

# Package ‘plotbb’

May 21, 2026

**Title** Grammar of Graphics for 'base' Plot

**Version** 0.1.2

**Description** A grammar of graphics framework built on 'base' graphics. It provides a 'bbplot' object and a '+' operator to incrementally compose plots from data, aesthetic mappings and layers, then render them using the base plotting system. The package includes common geometric layers (points, lines, segments, bars, histograms, boxplots and tiles), scales for color and other aesthetics, legends, faceting, themes, and significance annotations.

**Imports** graphics, magrittr, rlang, scales, methods, utils

**Suggests** stats, ape, aplot (>= 0.0.8), dplyr, ggplotify (>= 0.1.0), quarto, knitr, testthat

**VignetteBuilder** quarto

**ByteCompile** true

**License** Artistic-2.0

**Encoding** UTF-8

**RoxygenNote** 7.3.3

**NeedsCompilation** no

**Author** Guangchuang Yu [aut, cre, cph] (ORCID:  
<<https://orcid.org/0000-0002-6485-8781>>)

**Maintainer** Guangchuang Yu <guangchuangyu@gmail.com>

**Repository** CRAN

**Date/Publication** 2026-05-21 05:00:02 UTC

## Contents

|                         |   |
|-------------------------|---|
| as.bbplot . . . . .     | 2 |
| bbplot . . . . .        | 3 |
| bb_aes . . . . .        | 4 |
| bb_bar . . . . .        | 4 |
| bb_facet_wrap . . . . . | 6 |
| bb_grid . . . . .       | 7 |

|                                |    |
|--------------------------------|----|
| bb_labs . . . . .              | 7  |
| bb_legend . . . . .            | 8  |
| bb_scale_col_palette . . . . . | 9  |
| bb_scale_pch_manual . . . . .  | 10 |
| bb_theme . . . . .             | 10 |
| set_bb_theme . . . . .         | 11 |
| unset_bb_theme . . . . .       | 12 |

|              |           |
|--------------|-----------|
| <b>Index</b> | <b>13</b> |
|--------------|-----------|

---

|           |                  |
|-----------|------------------|
| as.bbplot | <i>as.bbplot</i> |
|-----------|------------------|

---

## Description

convert a base plot function to a bbplot object

## Usage

```
as.bbplot(fun)
```

## Arguments

fun                    a function that plot something in base graphics

## Details

the base plot function will be plotted as a canvas and users can apply theme and add layers to it

## Value

A bbplot object

## Author(s)

Guangchuang Yu

---

|        |               |
|--------|---------------|
| bbplot | <i>bbplot</i> |
|--------|---------------|

---

**Description**

bbplot

**Usage**

```
bbplot(data, mapping = bb_aes())
```

**Arguments**

|         |                  |
|---------|------------------|
| data    | data             |
| mapping | variable mapping |

**Details**

a proof of concept for grammar of graphics based on base plot. The bbplot class contains data (input data), mapping (aesthetic mapping), layer (a list of plot layers), theme (theme setting) and labs (label setting, including title, subtitle, x and y labels).

**Value**

bbplot object

**Author(s)**

Guangchuang Yu

**Examples**

```
library(plotbb)
p <- bbplot(mtcars, bb_aes(mpg, disp, col=factor(cyl)))
p + bb_grid(col='grey50', lty='dashed') + bb_point(pch=19)
```

---

|        |               |
|--------|---------------|
| bb_aes | <i>bb_aes</i> |
|--------|---------------|

---

**Description**

aesthetic mapping

**Usage**

```
bb_aes(x, y, ...)
```

**Arguments**

|     |                |
|-----|----------------|
| x   | x variable     |
| y   | y variable     |
| ... | other mappings |

**Details**

aesthetic mapping for bbplot

**Value**

enquo expression describing variables mapping to aesthetic attributes

**Author(s)**

Guangchuang Yu

---

|        |                   |
|--------|-------------------|
| bb_bar | <i>bb_boxplot</i> |
|--------|-------------------|

---

**Description**

boxplot layer  
density layer  
histogram layer  
layer  
significance layer

**Usage**

```

bb_bar(mapping = NULL, data = NULL, stat = "identity", width = 0.9, ...)

bb_boxplot(mapping = NULL, data = NULL, ...)

bb_density(mapping = NULL, data = NULL, ...)

bb_errorbar(mapping = NULL, data = NULL, orientation = "y", width = 0.5, ...)

bb_hist(mapping = NULL, data = NULL, ...)

bb_line(mapping = NULL, data = NULL, ...)

bb_lm(mapping = NULL, data = NULL, se = TRUE, level = 0.95, ...)

bb_point(mapping = NULL, data = NULL, position = "identity", ...)

bb_segment(mapping = NULL, data = NULL, ...)

bb_signif(mapping = NULL, data = NULL, ...)

bb_text(mapping = NULL, data = NULL, ...)

bb_tile(mapping = NULL, data = NULL, ...)

```

**Arguments**

|             |   |
|-------------|---|
| mapping     | aesthetic mapping   |
| data        | layer data  |
| stat        | one of 'identity' or 'count'  |
| width       | bar width or errorbar cap width   |
| ...         | addition parameter for the layer  |
| orientation | one of 'y' or 'x'   |
| se          | display confidence interval around smooth? (TRUE by default, see ggplot2) |
| level       | level of confidence interval to use (0.95 by default)                     |
| position    | one of 'identity' or 'jitter'   |

**Details**

bbplot layers

**Value**

A modified bbplot object  
 A modified bbplot object  
 A modified bbplot object

A modified bbplot object

A modified bbplot object

### Author(s)

Guangchuang Yu

### Examples

```
library(plotbb)
p <- bbplot(mtcars, bb_aes(mpg, disp, col=factor(cyl))) +
  bb_point() + bb_lm(bb_aes(group=cyl), lwd=2)
```

---

bb\_facet\_wrap

*bb\_facet\_wrap*

---

### Description

Facet a bbplot object into multiple panels.

### Usage

```
bb_facet_wrap(facets, ncol = NULL, nrow = NULL, scales = "fixed")
```

### Arguments

|        |  |
|--------|--|
| facets | a formula specifying faceting variable, e.g. ~cyl.                           |
| ncol   | number of columns.   |
| nrow   | number of rows.  |
| scales | scale behavior across facets, one of 'fixed', 'free', 'free_x', or 'free_y'. |

### Value

A modified bbplot object

### Author(s)

Guangchuang Yu

---

*bb\_grid*                      *bb\_grid*

---

**Description**

add grid lines

**Usage**

```
bb_grid(col = "lightgray", lty = par("lty"), lwd = par("lwd"), bg = TRUE)
```

**Arguments**

|                  |   |
|------------------|---|
| <code>col</code> | line color                                |
| <code>lty</code> | line type                                 |
| <code>lwd</code> | line width                                |
| <code>bg</code>  | whether plot the grid lines as background |

**Value**

A modified `bbplot` object

**Author(s)**

Guangchuang Yu

---

*bb\_labs*                      *bb\_labs*

---

**Description**

change labels for `bbplot`

**Usage**

```
bb_labs(title = NULL, sub = NULL, xlab = NULL, ylab = NULL)
```

```
bb_title(title)
```

```
bb_sub(sub)
```

```
bb_xlab(xlab)
```

```
bb_ylab(ylab)
```

**Arguments**

|       |       |
|-------|-------|
| title | title |
| sub   | sub   |
| xlab  | xlab  |
| ylab  | ylab  |

**Details**

setting one or several of 'title', 'sub', 'xlab', and 'ylab'

**Value**

A modified bbplot object

**Author(s)**

Guangchuang Yu

**Examples**

```
library(plotbb)
p <- bbplot(mtcars, bb_aes(mpg, disp, col=factor(cyl))) + bb_point(pch=19)
p + bb_labs(title = "hello", sub = "just for demo",
            xlab="this is xlab", ylab = "this is ylab") +
  bb_title("hello world") # last one rules
```

---

bb\_legend

*bb\_legend*

---

**Description**

Add legend for aesthetic mapping.

**Usage**

```
bb_legend(  
  position = "topright",  
  title = NULL,  
  aesthetic = "col",  
  pch = 19,  
  bty = "n",  
  outside = FALSE,  
  ...  
)
```

**Arguments**

|           |   |
|-----------|---|
| position  | legend position passed to <code>graphics::legend</code> .       |
| title     | legend title.   |
| aesthetic | currently supports "col", "fill", "pch", "lty", "cex".          |
| pch       | point shape used in legend.                                     |
| bty       | box type passed to <code>graphics::legend</code> .              |
| outside   | logical, whether to place the legend outside the plotting area. |
| ...       | additional parameters passed to <code>graphics::legend</code> . |

**Value**

A modified `bbplot` object

**Author(s)**

Guangchuang Yu

---

`bb_scale_col_palette` *bb\_scale\_col\_palette*

---

**Description**

change col palette

**Usage**

```
bb_scale_col_palette(palette = NULL)
```

```
bb_scale_col_manual(values)
```

```
bb_scale_col_gradient(low = "#132B43", high = "#56B1F7")
```

**Arguments**

|         |                                  |
|---------|----------------------------------|
| palette | color palette                    |
| values  | colors for discrete scale.       |
| low     | low color for continuous scale.  |
| high    | high color for continuous scale. |

**Value**

A modified `bbplot` object

**Author(s)**

Guangchuang Yu

---

bb\_scale\_pch\_manual    *aesthetic scales*

---

**Description**

aesthetic scales

**Usage**

```
bb_scale_pch_manual(values)
```

```
bb_scale_lty_manual(values)
```

```
bb_scale_cex_manual(values)
```

```
bb_scale_cex_continuous(range = c(0.8, 1.6))
```

**Arguments**

values            values used for mapping.

range            numeric length-2 range for continuous mapping.

**Value**

A modified bbplot object

**Author(s)**

Guangchuang Yu

---

bb\_theme            *bb\_theme*

---

**Description**

bbplot theme

**Usage**

```
bb_theme(...)
```

```
bb_theme_expand(...)
```

```
bb_theme_grey(...)
```

```
bb_theme_deepblue(...)
```

```
bb_theme_bw(...)
```

```
bb_theme_minimal(...)
```

**Arguments**

... parameters for graphics::par

**Details**

setting visual details of bbplot

**Value**

A modified bbplot object

**Author(s)**

Guangchuang Yu

---

set\_bb\_theme

*set\_bb\_theme*

---

**Description**

set bb\_theme

**Usage**

```
set_bb_theme(theme)
```

**Arguments**

theme bb\_theme

**Details**

setting bb\_theme for ordinary base plot command. It internally use par to set global graphic parameters. Users need to explicitly call unset\_bb\_theme() to restore original setting.

**Value**

setting selected theme as default (has side effect and will affect other base plot)

**Author(s)**

Guangchuang Yu

**Examples**

```
library(plotbb)
set_bb_theme(bb_theme_deepblue)
bbplot(mtcars, bb_aes(mpg, disp, col=factor(cyl))) + bb_point(pch=19)
```

---

|                             |                       |
|-----------------------------|-----------------------|
| <code>unset_bb_theme</code> | <i>unset_bb_theme</i> |
|-----------------------------|-----------------------|

---

**Description**

unset bb\_theme

**Usage**

```
unset_bb_theme()
```

**Details**

remove all the themes by set\_bb\_theme

**Value**

unset theme (i.e., restore par setting)

**Author(s)**

Guangchuang Yu

# Index

as.bbplot, 2

bb\_aes, 4

bb\_bar, 4

bb\_boxplot (bb\_bar), 4

bb\_density (bb\_bar), 4

bb\_errorbar (bb\_bar), 4

bb\_facet\_wrap, 6

bb\_grid, 7

bb\_hist (bb\_bar), 4

bb\_labs, 7

bb\_legend, 8

bb\_line (bb\_bar), 4

bb\_lm (bb\_bar), 4

bb\_point (bb\_bar), 4

bb\_scale\_cex\_continuous  
    (bb\_scale\_pch\_manual), 10

bb\_scale\_cex\_manual  
    (bb\_scale\_pch\_manual), 10

bb\_scale\_col\_gradient  
    (bb\_scale\_col\_palette), 9

bb\_scale\_col\_manual  
    (bb\_scale\_col\_palette), 9

bb\_scale\_col\_palette, 9

bb\_scale\_lty\_manual  
    (bb\_scale\_pch\_manual), 10

bb\_scale\_pch\_manual, 10

bb\_segment (bb\_bar), 4

bb\_signif (bb\_bar), 4

bb\_sub (bb\_labs), 7

bb\_text (bb\_bar), 4

bb\_theme, 10

bb\_theme\_bw (bb\_theme), 10

bb\_theme\_deepblue (bb\_theme), 10

bb\_theme\_expand (bb\_theme), 10

bb\_theme\_grey (bb\_theme), 10

bb\_theme\_minimal (bb\_theme), 10

bb\_tile (bb\_bar), 4

bb\_title (bb\_labs), 7

bb\_xlab (bb\_labs), 7

bb\_ylab (bb\_labs), 7

bbplot, 3

set\_bb\_theme, 11

unset\_bb\_theme, 12