Package ‘ggpackets’

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Title Package Plot Layers for Easier Portability and Modularization

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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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ggpackets: Package Plot Layers for Easier Portability and Modularization

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)

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See Also

Useful links:
- https://dgkf.github.io/ggpackets/
Examples

```r
# 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

`+gg` is an operator that allows you to chain ggplot operations together, making it easier to create complex plots in a single line of code.
Usage

```r
## 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.

---

### `.all_aesthetics`

Extracted `.all_aesthetics` from internal ggplot2 with hardcoded fallback

Description

Extracted `.all_aesthetics` from internal ggplot2 with hardcoded fallback

Usage

```
.all_aesthetics
```

Format

An object of class character of length 41.

---

### `.plus_gg`

ggplot2 internal gg addition method

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**

```r
## 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**

```r
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  

**Description**

Reduce data arguments using `update_data`

**Usage**

```python
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  

**Description**

Reduce aesthetic mapping arguments using `update_mapping`

**Usage**

```python
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

**Usage**

deduplicate_params(args)

**Arguments**

- **args**
  
  A list of arguments to deduplicate.

---

**expand_dots**

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**

- `x` A named list to filter.
- `call_ids` A character vector of valid ids.
- `all_ids` A character vector of all possible ids.

---

**Description**

`ggpacket` 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**

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

**Arguments**

- `...` Arguments passed on to `ggpacket_call`
  - `data` The data argument to use for all layers within the `ggpacket`
  - `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 `..reset..` to any aesthetic field will return the propagated aesthetic mapping to a default, unmapped state for that layer.
  - `.id` 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 preferrable 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
### Description

A ggpacket object

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

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

Quosures representing arguments to be passed to all of the ggpacket’s ggplot layers.

A list containing the layers stored within the ggpacket

### Usage

```r
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)
```

---

```r
## 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 ggc

ggcalls A list of lazily evaluated ggplot layer construction expressions.

---

ggpacket_call The function used when a ggpacket is called as a function

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. Lay

er-specific mappings will update the value of the mapping, and assigning ..reset.. to any aesthetic field will return the prop

gated 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 overwrit
.en by layer-specific arguments if provided.
.id an optional identifier tag for the ggpacket, used for filtering arguments and a
esthetics that are propagated into the contained ggplot layers.

Value

A new ggpacket object with the new defaults applied
ggpacket_plus_ANY

Swallow calls when a ggpacket is added to any expression

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
Add a gg object to a ggpacket object

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
Specific handling of ..reset.. aesthetic

Description
Specific handling of ..reset.. aesthetic

Usage
handle_reset_mapping(mapping)

Arguments
- mapping: A ggplot2 aesthetic mapping.
infer_ggcall_id  \hspace{1cm} \textit{Convert ggplot geom layers to friendly names}

\textbf{Description}

Convert ggplot geom layers to friendly names

\textbf{Usage}

\texttt{infer_ggcall_id(x)}

\textbf{Arguments}

\begin{itemize}
  \item \texttt{x} \hspace{1cm} A function name from which an id should be inferred.
\end{itemize}

infer_ggcall_name  \hspace{1cm} \textit{Label ggcall with function name if it can be deduced}

\textbf{Description}

Label ggcall with function name if it can be deduced

\textbf{Usage}

\texttt{infer_ggcall_name(expr)}

\textbf{Arguments}

\begin{itemize}
  \item \texttt{expr} \hspace{1cm} An expression from which a call name should be inferred.
\end{itemize}

length_{ggpacket-method}  \hspace{1cm} \textit{Get the number of ggcalls within a ggpacket}

\textbf{Description}

Get the number of ggcalls within a ggpacket

\textbf{Usage}

\begin{verbatim}
## S4 method for signature 'ggpacket'
length(x)
\end{verbatim}

\textbf{Arguments}

\begin{itemize}
  \item \texttt{x} \hspace{1cm} A ggpacket object
\end{itemize}
**match_unnamed_args**  
*Match unnamed arguments*

---

**Description**

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

**Usage**

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

**Arguments**

- **f**: A function to match arguments against.
- **args**: A list of arguments to match.
- **envir**: An environment in which the function should be matched.

---

**names,ggpacket-method**  
*Fetch the ids associated with each ggcall*

---

**Description**

Fetch the ids associated with each ggcall

**Usage**

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

**Arguments**

- **x**: 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**

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

**Arguments**

- `f`  
  A function to filter on.
- `args`  
  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**

```r
required_aesthetics(x)
```

**Arguments**

- `x`  
  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**

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

**Arguments**

- `which`  
  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

```r
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

```r
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  
Substitute a quoted expression in a given environment

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  
Reduce data parameters, iteratively applying functions or masking

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  
Reduce a list of mappings, iteratively routing aesthetics

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

Subset a ggpacket for a selection of ggcalls

**Description**

Subset a ggpacket for a selection of ggcalls

**Usage**

```r
## 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

Index into a ggpacket object

**Description**

Index into a ggpacket object

**Usage**

```r
## 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

**Subset a ggpacket for a selection of ggcalls**

**Description**

Subset a ggpacket for a selection of ggcalls

**Usage**

```r
## 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.

---

### %+%

**Lazy handler for ggplot addition**

**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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