

Package ‘morgenstemning’

August 29, 2016

Title Color schemes compatible with red-green color perception difficulties

Description This package is a port of the MATLAB colourmap functions accompanying the paper M. Geissbuehler and T. Lasser, “How to display data by color schemes compatible with red-green color perception deficiencies,” Opt. Express 21, 9862-9874 (2013) to R.

Version 1.0

Author Matthias Geissbuehler <matthias.geissbuehler@a3.epfl.ch>, James Manton <ajd.manton@gmail.com>

Maintainer James Manton <ajd.manton@gmail.com>

URL <https://github.com/ajdm/morgenstemning>

Depends R (>= 2.15.0)

Suggests testthat

License GPL-3

LazyData true

NeedsCompilation no

Repository CRAN

Date/Publication 2014-02-28 07:00:53

R topics documented:

| | |
|--------------------------|---|
| ametrine | 2 |
| isolum | 3 |
| morgenstemning | 4 |

| | |
|--------------|----------|
| Index | 5 |
|--------------|----------|

`ametrine`*Create a colorblind-safe vector of n quasi-isoluminant colors.*

Description

Create a colorblind-safe vector of n quasi-isoluminant colors.

Usage

```
ametrine(n = 256, mincolor = NULL, maxcolor = NULL, invert = FALSE,  
         alpha = 1)
```

Arguments

| | |
|-----------------------|--|
| <code>n</code> | the number of colors to be in the palette. |
| <code>mincolor</code> | a color with which to replace the lower end of the scale. |
| <code>maxcolor</code> | a color with which to replace the upper end of the scale. |
| <code>invert</code> | logical indicating whether the palette should be inverted. |
| <code>alpha</code> | the alpha transparency for the palette. |

Details

The colormap is almost isoluminant and perceived by those with a red-green color perception deficiency as a roughly linear ramp between blue and yellow. However, the colormap has been enriched with a red control point for those with normal color vision. In order to improve contrast, this colormap is slightly unbalanced in luminence, unlike [isolum](#).

Value

A character vector of color names. This can be used either to create a user-defined color palette for subsequent graphics by [palette](#)(cv), a `col =` specification in graphics functions or in `par`.

See Also

[palettes](#) and [colors](#).

Examples

```
require(graphics)  
# A color wheel  
pie(rep(1,12), col=ametrine(12))
```

isolum *Create a colorblind-safe vector of n isoluminant colors.*

Description

Create a colorblind-safe vector of n isoluminant colors.

Usage

```
isolum(n = 256, mincolor = NULL, maxcolor = NULL, invert = FALSE,  
       gamma = 1.8, alpha = 1)
```

Arguments

| | |
|----------|---|
| n | the number of colors to be in the palette. |
| mincolor | a color with which to replace the lower end of the scale. |
| maxcolor | a color with which to replace the upper end of the scale. |
| invert | logical indicating whether the palette should be inverted. |
| gamma | the exponent to use for each channel when converting to greyscale, such that $grey = (red^\gamma + green^\gamma + blue^\gamma) ^ (1/\gamma)$. |
| alpha | the alpha transparency for the palette. |

Details

The colormap is isoluminant and perceived by those with a red-green color perception deficiency as a linear ramp between blue and yellow. However, the colormap has been enriched with a red control point for those with normal color vision, with the shade carefully chosen to avoid creating a non-linear ramp for those with red-green color perception deficiency. As the color map is isoluminant, it will appear as one shade of grey across the entire range when printed on a black & white printer.

Value

A character vector of color names. This can be used either to create a user-defined color palette for subsequent graphics by [palette](#)(cv), a col = specification in graphics functions or in par.

See Also

[palettes](#) and [colors](#).

Examples

```
require(graphics)  
# A color wheel  
pie(rep(1,12), col=isolum(12))
```

morgenstemning *Create a colorblind-safe vector of n contiguous colors.*

Description

Create a colorblind-safe vector of n contiguous colors.

Usage

```
morgenstemning(n = 256, mincolor = NULL, maxcolor = NULL,  
  invert = FALSE, gamma = 1.8, alpha = 1)
```

Arguments

| | |
|----------|--|
| n | the number of colors to be in the palette. |
| mincolor | a color with which to replace the lower end of the scale. |
| maxcolor | a color with which to replace the upper end of the scale. |
| invert | logical indicating whether the palette should be inverted. |
| gamma | the exponent to use for each channel when converting to greyscale, such that grey = (red ^{gamma} + green ^{gamma} + blue ^{gamma}) ^ (1/gamma). |
| alpha | the alpha transparency for the palette. |

Details

The colormap increases linearly in lightness (such as a pure black to white map) but incorporates additional colors that help to emphasise the transitions and hence enhance the perception of the data. It is designed to be printer-friendly both for color printers and black & white printers.

Value

A character vector of color names. This can be used either to create a user-defined color palette for subsequent graphics by `palette(cv)`, a `col` = specification in graphics functions or in `par`.

See Also

[palettes](#) and [colors](#).

Examples

```
require(graphics)  
# A color wheel  
pie(rep(1,12), col=morgenstemning(12))
```

Index

ametrine, [2](#)

colors, [2-4](#)

isolum, [2, 3](#)

morgenstemning, [4](#)

palette, [2-4](#)

palettes, [2-4](#)