Package 'newsmap'

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Type Package

Title Semi-Supervised Model for Geographical Document Classification

Version 0.9.2

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Description Semissupervised model for geographical document classification (Watanabe 2018) <doi:10.1080/21670811.2017.1293487>.
This package currently contains seed dictionaries in English, German, French, Spanish, Italian, Russian, Hebrew, Arabic, Turkish, Japanese and Chinese (Simplified and Traditional).

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URL https://github.com/koheiw/newsmap

BugReports https://github.com/koheiw/newsmap/issues

LazyData TRUE

Encoding UTF-8

Depends R (>= 3.5), methods

Imports utils, Matrix, quanteda (>= 2.1), quanteda.textstats, stringi

Suggests testthat

Language en-GB

RoxygenNote 7.3.2

NeedsCompilation no

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Contents

`accuracy` *Evaluate classification accuracy in precision and recall*

Description

Evaluate classification accuracy in precision and recall

Usage

```
accuracy(x, y)
```

Arguments

`x`	vector of predicted classes
`y`	vector of true classes

Examples

```
class_pred <- c('US', 'GB', 'US', 'CN', 'JP', 'FR', 'CN') # prediction
class_true <- c('US', 'FR', 'US', 'CN', 'KP', 'EG', 'US') # true class
acc <- accuracy(class_pred, class_true)
print(acc)
summary(acc)
```

`afe` *Compute average feature entropy (AFE)*

Description

AFE computes randomness of occurrences features in labelled documents.

Usage

```
afe(x, y, smooth = 1)
```

Arguments

`x`	a dfm for features
`y`	a dfm for labels
`smooth`	a numeric value for smoothing to include all the features

---

`coef.textmodel_newsmap` *Extract coefficients for features*

Description

Extract coefficients for features

Usage

```
## S3 method for class 'textmodel_newsmap'
coef(object, n = 10, select = NULL, ...)

## S3 method for class 'textmodel_newsmap'
coefficients(object, n = 10, select = NULL, ...)
```

Arguments

`object`	a Newsmap model fitted by `textmodel_newsmap()`.
`n`	the number of coefficients to extract.
`select`	returns the coefficients for the selected class; specify by the names of rows in `object$model`.
`...`	not used.

`data_dictionary_newsmap_ar`
Seed geographical dictionary in Arabic

Description

Seed geographical dictionary in Arabic

Author(s)

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`data_dictionary_newsmap_de`
Seed geographical dictionary in German

Description

Seed geographical dictionary in German

Author(s)

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`data_dictionary_newsmap_en`
Seed geographical dictionary in English

Description

Seed geographical dictionary in English

Author(s)

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data_dictionary_newsmap_es

Seed geographical dictionary in Spanish

Description

Seed geographical dictionary in Spanish

Author(s)

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data_dictionary_newsmap_fr

Seed geographical dictionary in French

Description

Seed geographical dictionary in French

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data_dictionary_newsmap_he

Seed geographical dictionary in Hebrew

Description

Seed geographical dictionary in Hebrew

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data_dictionary_newsmap_it
Seed geographical dictionary in Italian

Description

Seed geographical dictionary in Italian

Author(s)

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data_dictionary_newsmap_ja
Seed geographical dictionary in Japanese

Description

Seed geographical dictionary in Japanese

Author(s)

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data_dictionary_newsmap_pt
Seed geographical dictionary in Portuguese

Description

Seed geographical dictionary in Portuguese

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data_dictionary_newsmap_ru

Seed geographical dictionary in Russian

Description

Seed geographical dictionary in Russian

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data_dictionary_newsmap_tr

Seed geographical dictionary in Turkish

Description

Seed geographical dictionary in Turkish

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data_dictionary_newsmap_zh_cn

Seed geographical dictionary in Chinese (simplified)

Description

Seed geographical dictionary in Chinese (simplified)

Author(s)

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data_dictionary_newsmap_zh_tw

Seed geographical dictionary in Chinese (traditional)

Description

Seed geographical dictionary in Chinese (traditional)

Author(s)

Chung-hong Chan <chainsawtiney@gmail.com>

predict.textmodel_newsmap

Prediction method for textmodel_newsmap

Description

Predict document class using trained a Newsmap model

Usage

```
## S3 method for class 'textmodel_newsmap'
predict(
  object,
  newdata = NULL,
  confidence = FALSE,
  rank = 1L,
  type = c("top", "all"),
  rescale = FALSE,
  min_conf = -Inf,
  min_n = 0L,
  ...
)
```

Arguments

object	a fitted Newsmap textmodel.
newdata	dfm on which prediction should be made.
confidence	if TRUE, it returns likelihood ratio score.
rank	rank of the class to be predicted. Only used when type = "top".
type	if top, returns the most likely class specified by rank; otherwise return a matrix of likelihood ratio scores for all possible classes.

rescale	if TRUE, likelihood ratio scores are normalized using scale(). This affects both types of results.
min_conf	return NA when confidence is lower than this value.
min_n	set the minimum number of polarity words in documents.
...	not used.

---

summary.textmodel_newsmap_accuracy *Calculate micro and macro average measures of accuracy*

Description

This function calculates micro-average precision (p) and recall (r) and macro-average precision (P) and recall (R) based on a confusion matrix from accuracy().

Usage

```
## S3 method for class 'textmodel_newsmap_accuracy'
summary(object, ...)
```

Arguments

object	output of accuracy()
...	not used.

---

textmodel_newsmap *Semi-supervised Bayesian multinomial model for geographical document classification*

Description

Train a Newsmap model to predict geographical focus of documents with labels given by a dictionary.

Usage

```
textmodel_newsmap(
  x,
  y,
  label = c("all", "max"),
  smooth = 1,
  boolean = FALSE,
  drop_label = TRUE,
  verbose = quanteda_options("verbose"),
  entropy = c("none", "global", "local", "average"),
  ...
)
```

Arguments

x	a dfm or fcm created by quanteda::dfm()
y	a dfm or a sparse matrix that record class membership of the documents. It can be created applying quanteda::dfm_lookup() to x.
label	if "max", uses only labels for the maximum value in each row of y.
smooth	a value added to the frequency of words to smooth likelihood ratios.
boolean	if TRUE, only consider presence or absence of features in each document to limit the impact of words repeated in few documents.
drop_label	if TRUE, drops empty columns of y and ignore their labels.
verbose	if TRUE, shows progress of training.
entropy	[experimental] the scheme to compute the entropy to regularize likelihood ratios. The entropy of features are computed over labels if global or over documents with the same labels if local. Local entropy is averaged if average. See the details.
...	additional arguments passed to internal functions.

Details

Newsmap learns association between words and classes as likelihood ratios based on the features in x and the labels in y. The large likelihood ratios tend to concentrate to a small number of features but the entropy of their frequencies over labels or documents helps to disperse the distribution.

References

Kohei Watanabe. 2018. "Newsmap: semi-supervised approach to geographical news classification." *Digital Journalism* 6(3): 294-309.

Examples

```
require(quanteda)
text_en <- c(text1 = "This is an article about Ireland.",
             text2 = "The South Korean prime minister was re-elected.")

toks_en <- tokens(text_en)
label_toks_en <- tokens_lookup(toks_en, data_dictionary_newsmap_en, levels = 3)
label_dfm_en <- dfm(label_toks_en)

feat_dfm_en <- dfm(toks_en, tolower = FALSE)

model_en <- textmodel_newsmap(feat_dfm_en, label_dfm_en)
predict(model_en)
```

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