

Package ‘hiR’

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Title Harmony Institute’s toolkit for R

Description Various helper tools for R maintained by HI data lab

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Author HI Data Lab <info@harmony-institute.org>

Maintainer Burton Dewilde <burton@harmony-institute.org>

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Depends R (>= 2.15.2), tm, lattice, makeR, classInt, scales, RColorBrewer, plyr, Matrix, glm-net, Rstem, lda, rjson, RCurl, stringr, chron, grid

Suggests maps, XML, sentiment

LazyLoad yes

Collate

‘classify_sentiment.R’ ‘gen_var_names.R’ ‘geocode.R’ ‘get_klout_scores.R’ ‘lda.R’ ‘leading_zeros.R’ ‘regress_text.R’

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calendar	<i>Create a calendar heat map with a set number of breaks</i>
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Description

This function creates a calendar heat map with custom break values, allowing for comparisons between multiple time series.

Usage

```
calendar(dates, values, breaks, ncolors = 9,
         pal = "Spectral", varname = "Values",
         date_form = "%Y-%m-%d")
```

Arguments

dates	Vector of dates.
values	Numeric vector of values per day.
breaks	Vector specifying values to breaks colors at (optional).
ncolors	Number of colors to use.
pal	Palette from RColorBrewer
varname	Name of variable for plot title.
date_form	Date format. Defaults to "%Y-%m-%d"

Examples

```
date <- seq(from=as.Date("2010-01-01"),
            to=as.Date("2012-12-31"),
            by='day')
value <- rnorm(length(date), mean = 10, sd=1)
library("hiR")
calendar(dates=date, values=value)
```

classify_sentiment	<i>Classify the sentiment of text documents</i>
--------------------	---

Description

This function takes a character vector of documents as an input and returns probabilistic sentiment classification. This function is a slight adjustment to "classify_polarity" in the "sentiment" package. **WARNING:** This still needs to be tweaked to return meaningful classifications. Use the pos/neg ratio as a better metric for now.

Usage

```
classify_sentiment(text, algorithm = "bayes",
                  pstrong = 1, pweak = 0.75, prior = 1,
                  neutral_range = c(1, 1.5), verbose = FALSE, ...)
```

Arguments

text	A character vector of text blobs.
algorithm	A string indicating whether to use the naive bayes algorithm or a simple voter algorithm.
pstrong	A numeric specifying the probability that a strongly subjective term appears in the given text.
pweak	A numeric specifying the probability that a weakly subjective term appears in the given text.
prior	A numeric specifying the prior probability to use for the naive Bayes classifier.
neutral_range	# A numeric vector specifying the low and high value of pos/neg ratio to classify as "neutral."
verbose	A logical specifying whether to print detailed output regarding the classification process.
...	Additional arguments to pass to create_matrix in the sentiment package

Examples

```
documents <- c("I am very happy, excited, and optimistic.",
               "I am very scared, annoyed, and irritated.",
               "Iraq's political crisis entered its second
               week one step closer to the potential
               dissolution of the government, with a call
               for elections by a vital coalition partner
               and a suicide attack that extended the spate
               of violence that has followed the withdrawal
               of U.S. troops.",
               "With nightfall approaching, Los Angeles
               authorities are urging residents to keep their
               outdoor lights on as police and fire officials
               try to catch the person or people responsible
               for nearly 40 arson fires in the last three days.")
library("hiR")
classify_sentiment(documents, algorithm="bayes", verbose=TRUE)
```

color_assign	<i>Partition a numeric vector into a set of breaks and assign colors</i>
--------------	--

Description

This function takes an input numeric vector and partitions it into a set number of breaks. It then assigns a color to each break via RColorBrewer

Usage

```
color_assign(var, n = 9, style = "jenks",
             pal = "Spectral", rev = FALSE, na_color = "#787878",
             na_omit = FALSE, alph = 1, include_var = TRUE)
```

Arguments

var	Numeric vector to partition. Alternatively, if "style" argument is a clustering algorithm, you can supply a matrix.
n	Number of colors / breaks
style	Breaks algorithm from "classIntervals" in the "classInt" package. These include: "fixed", "sd", "equal", "pretty", "quantile", "kmeans", "hclust", "bclust", "fisher", or "jenks"
pal	Palette from RColorBrewer. Alternatively a character vector of hexcodes representing your palette. If your variable is continuous, these colors should be ramped upwards or downwards.
rev	Logical; should the function reverse the ordering of the palette
na_color	Hexcode to assign NA values
na_omit	Logical; should the function remove NAs. 'na_color' will be irrelevant if this is TRUE.
alph	Opacity level (0=transparent, 1=opaque)
include_var	Logical; should the function return the input variable(s)

Value

A data.frame with the variable, break assignments, and color assignments

Examples

```
var <- rnorm(1000)
library("hiR")
var_cols <- color_assign(var)
par(family="HersheySans")
plot(var_cols$var,
      pch=20,
      col=var_cols$col,
      xlab="index",
      ylab="value",
      main="assign_colors example")
```

 csv_stack

Stack up a directory of csvs or list of data.frames

Description

This functions makes data stacks

Usage

```
csv_stack(csvs = NULL)
```

Arguments

csvs a directory full of csv files or a list data.frames

Value

A data.frame with inconsistent columns filled in

gen_var_names	<i>Automatically generate variable names for subsetting dataframes.</i>
---------------	---

Description

Say you were building a dataset and wanted to automatically generate variable names by some pattern. For instance, you might want to do this with population counts within 100 census tracts by race IE: `tracts <- paste("c", rep(1:100), sep=""); race - c("black", "white", "hispanic");` In this case you would want to generate 300 unique variable names This function will generate these variable names automatically when provided with: 1. the "roots" - in the example above, the unique census tracts 2. the "vars" - in the example above, the unique races

Usage

```
gen_var_names(roots, vars, delim = "_")
```

Arguments

roots	A set of names that serve as the root variable
vars	A set of names that represent the subsets of each root variable
delim	Character to separate roots and vars by. Defaults to "_"

Examples

```
tracts <- paste("ct", rep(1:100), sep="")
race <- c("black", "white", "hispanic")
library("hiR")
gen_var_names(roots=tracts, vars=race)
```

geocode	<i>Geocode strings of text via the Google API</i>
---------	---

Description

The function hits the google maps API and tries to geocode strings of text

Usage

```
geocode(uid_location, service = "yahoo",
        yahoo_appid = "")
```

Arguments

uid_location	A data.frame with one column named "uid" - a vector unique ids and another column named "location" - a vector of strings of text to geocode
service	either yahoo or google, you can programmatically alternate to avoid rate limits
yahoo_appid	Your yahoo_appid from https://developer.apps.yahoo.com/dashboard/createKey.html

Value

A data.frame with the uid, location, lat, lng, and type indicating the geocoding precision

Examples

```
# Generate the data
uid <- paste0("city", 1:5)
location <- c("Boston, MA",
              "New York, NY",
              "Washington D.C.",
              "Philadelphia, PA",
              "Baltimore, MD"
            )
uid_location <- data.frame(uid, location)

# Run geocoding function
library("plyr")
library("hiR")
geocoded_data <- ddply(uid_location, .(uid), geocode)
summary(geocoded_data)

# Plot results
#params
par(family="HersheySans")

#map
library("maps")
regions <- c("new hampshire",
             "massachusetts",
             "rhode island",
             "penn",
             "connecticut",
             "washington d.c",
             "new york",
             "new jersey",
             "delaware",
             "maryland"
            )
map("state", region=regions, col="grey80")

#points + labels
points(geocoded_data$lng,
       geocoded_data$lat,
       pch=20,
       cex=2,
       col="steelblue")
text(geocoded_data$lng-0.5,
     geocoded_data$lat+0.3,
     labels=geocoded_data$location,
     cex=1,
     col="darkred")
title("Major Cities on the Eastern Seaboard")
```

get_klout_scores	<i>Retrieve klout scores for a vector of twitter handles</i>
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Description

Retrieve klout scores for a vector of twitter handles

Usage

```
get_klout_scores(twitter_handles, api_key,  
  na_omit = TRUE)
```

Arguments

twitter_handles	A character vector of twitter handles - with or without "@"
api_key	Your api key from http://klout.com/s/developers/
na_omit	Logical; should the function remove handles that don't have klout scores

Value

A data.frame of twitter handles, klout ids, and klout scores

Examples

```
# simply get a couple of klout scores  
# you can use my apikey for now but it will eventually break  
library("hiR")  
get_klout_scores(twitter_handles = c("brianabelson", "hinstitute"), api_key="8yng356gnjg37cvn4esbtewy")  
# see inst/docs/get_klout_scores_ex.R for a more detailed use case
```

lda	<i>An easy-to-use and comprehensive implementation of topic modeling in R</i>
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Description

lda is a wrapper for lda.collapsed.gibbs.sampler in the "lda" package. It fits topic models using latent dirichlet allocation. It provides arguments for cleaning the input text and tuning the parameters of the model. It also returns a lot of useful information about the topics/documents in a format that you can easily join back to your original data. This allows you to easily model outcomes based on the distribution of topics within a collection of texts.

Usage

```
lda(text, ids = NULL, lower_case = TRUE,
    remove_stop_words = TRUE, stop_words_to_add = NULL,
    remove_numbers = TRUE, remove_punctuation = TRUE,
    remove_non_ascii = TRUE, stem_words = FALSE,
    char_range = c(2, 50), min_word_count = 5,
    n_topics = 10, n_topic_words = 20, n_iter = 1000,
    burnin = 100, alpha = 0.1, eta = 0.1,
    n_assignments = 2)
```

Arguments

<code>text</code>	A character vector of text documents
<code>ids</code>	A vector of ids (to allow joining results to other variables). default is 1:length(text)
<code>lower_case</code>	Logical; should the function make the text lower case?
<code>remove_stop_words</code>	Logical; should the function remove stop words? NOTE: this will also make the text lower case
<code>stop_words_to_add</code>	A character vector of stopwords to add
<code>remove_numbers</code>	Logical; should the function remove numbers?
<code>remove_punctuation</code>	Logical; should the function remove punctuation?
<code>remove_non_ascii</code>	Logical; should the function remove non-ASCII characters?
<code>stem_words</code>	Logical; should the function stem the words?
<code>char_range</code>	A numeric vector of length two with low and high value of characters per word (inclusive!) - e.g: c(3,50)
<code>min_word_count</code>	The number of times a word/feature must occur in a text to be considered
<code>n_topics</code>	The number of topics to fit
<code>n_topic_words</code>	The number of top topic words to return
<code>n_iter</code>	The number of iterations
<code>burnin</code>	The number of initial iterations to ignore. the function adds burnin to <code>n_iter</code>
<code>alpha</code>	The scalar value of the dirichlet hyperparameter for topic proportions
<code>eta</code>	The scalar value of the dirichlet hyperparameter for topic multinomials
<code>n_assignments</code>	The number of assignments to return (returned as <code>topic_a</code> , <code>topic_b</code> etc.)

Value

A list of: `$topic_words`: A table of the top `n` words per topic, `n = n_topic_words` `$document_stats`: A data.frame of stats about topics in each document `$topic_words`: A table of top topic words in each document

leading_zeros	<i>Automatically add leading zeros to id columns</i>
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Description

This function quickly and painlessly adds leading zeros to id variables

Usage

```
leading_zeros(ids = NULL, n_digits = NULL)
```

Arguments

ids	A vector of ids to add zeros to.
n_digits	The desired length of each id. if NULL, this will be the maximum number of characters of a single id.

Examples

```
ids <- c("1", "12470192401" , "30479103", "42u1p9241", "532", "3153")
library("hiR")
leading_zeros(ids)
```

pretty_coefs	<i>Create Pretty Coefficient Plots</i>
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Description

Create Pretty Coefficient Plots

Usage

```
pretty_coefs(m, title = "", pval = 0.05, null = 0)
```

Arguments

m	A model from glm, lm, etc.
title	The title for the plot
pval	the p-value at which to color significant coefficients blue
null	the value at which a coefficient is null (0 or 1, usually)

Value

A pretty coefficient plot

Examples

```

y = rnorm(100)
x1 = rnorm(100)
x2 = rnorm(100)
x3 = rnorm(100)
x4 = rnorm(100)
m <- glm(y ~ x1 + x2 + x3 + x4)
pretty_coefs(m)

```

regress_text

*Automate lasso/ridge text regression***Description**

Adapted from: <https://github.com/johnmyleswhite/TextRegression>

Usage

```

regress_text(text, y, stop_words = TRUE,
  stem_words = TRUE, stop_words_to_add = NULL,
  sparse = 0.995, family = "gaussian", alpha = 0.1,
  n_splits = 10, size = 0.8)

```

Arguments

text,	A character vector of text blobs to use as predictors.
y	The outcome variable. Its class depends on the family of regression selected.
stop_words	Logical; should the function remove stop words?
stem_words	Logical; should the function stem words?
stop_words_to_add	A character vector of additional stopwords
sparse	Level of sparsity at which a given feature will not be considered (0-1)
family	Regression type in glmnet
alpha	Alpha=1 is the lasso penalty, and alpha=0 the ridge penalty.
n_splits	Number of times to resample data
size	How much of the data should be used during resampling for model fitting?

Value

A list with a data.frame of terms and coefficients, and optimal lamda and rmse metrics for model comparison

Examples

```
# from https://github.com/johnmyleswhite/TextRegression

text <- c('saying text is good',
          'saying text once and saying text twice is better',
          'saying text text text is best',
          'saying text once is still ok',
          'not saying it at all is bad',
          'because text is a good thing',
          'we all like text',
          'even though sometimes it is missing')

y <- c(1, 2, 3, 1, 0, 1, 1, 0)

library("hiR")
res <- regress_text(text, y)

print(res[[1]])
```

word_stemmer	<i>Stem each feature in a blob of text</i>
--------------	--

Description

A vecotrizable wrapper for wordStem in the Rstem package

Usage

```
word_stemmer(document)
```

Arguments

document	A blob of text
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Examples

```
documents <- c("running runner run", "jumping jump jumped")
library("tm")
corpus <- Corpus(VectorSource(documents))
library("hiR")
as.character(tm_map(corpus, word_stemmer))
```

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