Package ‘gridtext’

December 10, 2020

Type Package
Title Improved Text Rendering Support for 'Grid' Graphics
Version 0.1.4
Description Provides support for rendering of formatted text using 'grid' graphics. Text can be formatted via a minimal subset of 'Markdown', 'HTML', and inline 'CSS' directives, and it can be rendered both with and without word wrap.

URL https://wilkelab.org/gridtext/
BugReports https://github.com/wilkelab/gridtext/issues
License MIT + file LICENSE
Depends R (>= 3.5)
Imports grid, grDevices, markdown, Rcpp, RCurl, png, jpeg, stringr, xml2
Suggests covr, knitr, rmarkdown, testthat, vdiffrr
LinkingTo Rcpp
Encoding UTF-8
LazyData true
RoxygenNote 7.1.1
SystemRequirements C++11
NeedsCompilation yes
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Repository CRAN
Date/Publication 2020-12-10 20:50:02 UTC

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gridtext  
*Improved text rendering support for grid graphics*

**Description**

The gridtext package provides two new grobs, `richtext_grob()` and `textbox_grob()`, which support drawing of formatted text labels and formatted text boxes, respectively.

`richtext_grob`  
*Draw formatted text labels*

**Description**

This grob acts mostly as a drop-in replacement for `grid::textGrob()` but provides more sophisticated formatting. The grob can handle basic markdown and HTML formatting directives, and it can also draw boxes around each piece of text. Note that this grob does not draw `plotmath` expressions.

**Usage**

```r
richtext_grob(
  text,
  x = unit(0.5, "npc"),
  y = unit(0.5, "npc"),
  hjust = 0.5,
  vjust = 0.5,
  halign = hjust,
  valign = vjust,
  rot = 0,
  default.units = "npc",
  margin = unit(c(0, 0, 0, 0), "pt"),
  padding = unit(c(0, 0, 0, 0), "pt"),
  r = unit(0, "pt"),
  align_widths = FALSE,
  align_heights = FALSE,
  name = NULL,
  gp = gpar(),
  box_gp = gpar(col = NA),
  vp = NULL,
  use_markdown = TRUE,
  debug = FALSE
)
```
Arguments

text Character vector containing Markdown/HTML strings to draw.
x, y Unit objects specifying the location of the reference point.
hjust, vjust Numerical values specifying the justification of the text boxes relative to x and y. These justification parameters are specified in the internal reference frame of the text boxes, so that, for example, hjust adjusts the vertical justification when the text is rotated 90 degrees to the left or right.
halign, valign Numerical values specifying the text justification inside the text boxes. If not specified, these default to hjust and vjust.
rot Angle of rotation for text, in degrees.
default.units Units of x and y if these are provided only as numerical values.
margin, padding Unit vectors of four elements each indicating the margin and padding around each text label in the order top, right, bottom, left. Margins are drawn outside the enclosing box (if any), and padding is drawn inside. To avoid rendering artifacts, it is best to specify these values in absolute units (such as points, mm, or inch) rather than in relative units (such as npc).
r The radius of the rounded corners. To avoid rendering artifacts, it is best to specify this in absolute units (such as points, mm, or inch) rather than in relative units (such as npc).
align_widths, align_heights Should the widths and heights of all the text boxes be aligned? Default is no.
name Name of the grob.
gp Other graphical parameters for drawing.
box_gp Graphical parameters for the enclosing box around each text label.
vp Viewport.
use_markdown Should the text input be treated as markdown? Default is yes.
debug Should debugging info be drawn? Default is no.

Value
A grid grob that represents the formatted text.

See Also
textbox_grob()

Examples
library(grid)
text <- c("Some text **in bold.**", "Linebreaks<br>Linebreaks<br>Linebreaks", "<sup>2</sup>x + 5*<sub>x</sub> + C<sub>i</sub>", "Some <span style='color:blue'>blue text **in bold.**</span><br>And *italics text.*<br>"
And some <span style='font-size:18pt; color:black'>large</span> text.

```r
x <- c(0.2, 0.1, 0.7, 0.9)
y <- c(0.8, 0.4, 0.1, 0.5)
rot <- c(0, 0, 45, -45)
gp = gpar(col = c("black", "red"), fontfamily = c("Palatino", "Courier", "Times", "Helvetica"))
box_gp = gpar(col = "black", fill = c("cornsilk", NA, "lightblue1", NA), lty = c(0, 1, 1, 1))
hjust <- c(0.5, 0, 0, 1)
vjust <- c(0.5, 1, 0, 0.5)
g <- richtext_grob(
  text, x, y, hjust = hjust, vjust = vjust, rot = rot,
  padding = unit(c(6, 6, 4, 6), "pt"),
  r = unit(c(0, 2, 4, 8), "pt"),
  gp = gp, box_gp = box_gp
)
grid.newpage()
grid.draw(g)
grid.points(x, y, default.units = "npc", pch = 19, size = unit(5, "pt"))
```

```r
text <- c("January", "February", "March", "April", "May")
x <- (1:5)/6 + 1/24
y <- rep(0.8, 5)
g <- richtext_grob(
  text, x, y, halign = 0, hjust = 1,
  rot = 45,
  padding = unit(c(3, 6, 1, 3), "pt"),
  r = unit(4, "pt"),
  align_widths = TRUE,
  box_gp = gpar(col = "black", fill = "cornsilk")
)
grid.newpage()
grid.draw(g)
grid.points(x, y, default.units = "npc", pch = 19, size = unit(5, "pt"))
```

---

**textbox_grob**

*Draw formatted multi-line text with word wrap*

**Description**

The function `textbox_grob()` is intended to render multi-line text labels that require automatic word wrapping. It is similar to `richtext_grob()`, but there are a few important differences. First, while `richtext_grob()` is vectorized, `textbox_grob()` is not. It can draw only a single text box at a time. Second, `textbox_grob()` doesn’t support rendering the text box at arbitrary angles. Only four different orientations are supported, corresponding to a rotation by 0, 90, 180, and 270 degrees.
textbox_grob

**Usage**

textbox_grob(
  text,
  x = NULL,
  y = NULL,
  width = unit(1, "npc"),
  height = NULL,
  minwidth = NULL,
  maxwidth = NULL,
  minheight = NULL,
  maxheight = NULL,
  hjust = 0.5,
  vjust = 0.5,
  halign = 0,
  valign = 1,
  default.units = "npc",
  margin = unit(c(0, 0, 0, 0), "pt"),
  padding = unit(c(0, 0, 0, 0), "pt"),
  r = unit(0, "pt"),
  orientation = c("upright", "left-rotated", "right-rotated", "inverted"),
  name = NULL,
  gp = gpar(),
  box_gp = gpar(col = NA),
  vp = NULL,
  use_markdown = TRUE
)

**Arguments**

- **text**: Character vector containing Markdown/HTML string to draw.
- **x, y**: Unit objects specifying the location of the reference point. If set to NULL (the default), these values are chosen based on the values of hjust and vjust such that the box is appropriately justified in the enclosing viewport.
- **width, height**: Unit objects specifying width and height of the grob. A value of NULL means take up exactly the space necessary to render all content. Use a value of unit(1,"npc") to have the box take up all available space.
- **minwidth, minheight, maxwidth, maxheight**: Min and max values for width and height. Set to NULL to impose neither a minimum nor a maximum. Note: minheight and maxheight do not work if width = NULL.
- **hjust, vjust**: Numerical values specifying the justification of the text box relative to the reference point defined by x and y. These justification parameters are specified in the internal reference frame of the text box, so that, for example, hjust adjusts the vertical justification when the text box is left- or right-rotated.
- **halign, valign**: Numerical values specifying the justification of the text inside the text box.
- **default.units**: Units of x, y, width, height, minwidth, minheight, maxwidth, maxheight if these are provided only as numerical values.
margin, padding
Unit vectors of four elements each indicating the margin and padding around each text label in the order top, right, bottom, left. Margins are drawn outside the enclosing box (if any), and padding is drawn inside. To avoid rendering artifacts, it is best to specify these values in absolute units (such as points, mm, or inch) rather than in relative units (such as npc).

r
The radius of the rounded corners. To avoid rendering artifacts, it is best to specify this in absolute units (such as points, mm, or inch) rather than in relative units (such as npc).

orientation
Orientation of the box. Allowed values are "upright", "left-rotated", "right-rotated", and "inverted", corresponding to a rotation by 0, 90, 270, and 180 degrees counter-clockwise, respectively.

name
Name of the grob.

gp
Other graphical parameters for drawing.

box_gp
Graphical parameters for the enclosing box around each text label.

vp
Viewport.

use_markdown
Should the text input be treated as markdown?

Value
A grid grob that represents the formatted text.

See Also

richtext_grob()

Examples

library(grid)
g <- textbox_grob("**The quick brown fox jumps over the lazy dog.**<br><br>The quick brown fox jumps over the lazy dog.
The **quick <span style='color:brown;'>brown fox</span>** jumps over the lazy dog.
The quick brown fox jumps over the lazy dog.",
x = unit(0.5, "npc"), y = unit(0.7, "npc"), halign = 0, valign = 1,
gp = gpar(fontsize = 15),
box_gp = gpar(col = "black", fill = "lightcyan1"),
r = unit(5, "pt"),
padding = unit(c(10, 10, 10, 10), "pt"),
margin = unit(c(0, 10, 0, 10), "pt")
)
grid.newpage()
grid.draw(g)

# internal vs. external alignment
g1 <- textbox_grob("The quick brown fox jumps over the lazy dog.",
hjust = 0, vjust = 1, halign = 0, valign = 1,
width = unit(1.5, "inch"), height = unit(1.5, "inch"),
box_gp = gpar(col = "black", fill = "cornsilk"),
padding = unit(c(2, 2, 2, 2), "pt"),
margin = unit(c(5, 5, 5, 5), "pt")
}
g2 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
hjust = 1, vjust = 1, halign = 0.5, valign = 0.5,
width = unit(1.5, "inch"), height = unit(1.5, "inch"),
box_gp = gpar(col = "black", fill = "cornsilk"),
padding = unit(c(2, 2, 2, 2), "pt"),
margin = unit(c(5, 5, 5, 5), "pt")
}
g3 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
hjust = 0, vjust = 0, halign = 1, valign = 1,
width = unit(1.5, "inch"), height = unit(1.5, "inch"),
box_gp = gpar(col = "black", fill = "cornsilk"),
padding = unit(c(2, 2, 2, 2), "pt"),
margin = unit(c(5, 5, 5, 5), "pt")
}
g4 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
hjust = 1, vjust = 0, halign = 0, valign = 0,
width = unit(1.5, "inch"), height = unit(1.5, "inch"),
box_gp = gpar(col = "black", fill = "cornsilk"),
padding = unit(c(2, 2, 2, 2), "pt"),
margin = unit(c(5, 5, 5, 5), "pt")
)
g1 <- gpar(col = "black", fill = "cornsilk")
g2 <- gpar(col = "black", fill = "cornsilk")
g3 <- gpar(col = "black", fill = "cornsilk")
g4 <- gpar(col = "black", fill = "cornsilk")

g1 <- gpar(col = "black", fill = "cornsilk")
g2 <- gpar(col = "black", fill = "cornsilk")
g3 <- gpar(col = "black", fill = "cornsilk")
g4 <- gpar(col = "black", fill = "cornsilk")

# internal vs. external alignment, with rotated boxes
g1 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
hjust = 1, vjust = 1, halign = 0, valign = 1,
width = unit(1.5, "inch"), height = unit(1.5, "inch"),
orIENTATION = "left-rotated",
box_gp = gpar(col = "black", fill = "cornsilk"),
padding = unit(c(2, 2, 2, 2), "pt"),
margin = unit(c(5, 5, 5, 5), "pt")
}
g2 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
hjust = 0, vjust = 1, halign = 0.5, valign = 0.5,
width = unit(1.5, "inch"), height = unit(1.5, "inch"),
orIENTATION = "right-rotated",
box_gp = gpar(col = "black", fill = "cornsilk"),
padding = unit(c(2, 2, 2, 2), "pt"),
margin = unit(c(5, 5, 5, 5), "pt")
)
g3 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
  hjust = 1, vjust = 1, halign = 1, valign = 1,
  width = unit(1.5, "inch"), height = unit(1.5, "inch"),
  orientation = "inverted",
  box_gp = gpar(col = "black", fill = "cornsilk"),
  padding = unit(c(2, 2, 2, 2), "pt"),
  margin = unit(c(5, 5, 5, 5), "pt")
)

g4 <- textbox_grob(
  "The quick brown fox jumps over the lazy dog.",
  hjust = 1, vjust = 0, halign = 0, valign = 0,
  width = unit(1.5, "inch"), height = unit(1.5, "inch"),
  orientation = "upright",
  box_gp = gpar(col = "black", fill = "cornsilk"),
  padding = unit(c(2, 2, 2, 2), "pt"),
  margin = unit(c(5, 5, 5, 5), "pt")
)

grid.newpage()
grid.draw(g1)
grid.draw(g2)
grid.draw(g3)
grid.draw(g4)
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