

Package ‘ucie’

July 22, 2025

Type Package

Title Mapping 3D Data into CIELab Color Space

Version 1.0.2

Maintainer Mikaela Koutrouli <mikaela.koutrouli@cpr.ku.dk>

Description Returns a data frame with the names of the input data points and hex colors (or CIELab coordinates). Data can be mapped to colors for use in data visualization. It optimally maps data points into a polygon that represents the CIELab colour space. Since Euclidean distance approximates relative perceptual differences in CIELab color space, the result is a color encoding that aims to capture much of the structure of the original data.

License MIT + file LICENSE

Encoding UTF-8

RoxygenNote 7.1.2

Imports colorspace, dplyr, geometry, pracma, ptinpoly, rgl, remotes

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

Author Mikaela Koutrouli [aut, cre],
Lars Juhl Jensen [aut]

Repository CRAN

Date/Publication 2022-06-20 19:40:02 UTC

Contents

data2cielab	2
Index	4

data2cielab

*Mapping 3D Data into CIELab Color Space***Description**

Returns a data frame with the names of the input data points and hex colors (or CIELab coordinates). Data can be mapped to colors for use in data visualization. It optimally maps data points into a polygon that represents the CIELab colour space. Since Euclidean distance approximates relative perceptual differences in CIELab color space, the result is a color encoding that aims to capture much of the structure of the original data.

Usage

```
data2cielab(dataset, WL = 1, Wa = 1, Wb = 1, S = 1, LAB_coordinates = FALSE)
Parameters(dataset, WL = 1, Wa = 1, Wb = 1)
ProduceColors(dataset, Soptim, RotL, Rota, Rotb, TrL, Tra, Trb,
              WL = 1, Wa = 1, Wb = 1, S = 1, LAB_coordinates = FALSE)
```

Arguments

dataset	3-column dataset to be translated into colors.
WL	Weight of L* axis in optimization function. Default value 1.
Wa	Weight of a* axis in optimization function. Default value 1.
Wb	Weight of b* axis in optimization function. Default value 1.
S	Scaling factor for color mapping. Default value 1.
LAB_coordinates	Logical. If FALSE, the function returns a data frame with hex colors. If TRUE, the function returns a data frame with the L*a*b* coordinates. Default value FALSE.
Soptim	A value for the size of the cloud.
RotL	A value for the rotation of the cloud in the L axis.
Rota	A value for the rotation of the cloud in the a axis.
Rotb	A value for the rotation of the cloud in the b axis.
TrL	A value for the translation of the cloud in the L axis.
Tra	A value for the translation of the cloud in the a axis.
Trb	A value for the translation of the cloud in the b axis.

Value

None

Examples

```
df <- data.frame(V1=runif(10, 0,1), V2=runif(10, 0,5), V3=runif(10, 0,30))  
data_with_colors <- data2cielab(df, Wb=1.2, S=1.6)  
data_with_colors <- data2cielab(df, LAB_coordinates = TRUE)
```

Index

`data2cielab`, [2](#)

`Parameters (data2cielab)`, [2](#)

`ProduceColors (data2cielab)`, [2](#)