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>. Contrast calculations follow WCAG 2.1 guidelines (W3C 2018 <https://www.w3.org/WAI/WCAG21/Understanding/contrast-minimum>).

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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

NeedsCompilation no

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`apply_fixes` *Apply automatic fixes to a plot*

Description

Apply automatic fixes to a plot

Usage

```
apply_fixes(plot, audit_report)
```

`generate_fix_code` *Generate fix code based on audit results*

Description

Generate fix code based on audit results

Usage

```
generate_fix_code(audit_report)
```

`gg_audit` *Comprehensive Audit of ggplot2 Visualization*

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

`plot`	A ggplot2 object
`checks`	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

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

plot	A ggplot2 object
type	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

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

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_fix_suggestions

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)

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