Package ‘bnviewer’

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Type Package
Title Interactive Visualization of Bayesian Networks
Version 0.1.1
Depends R (>= 3.0)
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Description The 'bnviewer' package reads various structure learning algorithms provided by the 'bnlearn' package and allows you to view them interactively.
License MIT + file LICENSE
URL http://robsonfernandes.net/bnviewer/
Encoding UTF-8
LazyData true
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Repository CRAN
Imports visNetwork (>= 2.0.4), bnlearn (>= 4.3), methods, igraph (>= 1.2.1)
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R topics documented:

strength.viewer ................................................. 2
viewer ......................................................... 6

Index 9
**Interactive Bayesian Network Strength Viewer.**

**Description**

Show the strength of the probabilistic relationships expressed by the arcs of a Bayesian network, and use model averaging to build a network containing only the significant arcs.

**Usage**

```r
strength.viewer(bayesianNetwork, bayesianNetwork.background = NULL,
    bayesianNetwork.boot.strength = NULL,
    bayesianNetwork.arc.strength.threshold.expression = NULL,
    bayesianNetwork.arc.strength.threshold.expression.color = NULL,
    bayesianNetwork.arc.strength.threshold.alternative.color = NULL,
    bayesianNetwork.arc.strength.label = FALSE,
    bayesianNetwork.arc.strength.label.prefix = "",
    bayesianNetwork.arc.strength.label.color = NULL,
    bayesianNetwork.arc.strength.tooltip = FALSE,
    bayesianNetwork.edge.scale.min = 1,
    bayesianNetwork.edge.scale.max = 5,
    bayesianNetwork.edge.scale.label.min = 14,
    bayesianNetwork.edge.scale.label.max = 14,
    bayesianNetwork.title = "", bayesianNetwork.subtitle = "",
    bayesianNetwork.footer = "", bayesianNetwork.layout = "default",
    node.shape = c("dot"), node.label.prefix = "",
    node.colors = list(), node.font = list(), edges.smooth = TRUE,
    edges.dashes = FALSE, edges.colors = list(),
    options.highlightNearest = TRUE, options.nodesIdSelection = FALSE)
```

**Arguments**

- `bayesianNetwork`
  
  A Bayesian Network structure from Averaged Network

- `bayesianNetwork.background`
  
  Bayesian network background

- `bayesianNetwork.boot.strength`
  
  A nonparametric bootstrap to assess arc strength and direction

- `bayesianNetwork.arc.strength.threshold.expression`
  
  Logical expression of the force threshold of the arcs of the Bayesian network

- `bayesianNetwork.arc.strength.threshold.expression.color`
  
  Color applied to logical expression of the force threshold of the arcs of the Bayesian network

- `bayesianNetwork.arc.strength.threshold.alternative.color`
  
  Alternative color to logical expression of the force threshold of the arcs of the Bayesian network
bayesianNetwork.arc.strength.label
   Enable Bayesian Network arc strength label
bayesianNetwork.arc.strength.label.prefix
   Include Bayesian Network arc strength label prefix
bayesianNetwork.arc.strength.label.color
   Set Bayesian Network arc strength label color
bayesianNetwork.arc.strength.tooltip
   Enable Bayesian Network arc strength tooltip
bayesianNetwork.edge.scale.min
   Set bayesian Network edge scale minimum
bayesianNetwork.edge.scale.max
   Set bayesian Network edge scale maximum
bayesianNetwork.edge.scale.label.min
   Set bayesian Network edge scale label minimum
bayesianNetwork.edge.scale.label.max
   Set bayesian Network edge scale label maximum
bayesianNetwork.title
   : String. Bayesian Network title
bayesianNetwork.subtitle
   : String. Bayesian Network subtitle
bayesianNetwork.footer
   : String. Bayesian Network footer
bayesianNetwork.layout
   : String. A layout of a Bayesian Network
       1. layout_on_sphere
       2. layout_on_grid
       3. layout_in_circle
       4. layout_as_star
       5. layout_as_tree
       6. layout_with_sugiyama
       7. layout_with_kk
       8. layout_with_dh
       9. layout_with_lgl
      10. layout_with_mds
      11. layout_with_gem
      12. layout_nicely
      13. layout_components
bayesianNetwork.width
   : String. Bayesian Network width
bayesianNetwork.height
   : String. Bayesian Network height
node.shape
   : String. A node shape of a Bayesian Network
       1. dot (default)
2. circle
3. ellipse
4. database
5. diamond
6. square
7. triangle
8. box
9. star
10. text

node.label.prefix
   : String. Adds a prefix to the node label

node.colors
   : String | named list. Color for the node. Can be \texttt{`rgba(120,32,14,1)'}, \texttt{`#97C2FC'}
   (hexa notation on 7 char without transparency) or \texttt{`red'}. Can be just one color, or a list with several elements:
   1. "background" : String. Default to \texttt{`#97C2FC'}. Background color for the node.
   2. "border" : String. Default to \texttt{`#2B7CE9'}. Border color for the node.
   3. "highlight" : String | named list, Color of the node when selected.
      (a) "background" : String. Default to \texttt{`#97C2FC'}. Background color for the node when selected.
      (b) "border" : String. Default to \texttt{`#2B7CE9'}. Border color for the node when selected.

node.font
   Node Font : Array. Example list(color = "black", face="Arial")

edges.smooth
   : Boolean. When true, the edge is drawn as a dynamic quadratic bezier curve.

edges.dashes
   : Array or Boolean. Default to false. When true, the edge will be drawn as a dashed line.

edges.colors
   : Named list or String. Default to named list. Color information of the edge in every situation. Can be \texttt{`rgba(120,32,14,1)'}, \texttt{`#97C2FC'}
   (hexa notation on 7 char without transparency) or \texttt{`red'}. 
   • "color" : String. Default to \texttt{`#848484'}. The color of the edge when it is not selected or hovered over (assuming hover is enabled in the interaction module).
   • "highlight" : String. Default to \texttt{`#848484'}. The color the edge when it is selected.
   • "hover" : String. Default to \texttt{`#848484'}. The color the edge when the mouse hovers over it (assuming hover is enabled in the interaction module).
   • "inherit" : String or Boolean. Default to \texttt{`from'}. When color, highlight or hover are defined, inherit is set to false! Supported options are: true, false, \texttt{from'},{to'},{both}'.
   • "opacity" : Number. Default to 1.0. It can be useful to set the opacity of an edge without manually changing all the colors. The allowed range of the opacity option is between 0 and 1.

options.highlightNearest
   : Boolean. Default to true. Highlight nearest when clicking a node.
strength.viewer

options.nodesIdSelection
: Boolean. Default to false. Add an id node selection creating an HTML select element.

References
See online documentation http://robsonfernandes.net/bnviewer

Examples

library(bnlearn)
library(bnviewer)
bayesianNetwork.boot.strength = boot.strength(coronary, R = 20, algorithm = "hc")
avg.bayesianNetwork = averaged.network(bayesianNetwork.boot.strength, threshold = 0.2)
strength.viewer(
  avg.bayesianNetwork,
bayesianNetwork.boot.strength,
bayesianNetwork.background = "white",
bayesianNetwork.arc.strength.threshold.expression = c("@threshold > 0 & @threshold < 0.5",
  "@threshold >= 0.5 & @threshold < 0.6",
  "@threshold >= 0.6 & @threshold <= 1"),

bayesianNetwork.arc.strength.threshold.expression.color = c("red", "yellow", "green"),
bayesianNetwork.arc.strength.threshold.alternative.color = "white",

bayesianNetwork.arc.strength.label = TRUE,
bayesianNetwork.arc.strength.label.prefix = ",
bayesianNetwork.arc.strength.label.color = "black",

bayesianNetwork.arc.strength.tooltip = TRUE,

bayesianNetwork.edge.scale.min = 1,
bayesianNetwork.edge.scale.max = 3,

bayesianNetwork.edge.scale.label.min = 14,
bayesianNetwork.edge.scale.label.max = 14,

bayesianNetwork.width = "100%",
bayesianNetwork.height = "800px",
bayesianNetwork.layout = "layout_with_sugiyama",
node.colors = list(background = "#97c2fc",
  border = "#2b7ce9",
  highlight = list(background = "#e91eba",
    border = "#2b7ce9")),

node.font = list(color = "black", face="Arial"),
edges.dashes = FALSE,

bayesianNetwork.title="Bayesian Network Strength Analysis - Coronary",

viewer

Interactive Bayesian Network Viewer

Description

Interactive Bayesian Network Viewer

Usage

viewer(bayesianNetwork, bayesianNetwork.title = "", bayesianNetwork.subtitle = "", bayesianNetwork.footer = "", bayesianNetwork.layout = "default", bayesianNetwork.width = "100\%", bayesianNetwork.height = "500px", node.shape = c("dot"), node.label.prefix = "", node.colors = list(), edges.smooth = TRUE, edges.dashes = FALSE, options.highlightNearest = TRUE, options.nodesIdSelection = FALSE)

Arguments

bayesianNetwork

A Bayesian Network structure. (Example: hill-climbing (HC)).
bayesianNetwork.title

: String. Bayesian Network title
bayesianNetwork.subtitle

: String. Bayesian Network subtitle
bayesianNetwork.footer

: String. Bayesian Network footer
bayesianNetwork.layout

: String. A layout of a Bayesian Network
1. layout_on_sphere
2. layout_on_grid
3. layout_in_circle
4. layout_as_star
5. layout_as_tree
6. layout_with_sugiyama
7. layout_with_kk
8. layout_with_dh
9. layout_with_lgl
10. layout_with_mds
11. layout_with_gem
12. layout_nicely
13. layout_components

`bayesianNetwork.width`
  : String. Bayesian Network width

`bayesianNetwork.height`
  : String. Bayesian Network height

`node.shape`
  : String. A node shape of a Bayesian Network
    1. dot (default)
    2. circle
    3. ellipse
    4. database
    5. diamond
    6. square
    7. triangle
    8. box
    9. star
   10. text

`node.label.prefix`
  : String. Adds a prefix to the node label

`node.colors`
  : String | named list. Color for the node. Can be 'rgba(120,32,14,1)', '#97C2FC' (hexa notation on 7 char without transparency) or 'red'. Can be just one color, or a list with several elements:
    1. "background" : String. Default to '#97C2FC'. Background color for the node.
    2. "border" : String. Default to '#2B7CE9'. Border color for the node.
    3. "highlight" : String | named list, Color of the node when selected.
       (a) "background" : String. Default to '#97C2FC'. Background color for the node when selected.
       (b) "border" : String. Default to '#2B7CE9'. Border color for the node when selected.

`edges.smooth`
  : Boolean. When true, the edge is drawn as a dynamic quadratic bezier curve.

`edges.dashes`
  : Array or Boolean. Default to false. When true, the edge will be drawn as a dashed line.

`options.highlightNearest`
  : Boolean. Default to true. Highlight nearest when clicking a node.

`options.nodesIdSelection`
  : Boolean. Default to false. Add an id node selection creating an HTML select element.

References

See online documentation http://robsonfernandes.net/bnviewer
Examples

library(bnlearn)
library(bnviewer)

data(coronary)
bn.learn.hc = hc(coronary)

viewer(bn.learn.hc,  
  bayesianNetwork.width = "100%",  
  bayesianNetwork.height = "80vh",  
  bayesianNetwork.layout = "layout_as_star",  
  bayesianNetwork.title = "Discrete Bayesian Network - Coronary",  
  bayesianNetwork.subtitle = "Coronary heart disease data set",  
  bayesianNetwork.footer = "Fig. 1 - Layout as star",  
  edges.smooth = TRUE,  
  node.colors = list(  
    background = "#f4bafd",  
    border = "#2b7ce9",  
    highlight = list(  
      background = "#97c2fc",  
      border = "#2b7ce9"  
    )  
  )
)