Package 'ColorNameR'

October 12, 2022

Type Package

Title Give Colors a Name

Version 0.1.0

Description A tool for transforming coordinates in a color space to common color names using data from the Royal Horticultural Society and the International Union for the Protection of New Varieties of Plants.

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URL <https://github.com/msanchez-beeckman/ColorNameR>

Encoding UTF-8

LazyData true

Depends R (>= 2.10)

Imports magrittr, dplyr, rlang, purrr, grDevices

RoxygenNote 7.1.1

Suggests tibble, testthat (>= 3.0.0), ggplot2, RColorBrewer

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

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R topics documented:

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cie76   *Get the CIE76 color difference between two CIELab values.*

Description

Get the CIE76 color difference between two CIELab values.

Usage

```
cie76(lab_color1, lab_color2)
```

Arguments

lab_color1   A vector with three components corresponding to a Lab value.

lab_color2   A vector with three components corresponding to another Lab value.

Value

The CIE76 color difference between the two given values.

References

Sharma, G., & Bala, R. (Eds.). (2017). Digital color imaging handbook. CRC press.

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cie94   *Get the CIE94 color difference between two CIELab values.*

Description

Get the CIE94 color difference between two CIELab values.

Usage

```
cie94(
  lab_color1,
  lab_color2,
  k_L = 1,
  k_C = 1,
  k_H = 1,
  K1 = 0.045,
  K2 = 0.015,
  symmetric = FALSE
)
```

Arguments

`lab_color1`	A vector with three components corresponding to a Lab value.
`lab_color2`	A vector with three components corresponding to another Lab value.
`k_L`	Weighting factor for the L component.
`k_C`	Weighting factor for the C component.
`k_H`	Weighting factor for the H component.
`K1`	Application dependent weighting factor.
`K2`	Application dependent weighting factor.
`symmetric`	If TRUE, use the symmetric version of the formula.

Value

The CIE94 color difference between the two given values.

References

Sharma, G., & Bala, R. (Eds.). (2017). Digital color imaging handbook. CRC press.

`ciede2000`   *Get the CIEDE2000 color difference between two CIELab values.*

Description

Get the CIEDE2000 color difference between two CIELab values.

Usage

```
ciede2000(lab_color1, lab_color2, k_L = 1, k_C = 1, k_H = 1)
```

Arguments

`lab_color1`	A vector with three components corresponding to a Lab value.
`lab_color2`	A vector with three components corresponding to another Lab value.
`k_L`	Weighting factor for the L component.
`k_C`	Weighting factor for the C component.
`k_H`	Weighting factor for the H component.

Value

The CIEDE2000 color difference between the two given values.

References

Sharma, G., Wu, W., & Dalal, E. N. (2005). The CIEDE2000 color-difference formula: Implementation notes, supplementary test data, and mathematical observations. Color Research & Application: Endorsed by Inter-Society Color Council, The Colour Group (Great Britain), Canadian Society for Color, Color Science Association of Japan, Dutch Society for the Study of Color, The Swedish Colour Centre Foundation, Colour Society of Australia, Centre Français de la Couleur, 30(1), 21-30.

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colordiff	*Get the color difference between values in the CIELab color space.*

Description

Get the color difference between values in the CIELab color space.

Usage

```
colordiff(color, reference, metric = "CIEDE2000", ...)
```

Arguments

color   A matrix whose rows specify color coordinates in the CIELab color space.

reference   A reference color.

metric   The color metric, between CIE76, CIE94, and CIEDE2000.

...   Weighting factors k_L, k_C, k_H, K1, and/or K2 for CIE94 and CIEDE2000, if applicable. Also, symmetric=TRUE to use a symmetric version of CIE94.

Value

The color difference between the two given values.

References

Sharma, G., & Bala, R. (Eds.). (2017). Digital color imaging handbook. CRC press. Sharma, G., Wu, W., & Dalal, E. N. (2005). The CIEDE2000 color-difference formula: Implementation notes, supplementary test data, and mathematical observations. Color Research & Application: Endorsed by Inter-Society Color Council, The Colour Group (Great Britain), Canadian Society for Color, Color Science Association of Japan, Dutch Society for the Study of Color, The Swedish Colour Centre Foundation, Colour Society of Australia, Centre Français de la Couleur, 30(1), 21-30.

Examples

```
colordiff(rbind(c(50, 2.6772, -79.7751),
                c(50, 3.1571, -77.2803),
                c(50, 2.8361, -74.0200)), c(50, 0, -82.7485))
colordiff(rbind(c(50, 2.6772, -79.7751),
                c(50, 3.1571, -77.2803),
                c(50, 2.8361, -74.0200)), c(50, 0, -82.7485), metric="CIE94")
colordiff(rbind(c(50, 2.6772, -79.7751),
                c(50, 3.1571, -77.2803),
             c(50, 2.8361, -74.0200)), c(50, 0, -82.7485), metric="CIE94", symmetric=TRUE)
```

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get_closest_color	*Get information about the closest RHS color to some CIELab coordinates.*

Description

Get information about the closest RHS color to some CIELab coordinates.

Usage

```
get_closest_color(L, a, b, metric = "CIEDE2000")
```

Arguments

L	The lightness L* of the color.
a	The chromatic component a* (red-green).
b	The chromatic component b* (blue-yellow).
metric	The color distance to use.

Value

A one-row tibble.

Examples

```
get_closest_color(65, 20, -20)
```

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name   *Name a color given its coordinates in a specified color space.*

Description

Name a color given its coordinates in a specified color space.

Usage

```
name(color, colorspace = "Lab", illuminant = NULL, language = "english")
```

Arguments

color   A matrix whose rows specify colors.

colorspace   The color space the coordinates of the colors are in.

illuminant   The reference white, or NULL if not needed.

language   The language of the color name, between English, French, German, and Span-
               ish.

Details

The available color spaces are "XYZ", "sRGB", "Apple RGB", "CIE RGB", "Luv", and "Lab" (de-
fault). If the color space is an RGB variant, the coordinates must take values between 0 and 1.

Value

The name of the color, according to the UPOV.

Examples

```
name(c(65, 20, -20))
name(c(65, 20, -20), language="Spanish")
name(c(65, 20, -20), language="es")
name(c(244/255, 234/255, 184/255), colorspace="sRGB")
name(rbind(c(65, 20, -20), c(69, 4, -31)))
```

rhs_color_names_2015   *UPOV names and groups for RHS colors.*

Description

Data set containing English, French, German, and Spanish names for the colors defined by the RHS in its sixth edition (2015), alongside their UPOV group number.

Usage

```
rhs_color_names_2015
```

Format

A data frame with 920 rows and 10 variables:

UPOVGroup the UPOV group of the color

RHS the RHS code of the color

english the English name for the color

french the French name for the color

german the German name for the color

spanish the Spanish name for the color

Source

UPOV https://www.upov.int/meetings/en/doc_details.jsp?meeting_id=50790&doc_id=426293

rhs_color_values_2007   *RHS colors in different color spaces.*

Description

Data set containing the coordinates in RGB, CIELab, and CIELCh of the colors defined by the Royal Horticultural Society in its fifth edition (2007).

Usage

```
rhs_color_values_2007
```

Format

A data frame with 892 rows and 10 variables:

RHS the RHS code of the color

R the red component in sRGB

G the green component in sRGB

B the blue component in sRGB

L the lightness component in CIELab (D65 / 10º)

a the red-green component in CIELab (D65 / 10º)

b the blue-yellow component in CIELab (D65 / 10º)

L2 the lightness component in CIELCh (D65 / 10º)

C the colorfulness component in CIELCh (D65 / 10º)

h the hue in CIELCh (D65 / 10º)

Source

http://rhscf.orgfree.com/

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