

# Package ‘ggpackets’

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**Title** Package Plot Layers for Easier Portability and Modularization

**Version** 0.2.0

**Description** Create groups of 'ggplot2' layers that can be easily migrated from one plot to another, reducing redundant code and improving the ability to format many plots that draw from the same source 'ggpacket' layers.

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## Description

Create groups of ggplot layers that can be easily migrated from one plot to another, reducing redundant code and improving the ability to format many plots that draw from the same source ggpacket layers.

## Author(s)

**Maintainer:** Doug Kelkhoff <doug.kelkhoff@gmail.com>

## See Also

Useful links:

- <https://dgkf.github.io/ggpackets/>

## Examples

```
# Prep a tidy data.frame to plot with
airquality_long <- rbind(
  data.frame(
    airquality[,c("Month", "Day")],
    Variable = "Temp",
    Measurement = airquality$Temp),
  data.frame(
    airquality[,c("Month", "Day")],
    Variable = "Ozone",
    Measurement = airquality$Ozone))

# Build our new composite ggplot geom
geom_error_line <- ggpacket() %>%
  geom_ribbon(
    .id = "box",
    mapping = aes(fill = ..color..),
    stat = 'summary',
    fun = mean,
    fun.min = ~mean(.) - sd(.),
    fun.max = ~mean(.) + sd(.),
    alpha = 0.15,
    color = NA) %>%
  geom_line(
    .id = "line",
    stat = 'summary',
    fun = mean,
    alpha = 0.8)

# Try it out!
ggplot(airquality_long) +
  aes(x = round((Month * 30 + Day) / 4), y = Measurement, color = Variable) +
  geom_error_line(na.rm = TRUE, line.size = 1.5) +
  scale_y_log10() +
  labs(x = "Week")

# for further examples, check out the vignettes
vignette(package = "ggpackets")
```

## Description

Intercept ggplot2 ggproto plus operator

**Usage**

```
## S3 method for class 'gg'
e1 + e2
```

**Arguments**

e1            An object to add to a ggproto object.  
e2            A ggproto object to add.

**Value**

A ggplot2 object or ggpacket, dependent on whether e1 is a materialized ggproto object or a ggpacket.

---

<code>.all_aesthetics</code>	<i>Extracted .all_aesthetics from internal ggplot2 with hardcoded fallback</i>
------------------------------	--

---

**Description**

Extracted `.all_aesthetics` from internal `ggplot2` with hardcoded fallback

**Usage**

```
.all_aesthetics
```

**Format**

An object of class character of length 41.

---

<code>.plus_gg</code>	<i>ggplot2 internal gg addition method</i>
-----------------------	--

---

**Description**

ggplot2 internal gg addition method

**Usage**

```
.plus_gg(e1, e2)
```

**Arguments**

e1            Addition lhs  
e2            Addition rhs

---

`as.list,ggpacket-method`  
*Convert a ggpacket to a list of ggcalls*

---

### **Description**

Convert a ggpacket to a list of ggcalls

### **Usage**

```
## S4 method for signature 'ggpacket'  
as.list(x)
```

### **Arguments**

x                    A ggpacket object

---

`as_gg_call`                    *Convert an expression into a call as a list of quosure components*

---

### **Description**

Convert an expression into a call as a list of quosure components

### **Usage**

```
as_gg_call(x, which = -3L)
```

### **Arguments**

x                    An expression to convert to a ggcall.  
which                The relative frame offset in which the expression should be eventually evaluated.

---

collapse_data	<i>Collapse data arguments</i>
---------------	--------------------------------

---

**Description**

Reduce data arguments using update\_data

**Usage**

```
collapse_data(args)
```

**Arguments**

args	A list of arguments. If multiple elements are named "data" they will be collapsed into a single mapping argument, appropriately updating datasets and applying functions as needed.
------	---

---

collapse_mappings	<i>Collapse aesthetic mappings arguments</i>
-------------------	--

---

**Description**

Reduce aesthetic mapping arguments using update\_mapping

**Usage**

```
collapse_mappings(args)
```

**Arguments**

args	A list of arguments. If multiple elements are named "mapping" they will be collapsed into a single mapping argument, appropriately updating aesthetic mappings.
------	---

---

deduplicate\_params     *Remove arguments with duplicated names*

---

**Description**

Remove arguments with duplicated names

**Usage**

```
deduplicate_params(args)
```

**Arguments**

args                    A list of arguments to deduplicate.

---

expand\_dots            *Expand dot arguments into named arguments*

---

**Description**

Expand dot arguments into named arguments

**Usage**

```
expand_dots(expr, envir = parent.frame(2L))
```

**Arguments**

expr                    An expression whose arguments need to be expanded.  
envir                    An environment in which to evaluate expansion.

---

filter\_by\_ggcall\_ids   *Filter a named list by ids*

---

**Description**

Filter a named list (often an aesthetic mapping or argument list) for only unprefixed elements, elements which don't match any of all\_ids and those which match one of call\_ids. For those that match, remove the id prefix.

**Usage**

```
filter_by_ggcall_ids(x, call_ids, all_ids)
```

**Arguments**

<code>x</code>	A named list to filter.
<code>call_ids</code>	A character vector of valid ids.
<code>all_ids</code>	A character vector of all possible ids.

---

 ggpacket

*A container for lazy ggplot layers*


---

**Description**

ggpackets present a mechanism for easily collecting loose ggplot layers into objects that can be reused across multiple plots, as well as handling of hierarchical argument propagation, as well as data and aesthetic scoping.

**Usage**

```
ggpacket(...)
```

**Arguments**

<code>...</code>	Arguments passed on to <a href="#">ggpacket_call</a>
<code>data</code>	The data argument to use for all layers within the ggpacket
<code>mapping</code>	The aesthetic mapping to use as a basis for all layers within the ggpacket. Layer-specific mappings will update the value of the mapping, and assigning <code>..reset..</code> to any aesthetic field will return the propagated aesthetic mapping to a default, unmapped state for that layer.
<code>.id</code>	an optional identifier tag for the ggpacket, used for filtering arguments and aesthetics that are propagated into the contained ggplot layers.

**Details**

The ggpacket object behaves like a function, returning an updated ggpacket. As well, it contains a few slots which can be used for programmatically accessing the lazy ggplot calls.

Within ggpacket and subsequent ggplot layer calls, aesthetic mappings can contain references to previously mapped aesthetics using the double-dot keywords (e.g. `..x..`). In addition, the keyword `..reset..` can be used to revert aesthetics within the ggpacket or layer to an un-specified state.

Because ggpackets will tolerate a more flexible syntax for layer specifications, it's preferable to use the ggplot composition operator `%+` (instead of `+`). This allows for duplicate argument names and non-standard aesthetics to be passed, which are both handled internally within the ggpacket call, but will trigger warnings when using a bare `+`.

**Value**

A new ggpacket object



**Slots**

`data` A lazy reference to the `data` parameter of the `ggpacket`, allowing for scoping the data used by a block of `ggplot` layers.

`mapping` A lazy reference to the `mapping` parameter of the `ggpacket`, allowing for scoping of aesthetic mappings over a block of `ggplot` layers.

`dots` Quosures representing arguments to be passed to all of the `ggpacket`'s `ggplot` layers.

`ggcalls` A list containing the layers stored within the `ggpacket`

**Examples**

```
library(ggplot2)

# create a ggpacket directly, setting some fixed argument settings
ggpk_simple <- ggpacket() %>% geom_line(color = "red") %>% geom_point()
ggplot(mtcars, aes(x = wt, y = mpg)) + ggpk_simple()

# any non-fixed arguments can be modified in the ggpacket call
ggplot(mtcars, aes(x = wt, y = mpg)) + ggpk_simple(color = "green")

# arguments can be specified for only specific layers by prefixing them
ggplot(mtcars, aes(x = wt, y = mpg)) + ggpk_simple(point.size = 5)

# allow masking of preset arguments by wrapping the ggpacket in a function
ggpk_func <- function(...) {
  ggpacket() %>%
    geom_line(...) %>%
    geom_point(color = "red", ...)
}

ggplot(mtcars, aes(x = wt, y = mpg)) +
  ggpk_func(color = "purple", size = 2, point.size = 4)
```

---

`ggpacket-class`*A ggpacket object*

---

**Description**

A `ggpacket` object

Add a `ggpacket` object to another, arbitrary object

Display contents of a `ggpacket`

**Usage**

```
## S4 method for signature 'ggpacket,ANY'
e1 + e2

## S4 method for signature 'ggpacket'
show(object)
```

**Arguments**

e1	A ggpacket object.
e2	Any object.
object	A ggpacket object to show.

**Slots**

data	A dataset or waiver to use within the ggpacket ggcalls.
mapping	A ggplot aesthetic mapping to use within the ggpacket ggcalls.
dots	Arguments which should be passed before prespecified arguments to each ggcall.
ggcalls	A list of lazily evaluated ggplot layer construction expressions.

---

ggpacket_call	<i>The function used when a ggpacket is called as a function</i>
---------------	--

---

**Description**

The function used when a ggpacket is called as a function

**Usage**

```
ggpacket_call(mapping = NULL, data = NULL, ..., .id = character(0L))
```

**Arguments**

mapping	The aesthetic mapping to use as a basis for all layers within the ggpacket. Layer-specific mappings will update the value of the mapping, and assigning <code>..reset..</code> to any aesthetic field will return the propagated aesthetic mapping to a default, unmapped state for that layer.
data	The data argument to use for all layers within the ggpacket
...	additional arguments passed to all bundled ggplot layers, and will be overwritten by layer-specific arguments if provided.
.id	an optional identifier tag for the ggpacket, used for filtering arguments and aesthetics that are propagated into the contained ggplot layers.

**Value**

A new ggpacket object with the new defaults applied

---

ggpacket_plus_ANY	<i>Swallow calls when a ggpacket is added to any expression</i>
-------------------	---

---

**Description**

Swallow calls when a ggpacket is added to any expression

**Usage**

```
ggpacket_plus_ANY(e1, e2)
```

**Arguments**

e1	A ggpacket object.
e2	Any object.

---

gg_plus_ggpacket	<i>Add a gg object to a ggpacket object</i>
------------------	---

---

**Description**

Add a gg object to a ggpacket object

**Usage**

```
gg_plus_ggpacket(e1, e2)
```

**Arguments**

e1	A ggplot ggproto object.
e2	A ggpacket object.

---

handle_reset_mapping	<i>Specific handling of ..reset.. aesthetic</i>
----------------------	---

---

**Description**

Specific handling of ..reset.. aesthetic

**Usage**

```
handle_reset_mapping(mapping)
```

**Arguments**

mapping	A ggplot2 aesthetic mapping.
---------	------------------------------

---

infer_ggcall_id	<i>Convert ggplot geom layers to friendly names</i>
-----------------	---

---

**Description**

Convert ggplot geom layers to friendly names

**Usage**

```
infer_ggcall_id(x)
```

**Arguments**

x	A function name from which an id should be inferred.
---	--

---

infer_ggcall_name	<i>Label ggcall with function name if it can be deduced</i>
-------------------	---

---

**Description**

Label ggcall with function name if it can be deduced

**Usage**

```
infer_ggcall_name(expr)
```

**Arguments**

expr	An expression from which a call name should be inferred.
------	--

---

length,ggpacket-method	<i>Get the number of ggcalls within a ggpacket</i>
------------------------	--

---

**Description**

Get the number of ggcalls within a ggpacket

**Usage**

```
## S4 method for signature 'ggpacket'
length(x)
```

**Arguments**

x	A ggpacket object
---	-------------------

---

match_unnamed_args	<i>Match unnamed arguments</i>
--------------------	--------------------------------

---

**Description**

Similar to `match.call`, but without evaluating arguments, avoiding possible syntactic errors that would arise due to `ggpackets`-specific syntax.

**Usage**

```
match_unnamed_args(f, args, envir = parent.frame())
```

**Arguments**

<code>f</code>	A function to match arguments against.
<code>args</code>	A list of arguments to match.
<code>envir</code>	An environment in which the function should be matched.

---

<code>names, ggpacket-method</code>	<i>Fetch the ids associated with each ggcall</i>
-------------------------------------	--

---

**Description**

Fetch the ids associated with each ggcall

**Usage**

```
## S4 method for signature 'ggpacket'  
names(x)
```

**Arguments**

<code>x</code>	A ggpacket object
----------------	-------------------

---

`only_formals_and_dots` *Filter for only arguments that can be accepted by a given function*

---

**Description**

Filter for only arguments that can be accepted by a given function

**Usage**

```
only_formals_and_dots(f, args)
```

**Arguments**

<code>f</code>	A function to filter on.
<code>args</code>	A list of arguments to filter.

---

`required_aesthetics` *Check a ggpacket object for required aesthetic arguments*

---

**Description**

Check a ggpacket object for required aesthetic arguments

**Usage**

```
required_aesthetics(x)
```

**Arguments**

<code>x</code>	A ggpacket object or related ggplot component
----------------	---

---

`self` *Returning the calling object from within a function*

---

**Description**

Used for retrieving an S4 object being called as though it is a function

**Usage**

```
self(which = -1L)
```

**Arguments**

<code>which</code>	A relative environment offset in which to search for an object with a name of the calling expression.
--------------------	---

---

`smart_swap_mapping_data`*Mimic ggplot2 behavior of intelligently interpreting first layer argument*

---

**Description**

Like ggplot, if the first argument doesn't appear to be an aesthetic mapping, despite mappings being appropriately passed in the first argument, swap the first two arguments.

**Usage**

```
smart_swap_mapping_data(args)
```

**Arguments**

`args` a list of arguments to interpret

---

`substitute_ggcall_dot_aes`*Substitute a ggcall's dot aesthetics with their redirected values*

---

**Description**

Substitute a ggcall's dot aesthetics with their redirected values

**Usage**

```
substitute_ggcall_dot_aes(mapping, ggcall, envir = parent.frame())
```

**Arguments**

`mapping` A ggplot2 aesthetic mapping.

`ggcall` A ggcall list of expressions.

`envir` An environment in which the dot aesthetics should be evaluated.

---

substitute_quote	<i>Substitute a quoted expression in a given environment</i>
------------------	--

---

**Description**

Substitute a quoted expression in a given environment

**Usage**

```
substitute_quote(q, env = parent.frame())
```

**Arguments**

q	A quote to evaluate.
env	An environment in which the quote should be evaluated.

---

update_data	<i>Reduce data parameters, iteratively applying functions or masking</i>
-------------	--

---

**Description**

Reduce data parameters, iteratively applying functions or masking

**Usage**

```
update_data(d1, d2, ...)
```

**Arguments**

d1	A plot data object to update
d2	A second plot data object with which to update d1
...	Additional objects to sequentially collapse.

---

update_mapping	<i>Reduce a list of mappings, iteratively routing aesthetics</i>
----------------	--

---

**Description**

Reduce a list of mappings, iteratively routing aesthetics

**Usage**

```
update_mapping(...)
```

**Arguments**

...	A series of mappings to be sequentially collapsed
-----	---



---

 with\_ignore\_unknown\_params

*Evaluate an expression, ignoring warnings about unknown parameters*

---

### Description

Evaluate an expression, ignoring warnings about unknown parameters

### Usage

```
with_ignore_unknown_params(expr, envir = parent.frame())
```

### Arguments

expr	An expression to evaluate.
envir	An environment to evaluate the given expression in.

---

 [,ggpacket-method      *Index into a ggpacket object*


---

### Description

Index into a ggpacket object

### Usage

```
## S4 method for signature 'ggpacket'
x[i, j, ..., drop = TRUE]
```

### Arguments

x	A ggpacket object.
i	A character or numeric vector for indexing.
j	Unused.
...	Unused.
drop	Unused.

---

[.ggpacket	<i>Subset a ggpacket for a selection of ggcalls</i>
------------	---

---

**Description**

Subset a ggpacket for a selection of ggcalls

**Usage**

```
## S3 method for class 'ggpacket'
x[i, ...]
```

**Arguments**

x	A ggpacket to subset.
i	A vector upon which to subset the ggpacket ggcalls.
...	Additional arguments unused.

---

[[,ggpacket-method	<i>Index into a ggpacket object</i>
--------------------	-------------------------------------

---

**Description**

Index into a ggpacket object

**Usage**

```
## S4 method for signature 'ggpacket'
x[[i, j, ...]]
```

**Arguments**

x	A ggpacket object.
i	A character or numeric value for indexing.
j	Unused.
...	Unused.

---

[[.ggpacket	<i>Subset a ggpacket for a selection of ggcalls</i>
-------------	---

---

**Description**

Subset a ggpacket for a selection of ggcalls

**Usage**

```
## S3 method for class 'ggpacket'
x[[i, ...]]
```

**Arguments**

x	A ggpacket to subset.
i	A vector upon which to subset the ggpacket ggcalls.
...	Additional arguments unused.

---

%+%	<i>Lazy handler for ggplot addition</i>
-----	---

---

**Description**

Lazy handler for ggplot addition

**Usage**

```
e1 %+% e2
```

**Arguments**

e1	Addition lhs.
e2	Addition rhs.

**Value**

A new ggpacket object with e2 appended as an additional layer or layers.

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