

Package ‘hazer’

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Title Identifying Foggy and Cloudy Images by Quantifying Haziness

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Description Provides a set of functions to estimate haziness of an image based on RGB bands. It returns a haze factor, varying from 0 to 1, a metric for fogginess and cloudiness. The package also presents additional functions to estimate brightness, darkness and contrast rasters of the RGB image. This package can be used for several applications such as inference of weather quality data and performing environmental studies from interpreting digital images.

Depends R (>= 3.3.0)

Suggests jpeg, testthat, knitr, rmarkdown

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Encoding UTF-8

LazyData true

RoxygenNote 6.0.1.9000

URL <https://github.com/bnasr/hazer/>

BugReports <https://github.com/bnasr/hazer/issues>

VignetteBuilder knitr

NeedsCompilation no

Repository CRAN

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getBrightness	<i>The brightness map of an image (0 to 1).</i>
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Description

The brightness map of an image (0 to 1).

Usage

```
getBrightness(rgbArray)
```

Arguments

rgbArray RGB array (W x H x 3) where the third dimension contains R, G and B channels, values varying from 0 to 1.

Value

a numeric matrix (W x H) giving the brightness for each pixel of the image.

See Also

[getDarkness](#), [getContrast](#) and [getHazeFactor](#)

Examples

```
library(jpeg)

img <- readJPEG(system.file("img", "Rlogo.jpg", package="jpeg"))

b <- getBrightness(img)

par(mfrow=c(2,1), mar = c(0.5, 1, 0.5, 1))

plotRGBArray(img)
plotRGBArray(b)
```

getContrast	<i>The contrast map of an image (0 to 1).</i>
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Description

The contrast map of an image (0 to 1).

Usage

```
getContrast(rgbaArray)
```

Arguments

rgbaArray RGB array (W x H x 3) where the third dimension contains R, G and B channels, values varying from 0 to 1.

Value

a numeric matrix (W x H) giving the contrast for each pixel of the image.

See Also

[getDarkness](#), [getBrightness](#) and [getHazeFactor](#)

Examples

```
library(jpeg)

img <- readJPEG(system.file("img", "Rlogo.jpg", package="jpeg"))

c <- getContrast(img)

par(mfrow=c(2,1), mar = c(0.5, 1, 0.5, 1))

plotRGBArray(img)
plotRGBArray(c)
```

getDarkness	<i>The darkness map of an image (0 to 1).</i>
-------------	---

Description

The darkness map of an image (0 to 1).

Usage

```
getDarkness(rgbaArray)
```

Arguments

`rgbArray` RGB array (W x H x 3) where the third dimension contains R, G and B channels, values varying from 0 to 1.

Value

a numeric matrix (W x H) giving the darkness for each pixel of the image.

See Also

[getContrast](#), [getBrightness](#) and [getHazeFactor](#)

Examples

```
library(jpeg)

img <- readJPEG(system.file("img", "Rlogo.jpg", package="jpeg"))

d <- getDarkness(img)

par(mfrow=c(2,1), mar = c(0.5, 1, 0.5, 1))

plotRGBArray(img)
plotRGBArray(d)
```

`getHazeFactor` *The haze factor for a given RGB array.*

Description

The haze factor for a given RGB array.

Usage

```
getHazeFactor(rgbArray, mu = 5.1, nu = 2.9, sigma = 0.2461)
```

Arguments

`rgbArray` RGB array (W x H x 3) where the third dimension contains R, G and B channels, values varying from 0 to 1.

`mu` function parameter

`nu` function parameter

`sigma` function parameter

Value

a list of two numeric values:haze as haze degree and A0 as the global atmospheric light

See Also

[getDarkness](#), [getBrightness](#) and [getContrast](#)

Examples

```
library(jpeg)

img <- readJPEG(system.file("img", "Rlogo.jpg", package="jpeg"))

h <- getHazeFactor(img)
d <- getDarkness(img)
b <- getBrightness(img)
c <- getContrast(img)

par(mfcol = c(2, 2), mar = c(0.5, 0.5, 0.5, 0.5))

plotRGBArray(img)
mtext(text = 'RGB', side = 3, line = -2, adj = 0.05, font = 2, col = 'red')
mtext(text = paste0('Hazeness: ', signif(h$haze, 2)), side = 1, line = -2, adj = 0.05)
mtext(text = paste0('A0: ', signif(h$A0, 2)), side = 1, line = -1, adj = 0.05)

plotRGBArray(d)
mtext(text = 'Darkness', side = 3, line = -2, adj = 0.05, font = 2, col = 'red')

plotRGBArray(b)
mtext(text = 'Brightness', side = 3, line = -2, adj = 0.05, font = 2, col = 'red')

plotRGBArray(c)
mtext(text = 'Contrast', side = 3, line = -2, adj = 0.05, font = 2, col = 'red')
```

plotRGBArray

Plotting an RGB array on the graphics.

Description

Plotting an RGB array on the graphics.

Usage

```
plotRGBArray(rgbArray, xlim = c(0, 1), ylim = c(0, 1), ...)
```

Arguments

rgbArray	RGB array (W x H x 3) where the third dimension contains R, G and B channels, values varying from 0 to 1.
xlim	range of the x axis.
ylim	range of the y axis.
...	graphical parameters passed to the plot function

Value

a rasterImage output plotted on the base R graphics.

See Also

[plotRGBArray](#) wraps the `graphics::rasterImage` function

Examples

```
library(jpeg)
img <- readJPEG(system.file("img", "Rlogo.jpg", package="jpeg"))
plotRGBArray(img)
```

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