Package 'i2dash'

March 29, 2021

Type Package

Title Iterative and Interactive Dashboards

Version 0.2.3

Description Create customized, web-based dashboards for data presentation, exploration and sharing. 'i2dash' integrates easily into existing data analysis pipelines and can organize scientific findings thematically across different pages and layouts.

License MIT + file LICENSE

URL https://loosolab.github.io/i2dash/

BugReports https://github.com/loosolab/i2dash/issues

Encoding UTF-8

RoxygenNote 7.1.1

VignetteBuilder knitr

Imports magrittr, knitr, flexdashboard, assertive.sets, assertive.types, rmarkdown, stringr, stringi, glue, ymlthis, methods, stats, utils, xfun, htmltools

Suggests switchr, plotly, BiocStyle, testthat, ComplexHeatmap, digest, ggplot2, gt, kableExtra, forcats, leaflet

Collate 'i2dashboard.R' 'AllGenerics.R' 'assemble.R' 'components.R' 'colormap.R' 'get_set.R' 'i2dash-pkg.R' 'pages.R' 'reexports.R' 'sidebar.R' 'vis_objects.R'

NeedsCompilation no

Author Arsenij Ustjanzew [aut, cre, cph] (<https://orcid.org/0000-0002-1014-4521>), Jens Preussner [aut, cph] (<https://orcid.org/0000-0003-1927-3458>), Mario Looso [aut, cph] (<https://orcid.org/0000-0003-1495-9530>)

Maintainer Arsenij Ustjanzew <arsenij.ustjanzew@gmail.com>

Repository CRAN

Date/Publication 2021-03-29 15:20:02 UTC

R topics documented:

.add_component . . . 2
.create_page_name . . . 3
.render_page . . . 3
add_component . . . 4
add_page . . . 7
add_vis_object . . . 8
assemble . . . 9
embed_var . . . 10
i2dash . . . 10
i2dashboard-class . . . 11
interactivity . . . 12
render_image . . . 14
render_text . . . 15
%>% . . . 16
%<>% . . . 16

Index **17**

`.add_component` *Helper function to add components to the dashboard*

Description

Helper function to add components to the dashboard

Usage

```
.add_component(dashboard, page, component)
```

Arguments

`dashboard`	A i2dashboard.
`page`	The name of the page to add the component to.
`component`	A string or list.

Value

The dashboard with added component.

.create_page_name *Sanitize component names*

Description

This function takes a character string, replaces spaces by underscores and runs make.names.

Usage

```
.create_page_name(x)
```

Arguments

x	A character string.

Value

A sanitized string.

.render_page *Method for rendering a page with a given layout and components*

Description

Method for rendering a page with a given layout and components

Usage

```
.render_page(
  title,
  components,
  layout = c("default", "storyboard", "focal_left", "2x2_grid"),
  menu = NULL,
  sidebar = NULL
)
```

Arguments

title	The page title.
components	A list of page components.
layout	The pages overall layout.
menu	The menu under which the page will be filed.
sidebar	Character string with sidebar content.

Value

A markdown string with the final page.

add_component *Add content to an i2dashboard object.*

Description

Content can be added to the dashboards pages, the sidebar or the navigation bar.

Usage

```
add_component(dashboard, component, ...)

add_to_sidebar(dashboard, component, ...)

add_colormap(dashboard, ...)

add_link(dashboard, ...)

## S4 method for signature 'i2dashboard,character'
add_component(dashboard, component, page = "default", copy = FALSE, ...)

## S4 method for signature 'i2dashboard,`function`'
add_component(dashboard, component, page = "default", ...)

## S4 method for signature 'i2dashboard,gg'
add_component(dashboard, component, page = "default", ...)

## S4 method for signature 'i2dashboard,gt_tbl'
add_component(dashboard, component, page = "default", ...)

## S4 method for signature 'i2dashboard,kableExtra'
add_component(dashboard, component, page = "default", ...)

## S4 method for signature 'i2dashboard,Heatmap'
add_component(dashboard, component, page = "default", ...)

## S4 method for signature 'i2dashboard,ANY'
add_component(dashboard, component, page = "default", ...)

## S4 method for signature 'i2dashboard'
add_link(
  dashboard,
  href,
  title = NULL,
  icon = NULL,
  align = c("right", "left"),
  target = NULL
)
```

```
## S4 method for signature 'i2dashboard'
add_colormap(dashboard, map, name)

## S4 method for signature 'i2dashboard,character'
add_to_sidebar(
  dashboard,
  component,
  page = "default",
  global = FALSE,
  copy = FALSE,
  ...
)

## S4 method for signature 'i2dashboard,`function`'
add_to_sidebar(
  dashboard,
  component,
  page = "default",
  global = FALSE,
  copy = FALSE,
  ...
)
```

Arguments

dashboard	A i2dashboard.
component	An R object, function, or string.
...	Additional parameters passed to the components render function. In case of an image, parameters `height` and `width` can be used to define the dimensions of the image with CSS or provide an alternative text with `image_alt_text`.
page	The name of the page to add the component or sidebar to.
copy	Whether or not to copy images to `dashboard@datadir`.
href	The target of the link.
title	The link title.
icon	An optional link icon (see https://rmarkdown.rstudio.com/flexdashboard/using.html#icon-sets)
align	Optional argument that can be “left” or “right” (defaults = “right”) defining the alignment of the links in the navigation bar
target	An optional target (e.g. "_blank")
map	A character vector containing colors and possible the levels they map to (as names).
name	A name for the color mapping.
global	Whether or not to add the content to the global sidebar.

Details

The options to add content in detail:

- 'add_component()' adds content to a page of the dashboard by evaluating a function, or by including an object, a text or image file.
- 'add_to_sidebar()' adds content to the dashboards global sidebar or to a pages local sidebar.
- 'add_link()' adds a link to the navigation bar.
- 'add_colormap()' adds a global color mapping to the dashboards colormaps.

The mechanism to add different types of content to a dashboards page or sidebar depends on the class of the object passed to the function 'add_component()' or 'add_to_sidebar()':

- A function will be evaluated and its return value is used as content.
- A string that ends with .md or .txt will be used to open a file and use its content.
- A string that ends with \.[png|jpg|jpeg|gif] will be used to include an image as content.
- An R object (e.g. an 'htmlwidget') will be included if a suitable signature method is implemented.

Value

Returns the modified i2dashboard object.

- 'add_component()' extends the list of components of the respective page, stored in the 'pages' slot, by an R Markdown string containing the provided content.
- 'add_to_sidebar()' extends either the 'sidebar' slot or the 'sidebar' entry of a single page by an R Markdown string containing the provided content.
- 'add_link()' extends the 'navbar' slot by a list of link properties.
- 'add_colormap()' extends the 'colormaps' slot by the new color mapping.

If something went wrong during the addition, the unmodified i2dashboard object is returned.

Examples

```
library(magrittr)
i2dashboard() -> dashboard
myFunction <- function(dashboard) paste0("### Generate component\n\n",
    "Lorem ipsum dolor sit amet\n")

dashboard %<>% add_component(component = myFunction)
dashboard %<>% add_component(component = plotly::plot_ly(mtcars, x=~wt, y=~hp),
    title = "Include htmlwidget")

## Similarly, it is possible to insert files and images into components:
## dashboard %<>% add_component(component = "sample.txt", title = "Include text")
## dashboard %<>% add_component(component = "sample.jpg", title = "Include image")

dashboard %<>% add_to_sidebar(component = myFunction)
```

```
## Similarly, it is possible to insert files and images into the sidebar:
## dashboard %<>% add_to_sidebar(component = "sample.txt", package="i2dash")
## dashboard %<>% add_to_sidebar(component = "sample.jpg", package="i2dash")

colors <- c("l1" = "#F7FCFD", "l2" ="#E5F5F9", "l3" = "#CCECE6")
dashboard %<>% add_colormap(map = colors, name = "test")

dashboard %<>% add_link(href = "www.sample_url.net", title = "MyLink", align = "left")
```

---

add_page *Methods to add and remove pages of an i2dashboard object.*

Description

'add_page()' creates a page and adds it to the i2dashboard object. 'remove_page()' removes a page from the i2dashboard object.

Usage

```
add_page(dashboard, ...)

remove_page(dashboard, page)

## S4 method for signature 'i2dashboard'
add_page(
  dashboard,
  page,
  title,
  layout = "default",
  menu = NULL,
  sidebar = NULL,
  ...
)

## S4 method for signature 'i2dashboard'
remove_page(dashboard, page)
```

Arguments

dashboard	A i2dashboard.
...	Additional arguments.
page	The name of the page to be added or removed.
title	The title of the page to be added.
layout	The page layout (see below).
menu	The name of the menu, under which the page should appear.
sidebar	A Markdown string. Preferably, use the function 'add_to_sidebar()'.

Value

Returns the i2dashboard object with a modified 'pages' slot.

Examples

```
i2dashboard() %>%
     add_page(page="page1",
         title="Page Title",
         layout = "2x2_grid",
         menu="Menu A") -> dashboard
dashboard %<>% remove_page(page="page1")
```

`add_vis_object` *General method to add an object as component to a page of an i2dashboard object.*

Description

General method to add an object as component to a page of an i2dashboard object.

Usage

```
add_vis_object(dashboard, object, package, page = "default", title = NULL)
```

Arguments

`dashboard`	The i2dashboard.
`object`	The R visualization object to be added.
`package`	The name of the R package that defines the class(object).
`page`	The name of the page to add the object to.
`title`	An optional component title.

Value

Returns the modified i2dashboard object, if the component was added, otherwise an unmodified i2dashboard object.

`assemble` *Generate an RMarkdown file from an i2dashboard object.*

Description

Generate an RMarkdown file from an i2dashboard object.

Usage

```
assemble(dashboard, ...)

## S4 method for signature 'i2dashboard'
assemble(
  dashboard,
  file,
  pages = names(dashboard@pages),
  exclude = NULL,
  render = FALSE,
  ...
)
```

Arguments

`dashboard`	A i2dashboard.
`...`	Additional arguments passed on to '`rmarkdown::render()`'.
`file`	The path and filename of the resulting Rmd file (recommend that the suffix should be '.Rmd').
`pages`	A string or vector with the names of pages, which should be assembled into the resulting Rmd file
`exclude`	A string or vector with the names of pages, which should be excluded from dashboard assembly.
`render`	A logical indicating whether the assembled dashboard should immediately be rendered with '`rmarkdown::render()`' or run with '`rmarkdown::run()`'.

Value

Invisibly returns the unmodified i2dashboard object.

Examples

```
i2dashboard() %>% assemble(file="MyDashboard.Rmd")
i2dashboard() %>%
    add_page("p1", "Title 1") %>%
    add_page("p2", "Title 2") %>%
    assemble(file="MyDashboard.Rmd", exclude="default", render=TRUE)
```

`embed_var` *A method to embed tabular data into an HTML link for download.*

Description

A method to embed tabular data into an HTML link for download.

Usage

```
embed_var(x, ...)
```

Arguments

`x`	Data, which will be written to the embedded file.
`...`	Additional parameters.

Value

HTML code of a hyperlink containing the base64 encoded data.

Examples

```
embed_var(mtcars)
```

`i2dash` *'i2dash': A package for programmatic creation of interactive, web-based dashboards*

Description

'i2dash' relies on the widely used R packages 'flexdashboard', 'knitr' and 'rmarkdown'. 'i2dash' introduces a new class from R's S4 object system named i2dashboard, which by design provides the main functionality of the package. Besides global properties such as the dashboard title, author and theme, an instance of the i2dashboard class also stores individual dashboard pages and the navigation menu, as well as all components that make up the content of individual pages.

Citation

When using the package in your work, please cite: i2dash: Creation of Flexible, Interactive and Web-based Dashboards for Visualization of Omics-pipeline Results Arsenij Ustjanzew, Jens Preussner, Mette Bentsen, Carsten Kuenne, Mario Looso bioRxiv 2020.07.06.189563; doi: https://doi.org/10.1101/2020.07.06.1895

Author(s)

Arsenij Ustjanzew <arsenij.ustjanzew@gmail.com>

Jens Preussner <Jens.Preussner@mpi-bn.mpg.de>

Mario Looso <Mario.Looso@mpi-bn.mpg.de>

`i2dashboard-class` *The i2dashboard S4 class.*

Description

The i2dashboard S4 class provides main functionality of the package. Besides global properties such as the dashboard title, author and theme, an instance of the i2dashboard class also stores individual dashboard pages and the navigation menu, as well as all components that make up the content of individual pages. A new instance can be created using the `i2dashboard` function.

Usage

```
## S4 method for signature 'i2dashboard'
initialize(.Object, ...)

## S4 method for signature 'i2dashboard'
show(object)

i2dashboard(...)
```

Arguments

`.Object`	An object of class i2dashboard.
`...`	Named slots of the i2dashboard object.
`object`	An i2dashboard class object.

Value

'`i2dashboard()`' returns an i2dashboard object with a default title, theme, and an empty 'default' page.

'`show()`' returns text, describing the structure of the i2dashboard object.

Slots

`title` The dashboards title (default 'i2dashboard').

`author` The author of the dashboard.

`interactive` If a 'shiny'-based report should be created (default 'FALSE').

`theme` The theme of the dashboard (see the documentation of 'flexdashboard' for available themes) (default 'yeti').

`datadir` Path to the directory, where report data is stored (default 'tempdir()').

`pages` A list of dashboard pages.

`sidebar` Content of the global sidebar

`colormaps` A named list with color mappings.

`source` Either a logical value describing whether the source code should be embeded through an item in the navigation bar or a link to a URL where the source code can be found online.

`share` A vector with any number of the following services: 'facebook', 'twitter', 'google-plus', 'linkedin', and 'pinterest'. You can also specify "menu" to provide a generic sharing drop-down menu that includes all of the services.

`navbar` A list of links in the navigation bar (see the documentation of 'flexdashboard').

Examples

```
dashboard <- i2dashboard()
dashboard <- i2dashboard(
    title = "Dashboard title",
    author = "John Doe",
    interactive = TRUE,
    theme = "cosmo",
    datadir = "path/to/workdir",
    source = "embed"
)
# inspect dashboard:
show(dashboard)
dashboard
```

`interactivity` *Accessor methods for slots of an i2dashboard object.*

Description

Getter and Setter methods can be used to directly manipulate properties (slots) of an i2dashboard object. See i2dashboard for details.

Usage

```
interactivity(dashboard)

interactivity(dashboard) <- value

title(dashboard)

title(dashboard) <- value

author(dashboard)

author(dashboard) <- value

theme(dashboard)
```

```
theme(dashboard) <- value

datadir(dashboard)

datadir(dashboard) <- value

share(dashboard)

share(dashboard) <- value

embed_source(dashboard) <- value

source(dashboard)

source(dashboard) <- value

## S4 method for signature 'i2dashboard'
interactivity(dashboard)

## S4 replacement method for signature 'i2dashboard'
interactivity(dashboard) <- value

## S4 method for signature 'i2dashboard'
title(dashboard)

## S4 replacement method for signature 'i2dashboard'
title(dashboard) <- value

## S4 method for signature 'i2dashboard'
author(dashboard)

## S4 replacement method for signature 'i2dashboard'
author(dashboard) <- value

## S4 method for signature 'i2dashboard'
theme(dashboard)

## S4 replacement method for signature 'i2dashboard'
theme(dashboard) <- value

## S4 method for signature 'i2dashboard'
datadir(dashboard)

## S4 replacement method for signature 'i2dashboard'
datadir(dashboard) <- value

## S4 method for signature 'i2dashboard'
share(dashboard)
```

```
## S4 replacement method for signature 'i2dashboard'
share(dashboard) <- value

## S4 method for signature 'i2dashboard'
source(dashboard)

## S4 replacement method for signature 'i2dashboard'
source(dashboard) <- value

## S4 replacement method for signature 'i2dashboard'
embed_source(dashboard) <- value
```

Arguments

dashboard	A i2dashboard.
value	The value of the desired property. See i2dashboard for details.

Value

The Getter methods return the value of the respective slot of the i2dashboard object. The Setter methods return the i2dashboard object containing the modified slot.

Examples

```
dashboard <- i2dashboard()

title(dashboard) <- "New dashboard title"
author(dashboard) <- "John Doe"
theme(dashboard) <- "cosmo"
datadir(dashboard) <- "path/to/workdir/"
interactivity(dashboard) <- TRUE
share(dashboard) <- "menu"
embed_source(dashboard) <- TRUE
source(dashboard) <- "www.url_to_souce_code.net"
```

---

render_image *Method to embed an image file in a component*

Description

Method to embed an image file in a component

Usage

```
render_image(
  image,
  image_alt_text = NULL,
  title = NULL,
  raw = FALSE,
  width = "100%",
  height = "auto",
  in_component = TRUE
)
```

Arguments

image	The path to the image file.
image_alt_text	The alt text of the image.
title	The components title.
raw	Whether or not to emit solely the markdown image code.
width	Width defined with CSS in the HTML img-tag.
height	Height defined with CSS in the HTML img-tag.
in_component	Whether the image belongs to a component or the sidebar

Value

A character string containing the evaluated component

---

render_text *Method to embed content from a text file in a component/sidebar*

Description

Method to embed content from a text file in a component/sidebar

Usage

```
render_text(file, title = NULL, raw = FALSE)
```

Arguments

file	The file containing the text content.
title	The components title.
raw	Whether or not to emit raw file content

Value

A character string containing the evaluated component

%>% *'magrittr' forward-pipe operator*

Description

See %>%.

Value

No return value, called for forward-piping

%<>% *magrittr compound assignment pipe-operator*

Description

See %<>%.

Value

No return value, called for side effect

Index

.add_component, 2
.create_page_name, 3
.render_page, 3
%<>%, *16*, 16
%>%, *16*, 16

add_colormap *(*add_component*)*, 4
add_colormap,i2dashboard-method *(*add_component*)*, 4
add_component, 4
add_component,i2dashboard,ANY-method *(*add_component*)*, 4
add_component,i2dashboard,character-method *(*add_component*)*, 4
add_component,i2dashboard,function-method *(*add_component*)*, 4
add_component,i2dashboard,gg-method *(*add_component*)*, 4
add_component,i2dashboard,gt_tbl-method *(*add_component*)*, 4
add_component,i2dashboard,Heatmap-method *(*add_component*)*, 4
add_component,i2dashboard,kableExtra-method *(*add_component*)*, 4
add_link *(*add_component*)*, 4
add_link,i2dashboard-method *(*add_component*)*, 4
add_page, 7
add_page,i2dashboard-method *(*add_page*)*, 7
add_to_sidebar *(*add_component*)*, 4
add_to_sidebar,i2dashboard,character-method *(*add_component*)*, 4
add_to_sidebar,i2dashboard,function-method *(*add_component*)*, 4
add_vis_object, 8
assemble, 9
assemble,i2dashboard-method *(*assemble*)*, 9
author *(*interactivity*)*, 12
author,i2dashboard-method *(*interactivity*)*, 12
author<- *(*interactivity*)*, 12
author<-,i2dashboard-method *(*interactivity*)*, 12

datadir *(*interactivity*)*, 12
datadir,i2dashboard-method *(*interactivity*)*, 12
datadir<- *(*interactivity*)*, 12
datadir<-,i2dashboard-method *(*interactivity*)*, 12

embed_source<- *(*interactivity*)*, 12
embed_source<-,i2dashboard-method *(*interactivity*)*, 12
embed_var, 10

i2dash, 10
i2dashboard, 2, *4–12*, *14*
i2dashboard *(*i2dashboard-class*)*, 11
i2dashboard-class, 11
initialize,i2dashboard-method *(*i2dashboard-class*)*, 11
interactivity, 12
interactivity,i2dashboard-method *(*interactivity*)*, 12
interactivity<- *(*interactivity*)*, 12
interactivity<-,i2dashboard-method *(*interactivity*)*, 12

remove_page *(*add_page*)*, 7
remove_page,i2dashboard-method *(*add_page*)*, 7
render_image, 14
render_text, 15

share *(*interactivity*)*, 12
share,i2dashboard-method *(*interactivity*)*, 12
share<- *(*interactivity*)*, 12

share<-,i2dashboard-method
(interactivity), 12
show,i2dashboard-method
(i2dashboard-class), 11
source (interactivity), 12
source,i2dashboard-method
(interactivity), 12
source<- (interactivity), 12
source<-,i2dashboard-method
(interactivity), 12

theme (interactivity), 12
theme,i2dashboard-method
(interactivity), 12
theme<- (interactivity), 12
theme<-,i2dashboard-method
(interactivity), 12
title (interactivity), 12
title,i2dashboard-method
(interactivity), 12
title<- (interactivity), 12
title<-,i2dashboard-method
(interactivity), 12