

Package ‘roloc’

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Type Package

Title Convert Colour Specification to Colour Name

Version 0.1-2

Author Paul Murrell

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Description Functions to convert an R colour specification to a colour name. The user can select and create different lists of colour names and different colour metrics for the conversion.

License GPL-2 | GPL-3

Imports grDevices, methods, parallel, colorspace

Suggests grid, ggplot2, testthat

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 roloc-package

Convert Colour Specification to Colour Name

Description

Functions to convert an R colour specification to a colour name. The user can select and create different lists of colour names and different colour metrics for the conversion.

Details

The DESCRIPTION file:

```

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Title:        Convert Colour Specification to Colour Name
Version:      0.1-2
Author:       Paul Murrell
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License:      GPL-2 | GPL-3
Imports:      grDevices, methods, parallel, colorspace
Suggests:    grid, ggplot2, testthat
  
```

Index of help topics:

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NgaTae	Simple Maori Colour Names
Rcolours	The standard R colour names
ReseneColours	Resene colour dictionary
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colourMatch	Match Colour Specifications to Colour Names
colourName	Convert a colour specification to a colour name
colourSwatch	Colour Conversion Diagram
euclideanLUV	Euclidean colour metrics
roloc-package	Convert Colour Specification to Colour Name
simpleColours	Simple Colour Names

The main function in this package is `colourName()`, which takes one or more colour specifications and returns a matching colour name.

Author(s)

Paul Murrell

Maintainer: Paul Murrell <paul@stat.auckland.ac.nz>

References

Murrell, P. (2018). "Generating Colour Names: The 'roloc' Package for R." Technical Report 2018-01, Department of Statistics, The University of Auckland. <https://www.stat.auckland.ac.nz/~paul/Reports/roloc/intro/roloc.html>

See Also

[colourName](#)

Examples

```
colourName("#FF0000")
```

colourList	<i>Define a list of colour names</i>
------------	--------------------------------------

Description

Define a list of colour names, which includes both colour names and a set of sRGB specifications corresponding to the names.

Usage

```
colourList(names, colours)  
colorList(names, colours)
```

Arguments

names	A character vector of colour names.
colours	An "sRGB" colour object (which provides the sRGB specifications corresponding to the colour names).

Value

A "colourList" object.

Author(s)

Paul Murrell

Examples

```
colourList("red", colorspace::RGB(1, 0, 0))
```

`colourMatch`*Match Colour Specifications to Colour Names*

Description

Compare colour specifications to a list of colour names and return distance information for each comparison.

Usage

```
colourMatch(colour, colourList, colourMetric, ...)
```

Arguments

<code>colour</code>	An R colour specification
<code>colourList</code>	A list of colours
<code>colourMetric</code>	A colour metric function. See the Details Section.
<code>...</code>	Arguments passed to the colour metric function.

Details

The colour metric function must take at least two arguments, both of which are "RGB" colour objects (as created by functions in the **colorspace** package such as `RGB`): `colour`, which is the colour specification to find a match for; and `colourList`, which represents the list of colour names to find a match within. Any additional arguments must have default values (so that they do not HAVE to be specified in a call to `colourName`). The colour metric function must return either a vector or a list, the same length as the `colour` argument, containing integer indices into the colour list. NA means the colour could not be represented in the colour space used by the colour metric. "unknown" means that the colour

Value

A "colourMatch" object with components for the original colour specification, the original colour list object, and a matrix of distances between each colour specification and each colour name in the colour list.

Author(s)

Paul Murrell

See Also

This function underlies both [colourName](#) and [colourSwatch](#).

Examples

```
colourMatch("red", colourList=HTMLcolours)
```

colourName	<i>Convert a colour specification to a colour name</i>
------------	--

Description

Return a colour name from a colour specification.

Usage

```
## S3 method for class 'colourMatch'  
colourNames(x,  
            ...)  
  
## Default S3 method:  
colourNames(x,  
            colourList=getOption("roloc.colourList"),  
            colourMetric=getOption("roloc.colourMetric"),  
            ...)  
  
colourName(...)
```

Arguments

x	A "colourMatch" object or an R colour specification
colourList	A list of colours
colourMetric	A colour metric function. See colourMatch for details.
...	For colourNames, arguments passed to the colour metric function. For colourName, arguments passed to colourNames

Value

colourNames returns a list of colour names (possibly more than one per colour specification).
colourName returns a vector of colour names (only the first match per colour specification).

Author(s)

Paul Murrell

Examples

```
# Some colours() are identical to each other  
newColours <- colourName(rgb(t(col2rgb(colours()))), maxColorValue=255)  
repeats <- newColours != colours()  
cbind(colours()[repeats], newColours[repeats])
```

Description

Draw a diagram of a colour conversion with four columns: original colour specification, plus swatch, matching colour name, plus swatch. `colourSwatches` can show multiple matches per colour specification.

Usage

```
colourSwatch(x, ..., newpage = TRUE)
## S3 method for class 'colourMatch'
colourSwatch(x, ..., newpage = TRUE)
## Default S3 method:
colourSwatch(x,
              colourList=getOption("roloc.colourList"),
              colourMetric=getOption("roloc.colourMetric"),
              ..., newpage = TRUE)
colourSwatches(x, ..., newpage = TRUE)
## S3 method for class 'colourMatch'
colourSwatches(x, ..., newpage = TRUE)
## Default S3 method:
colourSwatches(x,
               colourList=getOption("roloc.colourList"),
               colourMetric=getOption("roloc.colourMetric"),
               ..., newpage = TRUE)
```

Arguments

<code>x</code>	A "colourMatch" object or an R colour specification
<code>colourList</code>	A list of colours
<code>colourMetric</code>	A colour metric function. See colourMatch for details.
<code>...</code>	Arguments passed to the colour metric function.
<code>newpage</code>	Whether to start a new page on the current graphics device.

Value

These functions are used for their side-effect (a colour match diagram).

Author(s)

Paul Murrell

Examples

```
colourSwatch("red")
```

euclideanLUV	<i>Euclidean colour metrics</i>
--------------	---------------------------------

Description

Colour metrics that calculate euclidean distance between colours in different colour spaces.

Usage

```
euclideanLUV(colour, colourList, tolerance = Inf)
euclideanRGB(colour, colourList, tolerance = Inf)
euclideanDistance(spec, list, tolerance)
```

Arguments

colour	An "sRGB" colour object representing colours to find a match for.
colourList	An "sRGB" colour object representing a list of colours to find a match within.
tolerance	A numeric value indicating a range beyond which matches will not be accepted.
spec	A single colour specification, as an RGB vector of three values.
list	A list of colours, as an RGB matrix with three columns.

Details

euclideanLUV() calculates euclidean distance in the CIE Luv colour space.

euclideanRGB() calculates euclidean distance in the sRGB colour space.

euclideanDistance() is provided as a helper for defining euclidean metrics in other colour spaces.

Value

The colour metrics return a matrix of distances, with one row per colour specification and one column per colour name.

Author(s)

Paul Murrell

HTMLcolours

HTML colour names

Description

The list of HTML colour names

Usage

HTMLcolours

Format

A "colourList" object.

References

<https://www.w3.org/TR/2011/REC-css3-color-20110607/#html4>

NBScolours

ISCC-NBS colour dictionary

Description

The ISCC-NBS list of colour names

Usage

NBScolours

Format

A "colourList" object.

Warning

Some of the sRGB centroids are approximations because some ISCC-NBS colours cannot be represented within the sRGB gamut. This means that some ISCC-NBS colour names will not "round trip"; the sRGB centroid will not return the ISCC-NBS colour name.

Source

<http://people.csail.mit.edu/jaffer/Color/NBS-ISCC-rgb.txt>

References

<http://tx4.us/nbs-iscc.htm> <http://www.munsellcolourscienceforpainters.com/ColourSciencePapers/sRGBCentroidsForTheISCC.htm>

NgaTae

Simple Maori Colour Names

Description

A small set of Maori colour names.

Usage

NgaTae

Format

A "colourList" object.

References

<http://www.maori.org.nz/kotereo/default.php?pid=sp148&parent=115>

Rcolours

The standard R colour names

Description

The list of colour names that R recognises as colour specifications. This list can also be referred to as X11colours or CSScolours or SVGcolours.

Usage

Rcolours

Format

A "colourList" object.

References

Jaffer, A. (2018). Color-name dictionaries. <http://people.csail.mit.edu/jaffer/Color/Dictionaries#X11>. Accessed: 2018-01-24.

ReseneColours

Resene colour dictionary

Description

The Resene list of colour names

Usage

ReseneColours

Format

A "colourList" object.

Source

<http://people.csail.mit.edu/jaffer/Color/Resene-X11>

References

Jaffer, A. (2018). Color-name dictionaries. <http://people.csail.mit.edu/jaffer/Color/Dictionaries#X11>. Accessed: 2018-01-24.

simpleColours

Simple Colour Names

Description

A set of colour names with descriptive labels that are evenly spaced throughout CIE LUV space.

Usage

simpleColours

Format

A "colourList" object.

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