

Package ‘GGenemy’

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Title Audit 'ggplot2' Visualizations for Accessibility and Best Practices

Version 0.1.0

Description Audits 'ggplot2' visualizations for accessibility issues, misleading practices, and readability problems. Checks for color accessibility concerns including colorblind-unfriendly palettes, misleading scale manipulations such as truncated axes and dual y-axes, text readability issues like small fonts and overlapping labels, and general accessibility barriers. Provides comprehensive audit reports with actionable suggestions for improvement. Color vision deficiency simulation uses methods from the 'colorspace' package Zeileis et al. (2020) <[doi:10.18637/jss.v096.i01](https://doi.org/10.18637/jss.v096.i01)>. Contrast calculations follow WCAG 2.1 guidelines (W3C 2018 <<https://www.w3.org/WAI/WCAG21/Understanding/contrast-minimum>>).

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Encoding UTF-8

RoxygenNote 7.3.3

Imports ggplot2, colorspace, grDevices

URL <https://github.com/andytai7/GGenemy>

BugReports <https://github.com/andytai7/GGenemy/issues>

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

Config/testthat.edition 3

VignetteBuilder knitr

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Contents

<code>gg_audit</code>	2
<code>gg_audit_accessibility</code>	3
<code>gg_audit_color</code>	3
<code>gg_audit_labels</code>	4
<code>gg_audit_scales</code>	4
<code>gg_audit_text</code>	5
<code>gg_simulate_cvd</code>	6
<code>gg_suggest_fixes</code>	6
<code>print.gg_audit_report</code>	7
<code>print.gg_fixSuggestions</code>	8

Index

9

<code>gg_audit</code>	<i>Comprehensive Audit of ggplot2 Visualization</i>
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Description

Runs all available audit checks on a ggplot2 object and returns a comprehensive report of potential issues and suggestions.

Usage

```
gg_audit(plot, checks = "all")
```

Arguments

<code>plot</code>	A ggplot2 object
<code>checks</code>	Character vector of checks to run. Default is "all". Options: "color", "scales", "text", "accessibility", "labels"

Value

A list with class "gg_audit_report" containing audit results

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg, color = factor(cyl))) +
  geom_point() +
  scale_color_manual(values = c("red", "green", "blue"))
report <- gg_audit(p)
print(report)
```

gg_audit_accessibility

Comprehensive Accessibility Audit

Description

Checks overall accessibility including color, contrast, and readability.

Usage

```
gg_audit_accessibility(plot)
```

Arguments

plot A ggplot2 object

Value

A list of issues, warnings, and suggestions

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg)) + geom_point(size = 1)
gg_audit_accessibility(p)
```

gg_audit_color

Audit Color Palette for Accessibility Issues

Description

Checks if a ggplot2 object uses colors that may be problematic for colorblind users and provides detailed analysis.

Usage

```
gg_audit_color(plot)
```

Arguments

plot A ggplot2 object

Value

A list of issues, warnings, and suggestions

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg, color = factor(cyl))) +
  geom_point() +
  scale_color_manual(values = c("red", "green", "blue"))
gg_audit_color(p)
```

gg_audit_labels

Audit Plot Labels and Annotations

Description

Checks for appropriate titles, labels, and legends.

Usage

```
gg_audit_labels(plot)
```

Arguments

plot	A ggplot2 object
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Value

A list of issues, warnings, and suggestions

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg, color = factor(cyl))) +
  geom_point()
gg_audit_labels(p)
```

gg_audit_scales

Audit Scales and Axes for Misleading Practices

Description

Checks for truncated axes, inappropriate transformations, and other scale-related issues that can mislead viewers.

Usage

```
gg_audit_scales(plot)
```

Arguments

`plot` A ggplot2 object

Value

A list of issues, warnings, and suggestions

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg)) +
  geom_point() +
  ylim(15, 35)
gg_audit_scales(p)
```

`gg_audit_text`*Audit Text Elements for Readability*

Description

Checks font sizes, label overlap, and text readability issues.

Usage

```
gg_audit_text(plot)
```

Arguments

`plot` A ggplot2 object

Value

A list of issues, warnings, and suggestions

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(x = rownames(mtcars), y = mpg)) +
  geom_col() +
  theme(axis.text.x = element_text(size = 6))
gg_audit_text(p)
```

`gg_simulate_cvd` *Simulate Colorblind Vision*

Description

Shows how your plot appears to people with different types of color vision deficiency

Usage

```
gg_simulate_cvd(plot, type = "deutan")
```

Arguments

<code>plot</code>	A ggplot2 object
<code>type</code>	Type of CVD: "deutan" (green-blind), "protan" (red-blind), or "tritan" (blue-blind)

Value

A modified ggplot2 object showing the simulated view

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg, color = factor(cyl))) +
  geom_point() +
  scale_color_manual(values = c("red", "green", "blue"))
gg_simulate_cvd(p, type = "deutan")
```

`gg_suggest_fixes` *Generate Code Suggestions to Fix Issues*

Description

Takes an audit report and generates actionable R code to fix issues. Can also attempt to automatically fix the plot.

Usage

```
gg_suggest_fixes(audit_report, auto_fix = FALSE, copy_to_clipboard = FALSE)
```

Arguments

<code>audit_report</code>	An object returned by <code>gg_audit()</code> , or a ggplot2 object
<code>auto_fix</code>	Logical. If TRUE, attempts to automatically apply fixes. Default is FALSE.
<code>copy_to_clipboard</code>	Logical. If TRUE, copies suggested code to clipboard. Default is FALSE.

`print.gg_audit_report`

7

Value

If `auto_fix` is TRUE, returns a fixed `ggplot2` object. Otherwise returns a list of code suggestions.

Examples

```
library(ggplot2)
p <- ggplot(mtcars, aes(wt, mpg, color = factor(cyl))) +
  geom_point() +
  scale_color_manual(values = c("red", "green", "blue"))

# Get suggestions
gg_suggest_fixes(p)

# Auto-fix the plot
p_fixed <- gg_suggest_fixes(p, auto_fix = TRUE)
```

`print.gg_audit_report` *Print method for audit reports*

Description

Print method for audit reports

Usage

```
## S3 method for class 'gg_audit_report'
print(x, ...)
```

Arguments

<code>x</code>	A <code>gg_audit_report</code> object
<code>...</code>	Additional arguments (not used)

Value

Returns the input object invisibly. Called for the side effect of printing a formatted audit report.

```
print.gg_fixSuggestions
```

Print method for fix suggestions

Description

Print method for fix suggestions

Usage

```
## S3 method for class 'gg_fix_suggestions'  
print(x, ...)
```

Arguments

x	A gg_fix_suggestions object
...	Additional arguments (not used)

Value

Returns the input object invisibly. Called for the side effect of printing formatted fix suggestions.

Index

```
gg_audit, 2
gg_audit_accessibility, 3
gg_audit_color, 3
gg_audit_labels, 4
gg_audit_scales, 4
gg_audit_text, 5
gg_simulate_cvd, 6
gg_suggest_fixes, 6

print.gg_audit_report, 7
print.gg_fixSuggestions, 8
```