Package 'ggtikz'

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Title Post-Process 'ggplot2' Plots with 'TikZ' Code Using Plot Coordinates

Version 0.1.1

Description Annotation of 'ggplot2' plots with arbitrary 'TikZ' code, using absolute data or relative plot coordinates.

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URL https://github.com/osthomas/ggtikz

BugReports https://github.com/osthomas/ggtikz/issues

Encoding UTF-8

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Imports dplyr, ggplot2, grid, stringr, tikzDevice

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Repository CRAN

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R topics documented:

`discretize` *Replace Infinites by discrete values*

Description

The replacement values correspond to the edges of the available coordinate space

Usage

```
discretize(coord_values, xrange, yrange)
```

Arguments

`coord_values`	numeric. The coordinate x and y values, potentially containing Inf or -Inf
`xrange`	Numeric vector of length 2, minimum and maximum values in the x direction
`yrange`	Numeric vector of length 2, minimum and maximum values in the y direction

---

`get_padding_from_elements`
Calculate length of padding from plot elements

Description

To prevent overlap with panel borders or axis lines, annotations are clipped to a viewport that is reduced in size by the width of these lines. They depend on the current plot theme.

Usage

```
get_padding_from_elements(
  gg_plot,
  elements_t,
  elements_r,
  elements_b,
  elements_l
)
```

Arguments

gg_plot	A ggplot2 object.
elements_t	character vector with names of elements to consider for padding at the *top*
elements_r	character vector with names of elements to consider for padding on the *right*
elements_b	character vector with names of elements to consider for padding at the *bottom*
elements_l	character vector with names of elements to consider for padding on the *left*

Value

A vector grid::units of paddings for t, r, b, l (in pt)

See Also

uninfinite_coord for construction of the complete replaced coordinate.

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ggtikz *Create a canvas and add a TikZ annotation.*

Description

This is a helper function for quick one-step annotations. It creates a ggtikzCanvas from a ggplot, adds one annotation to it, and optionally draws the plot and the annotations.

Usage

```
ggtikz(gg_plot, ..., draw = TRUE)
```

Arguments

gg_plot	A ggplot object on which annotations should be made.
...	Passed to ggtikzAnnotation.
draw	TRUE or FALSE. Should gg_plot and the resulting annotation be drawn immediately? A tikz device needs to be open.

Details

For finer control, see ggtikzCanvas() and ggtikzAnnotation().

Value

A ggtikzCanvas object with one ggtikzAnnotation (specified in ...) already added. If draw = TRUE, the gg_plot and the annotations are drawn to the currently active device. This must be a tikzDevice, or an error will be raised.

See Also

ggtikzCanvas for creating a canvas which can store multiple annotations.

ggtikzAnnotation for creating an annotation, which can then be added to a canvas.

Examples

```
## Not run:
library(ggplot2)
library(tikzDevice)
library(ggtikz)
p <- ggplot(mtcars, aes(disp, mpg)) + geom_point()
out <- tempfile(fileext = ".tikz")
tikz(out)
# Add a red circle in the middle of the plot.
ggtikz(p, "\\fill[red] (0.5,0.5) circle (2mm);", xy="plot")
dev.off()

## End(Not run)
```

---

ggtikzAnnotation *Prepare a TikZ annotation for a ggplot.*

Description

ggtikzAnnotation objects are meant to be added to a ggtikzCanvas object.

Usage

```
ggtikzAnnotation(
  tikz_code,
  x = c("data", "panel"),
  y = c("data", "panel"),
  xy = NULL,
  panelx = NULL,
  panely = NULL,
  transform = TRUE,
  replace_inf = TRUE,
  clip = "on"
)
```

Arguments

tikz_code	The tikz code to use for annotation. Backslashes must be escaped!
x	Reference frame for the x coordinates. Either "data" or "panel".
y	Reference frame for the y coordinates. Either "data" or "panel".
xy	Reference frame for both x and y coordinates. Trumps x and y. Either "data" or "panel" or "plot".

panelx	x position of the panel to use as coordinate reference, starting from the left, 1-based.
panely	y position of the panel to use as coordinate reference, starting from the top, 1-based.
transform	Should TikZ coordinates be transformed according to the scale transformation? If TRUE, coordinates in tikz_code are replaced by the transformation of the x/y scale, as appropriate. Coordinates components with physical lengths are not changed. See ggtikzTransform for details.
replace_inf	Should annotation coordinates containing 'Inf' or '-Inf' be adjusted so these values correspond to the edge of the available space? This is analogous to the behavior of ggplot when infinite values are encountered. See also ggtikzUninfinite
clip	Should annotations be clipped to the panel boundaries? See the clip argument to viewport

Details

This function prepares TikZ annotations in a form understandable to a ggtikzCanvas object. An annotation can be added to multiple ggtikzCanvas objects, provided that each underlying ggplot object has the necessary panels to know what to do with this information.

Value

A ggtikzAnnotation object, which can be added to a ggtikzCanvas object.

See Also

grid.tikzAnnotate for annotation of base graphics

ggtikz for a helper function for quick one-step annotations.

ggtikzCanvas for information about initiating the annotation process.

---

ggtikzCanvas *Create a canvas to store TikZ annotations to a ggplot.*

Description

Annotations can be made relative to the whole plot, to a panel, or to data coordinates (of individual panels).

Usage

```
ggtikzCanvas(gg_plot)
```

Arguments

gg_plot	A ggplot object on which annotations should be made.

Details

This function provides a canvas for TikZ annotations, and does not draw anything by itself. Its purpose is to provide information about the underlying ggplot object for coordinate calculations.

Value

A ggtikzCanvas object, to which annotations can be added.

See Also

grid.tikzAnnotate for annotation of base graphics.

ggtikz for a helper function for quick one-step annotations.

ggtikzAnnotation for more information about creating and adding ggtikz annotations.

Examples

```
## Not run:
library(ggplot2)
library(tikzDevice)
library(ggtikz)
p <- ggplot(mtcars, aes(disp, mpg)) + geom_point()

# Create a TikZ canvas on the plot
canvas <- ggtikzCanvas(p)

# Create annotations to add to the canvas

# Circle in the center of the plot
annotation1 <- ggtikzAnnotation(
   "\\fill[red] (0.5,0.5) circle (2mm);",
   xy = "plot")

# Arrow to data coordinate (400,20)
annotation2 <- ggtikzAnnotation(
   "\\draw[<-] (400,20) -- ++(0,2.5);",
   xy = "data", panelx = 1, panely = 1)

out <- tempfile(fileext = ".tikz")
tikz(out)
# First, draw the original plot
p
# Then, add the annotations to the canvas and draw it
canvas + annotation1 + annotation2
dev.off()

## End(Not run)
```

`ggtikzTransform` *Transform TikZ coordinates according to scale transformations*

Description

ggtikzTransform extracts coordinates definitions in an annotation's TikZ code and transforms them with the transformer functions stored in the underlying plot's x or y scales, respectively.

Usage

```
ggtikzTransform(ggtikzCanvas, ggtikzAnnotation)
```

Arguments

`ggtikzCanvas`	A `link{ggtikzCanvas}` object.
`ggtikzAnnotation`	A `link{ggtikzAnnotaton}` object.

Details

This function does not have to called directly. It is automatically called when annotations are added to a canvas, if `transform = TRUE` in the `ggtikzAnnotation` construction call.

Coordinates components with physical lengths are not changed. For a plot with a linear x scale and a log10-transformed y scale,

- the TikZ coordinate (10,10) becomes (10,1),
- the TikZ coordinate (10cm,10) becomes (10cm,1),
- the TikZ coordinate (10,10cm) becomes (10,10cm)
- the TikZ coordinate (0,0) will raise an error.

Value

A `link{ggtikzAnnotation}` object, with transformations applied to the coordinates in the TikZ code.

ggtikzUninfinite *Replace Inf in TikZ coordinates*

Description

Infinite values in TiKZ coordinate specifications are replaced by values corresponding to the edge of the available coordinate space. This allows placement of annotations at the very edge of a panel without knowing its precise coordinates. This is useful for annotations which extend to the panel boundaries, but also make use of specific coordinates.

Usage

```
ggtikzUninfinite(ggtikzCanvas, ggtikzAnnotation)
```

Arguments

ggtikzCanvas	A link{ggtikzCanvas} object.
ggtikzAnnotation	A link{ggtikzAnnotaton} object.

Value

A link{ggtikzAnnotation} object, with Infinites in coordinates replaced by finite values.

gg_to_npc.ggtikzCanvas *Convert data coordinates to npc coordinates.*

Description

Convert data coordinates to npc coordinates.

Usage

```
## S3 method for class 'ggtikzCanvas'
gg_to_npc(self, coord, panelx, panely)
```

Arguments

self	a ggtikzCanvas object
coord	A numeric vector of length 2, with the x coordinate to convert at coord[1] and the y coordinate to convert at coord[2]
panelx	X position (column) of the panel holding the data
panely	X position (row) of the panel holding the data

Value

The input coordinates from `coord` converted to npc coordinates in the form of a numeric vector of length 2. (0,0) corresponds to the lower left corner of the viewport containing the `ggplot` panel specified by `panelx` and `panely`, and (1,1) corresponds to the upper right corner.

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set_ggtikz_unclip_hook *Unclip plots produced by the* `tikzDevice`.

Description

By default, plots produced with the tikzDevice are clipped to the plot area, which also clips ggtikzAnnotations extending beyond the plot boundaries. This function removes the 'clip' and 'use as bounding box' options in a tikz file.

Usage

```
set_ggtikz_unclip_hook()

unset_ggtikz_unclip_hook()
```

Value

Called for side effects - the `unclip` knitr hook is set or unset, respectively.

See Also

`unclip`, the hook that is being set.

---

split_coord *Split a TikZ coordinate.*

Description

Split a TikZ coordinate.

Usage

```
split_coord(coord)
```

Arguments

`coord`	Coordinate string of the form "(x,y)"

Value

A character vector of length 2: The x and y components of the coordinate. These may contain spaces.

tikz_exts_pattern *Construct a regex pattern for possible tikzDevice extensions.*

Description

Construct a regex pattern for possible tikzDevice extensions.

Usage

```
tikz_exts_pattern(options)
```

Arguments

options	A list of knitr chunk options

Value

A regex pattern to match file extensions of tikz figures

unclip *knitr hook to remove clipping from plots produced with the tikzDevice.*

Description

Note that the chunk options unclip = TRUE and external = FALSEmust be set for the hook to come into effect!

Usage

```
unclip(before, options)
```

Arguments

before	see knit_hooks
options	see knit_hooks

Value

Called for side effect. The files containing tikz plots are edited and overwritten.

See Also

set_ggtikz_unclip_hook to set the knitr hook.

unclip_tikz, the workhorse function for this hook.

unclip_tikz *Unclip a plot produced by the* tikzDevice.

Description

By default, plots produced with the tikzDevice are clipped to the plot area, which also clips ggtikzAnnotations extending beyond the plot boundaries. This function removes the 'clip' and 'use as bounding box' options in a tikz file.

Usage

```
unclip_tikz(fpath)
```

Arguments

fpath	Path to the tikz file

Details

This function can be used for manual post-processing, however, see set_ggtikz_unclip_hook to set the corresponding knitr hook.

Value

Called for side effect. The file at fpath is edited and overwritten.

See Also

set_ggtikz_unclip_hook to set the knitr hook.

uninfinite_coord *Replace infinite values in TikZ coordinates*

Description

Infinite values are replaced with the minimum or maximum value of the padding in the x or y direction, respectively. Additionally, the adjusted coordinate is padded so that it lies just next to the panel borders and axis lines without overlap.

Usage

```
uninfinite_coord(coord, xrange, yrange)

uninfinite_tikz(tikz_code, xrange, yrange)
```

Arguments

coord	TikZ coordinate
xrange	Numeric vector of length 2, minimum and maximum values in the x direction
yrange	Numeric vector of length 2, minimum and maximum values in the y direction
tikz_code	The TikZ code to replace Infinite values in.

Value

The adjusted TikZ coordinate with padding, as a string.

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