of the node: 0.75 by default
- "style": the line style for the node: "solid", "dashed", "dotted", "invis" and "bold"

A list of global edge attributes used in "graph.edge.attrs":

- "color": the color of the edge: gray by default
- "weight": the weight of the edge: 1 by default
- "style": the line style for the edge: "solid", "dashed", "dotted", "invis" and "bold"

A list of local node attributes used in "node.attrs" (only those named Term IDs will be changed locally!):

- "label": a named vector specifying the node text/labelings
- "shape": a named vector specifying the shape of the node: "circle", "rectangle", "rect", "box" and "ellipse"
- "fixedsize": a named vector specifying whether it sets to true for not expanding for the width of the label
- "fillcolor": a named vector specifying the background color of the node
- "color": a named vector specifying the color for the node, corresponding to the outside edge of the node
- "fontcolor": a named vector specifying the color for the node text/labelings
- "fontsize": a named vector specifying the font size for the node text/labelings
- "height": a named vector specifying the height (in inches) of the node: 0.5 by default
- "width": a named vector specifying the width (in inches) of the node: 0.75 by default
- "style": a named vector specifying the line style for the node: "solid", "dashed", "dotted", "invis" and "bold"

## See Also

dDAGreverse, dDAGroot, dDAGinduce, dDAGlevel

## Examples

```
# 1) load HPPA as igraph object
ig.HPPA <-dRDataLoader(RData='ig.HPPA')
g <- ig.HPPA

# 2) randomly select vertices as the query nodes
# the more common, the query nodes can be term id
nodes_query <- V(g)[sample(V(g),5)]$name

# 3) obtain the induced subgraph based on all possible paths
subg <- dDAGinduce(g, nodes_query, path.mode="all_paths")

# 4) just visualise the induced subgraph
visDAG(g=subg, node.info="both")

# 5) color-code nodes/terms according to its level
data <- dDAGlevel(subg)
visDAG(g=subg, data=data, node.info="both")
# 5a) globally change the node and edge attributes
visDAG(g=subg, data=data, layout.orientation="top_bottom",
node.info="both",
graph.node.attrs=list(fixedsize=FALSE,shape="box",color="transparent"),
graph.edge.attrs=list(color="black"))
```

```
# 5b) locally highlight the root by changing its shape into "box"
root <- dDAGroot(subg)
root.shape <- "box"
names(root.shape) <- V(subg)[root]$name
visDAG(g=subg, data=data, node.info="both",
node.attrs=list(shape=root.shape))
# 5c) further locally remove the root labelling
root.label <- ""
names(root.label) <- V(subg)[root]$name
visDAG(g=subg, data=data, node.info="both",
node.attrs=list(shape=root.shape,label=root.label))
```