Package ‘jiebaR’

October 13, 2022

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Description Chinese text segmentation, keyword extraction and speech tagging
For R.
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Date 2019-12-13
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### Description

Keywords symbol to find keywords.

#### Usage

```r
## S3 method for class 'keywords'
jiebar <= code
```

```r
## S3 method for class 'keywords'
jiebar[code]
```

#### Arguments

- **jiebar**
  - jiebaR Worker.

- **code**
  - A Chinese sentence or the path of a text file.

#### Author(s)

Qin Wenfeng &lt;http://qinwenfeng.com&gt;
Examples

```r
## Not run:
words = "hello world"
res1 = worker("keywords", topn=1)
res1 <= words
## End(Not run)
```

---

Quick mode symbol

Description

Depreciated.

Usage

```r
## S3 method for class 'qseg'
quseg <= code

## S3 method for class 'qseg'
quseg[code]

quseg
```

Arguments

- `quseg`: a `qseg` object
- `code`: a string

Format

- `quseg`: an environment

Details

Quick mode is deprecated, and is scheduled to be remove in v0.11.0. If you want to keep this feature, please submit a issue on GitHub page to let me know.

Quick mode symbol to do segmentation, keyword extraction and speech tagging. This symbol will initialize a `quick_worker` when it is first called, and will do segmentation or other types of work immediately.

You can reset the default model setting by `$`, and it will change the default setting the next time you use quick mode. If you only want to change the parameter temporarily, you can reset the settings of `quick_worker$`. `get_qsegmodel`, `set_qsegmodel`, and `reset_qsegmodel` are also available for setting quick mode settings.
Author(s)
Qin Wenfeng <http://qinwenfeng.com>

See Also
set_qsegmodel worker

Examples

## Not run:
qseg <- "This is test"
qseg <- "This is the second test"

## End(Not run)

## Not run:
qseg <- "This is test"
qseg$detect = T
qseg
get_qsegmodel()

## End(Not run)

---

Text segmentation symbol

Description
Text segmentation symbol to cut words.

Usage

## S3 method for class 'segment'
jiebar <- code

## S3 method for class 'segment'
jiebar[code]

Arguments

jiebar      jiebaR Worker.

code        A Chinese sentence or the path of a text file.

Author(s)
Qin Wenfeng <http://qinwenfeng.com>
Examples

```r
## Not run:
words = "hello world"
test1 = worker()
test1 <= words
## End(Not run)
```

Description

Simhash symbol to compute simhash.

Usage

```r
## S3 method for class 'simhash'
jiebar <= code

## S3 method for class 'simhash'
jiebar[code]
```

Arguments

- `jiebar` jiebaR Worker.
- `code` A Chinese sentence or the path of a text file.

Author(s)

Qin Wenfeng <http://qinwenfeng.com>

Examples

```r
## Not run:
words = "hello world"
test1 = worker("simhash", topn=1)
test1 <= words
## End(Not run)
```
apply_list

apply_list (input, worker)

**Description**

Apply list input to a worker

**Usage**

apply_list(input, worker)

**Arguments**

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</tr>
<tr>
<td>worker</td>
<td>a worker</td>
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</table>

**Examples**

```r
# Not run:
words = "hello world"
test1 = worker("tag")
test1 <= words
# End(Not run)
```
Examples

cutter = worker()
apply_list(list("this is test", "that is not test"), cutter)
apply_list(list("this is test", list("that is not test", "ab c")), cutter)

---

The path of dictionary

---

Description

The path of dictionary, and it is used by segmentation and other function.

Usage

DICTPATH
HMMPATH
USERPATH
IDFPATH
STOPPATH

Format

character

distance Hamming distance of words

Description

This function uses Simhash worker to do keyword extraction and finds the keywords from two inputs, and then computes Hamming distance between them.

Usage

distance(codel, coder, jiebar)

vector_distance(codel, coder, jiebar)
Arguments

codel: For distance, a Chinese sentence or the path of a text file. For vector_distance, a character vector of segmented words.
coder: For distance, a Chinese sentence or the path of a text file. For vector_distance, a character vector of segmented words.
jiebar: jiebaR worker

Author(s)
Qin Wenfeng

References


See Also
worker

Examples

## Not run:

```r
words = "hello world"
simhasher = worker("simhash", topn = 1)
simhasher <= words
distance("hello world", "hello world!", simhasher)

vector_distance(c("hello","world"), c("hello", "world","!"), simhasher)
```

## End(Not run)

---

edit_dict

Edit default user dictionary

Description

Edit the default user dictionary.

Usage

```r
edit_dict(name = "user")
```

Arguments

name: the name of dictionary including user, system, stop_word.
Details

There are three columns in the system dictionary. Each column is separated by space. The first column is the word, and the second column is the frequency of the word. The third column is speech tag using labels compatible with ictclas.

There are two columns in the user dictionary. The first column is the word, and the second column is speech tag using labels compatible with ictclas. Frequencies of words in the user dictionary are set by user_weight in worker function. If you want to provide the frequency of a new word, you can put it in the system dictionary.

Only one column in the stop words dictionary, and it contains the stop words.

References

The ictclas speech tag: [http://t.cn/RAEj7e1](http://t.cn/RAEj7e1)

---

**file_coding**  
*Files encoding detection*

Description

This function detects the encoding of input files. You can also check encoding with checkenc package which is on GitHub.

Usage

```r
file_coding(file)
filecoding(file)
```

Arguments

- **file**
  
  A file path.

Details

This function will choose the most likely encoding, and it will be more stable for a large input text file.

Value

The encoding of file

Author(s)

Wu Yongwei, Qin wenfeng

References

See Also

https://github.com/qinwf/checkenc

filter_segment  Filter segmentation result

Description

This function helps remove some words in the segmentation result.

Usage

filter_segment(input, filter_words, unit = 50)

Arguments

input  a string vector
filter_words  a string vector of words to be removed.
unit  the length of word unit to use in regular expression, and the default is 50. Long list of a words forms a big regular expressions, it may or may not be accepted: the POSIX standard only requires up to 256 bytes. So we use unit to split the words in units.

Examples

filter_segment(c("abc","def"," ","."), c("abc"))

freq  The frequency of words

Description

This function returns the frequency of words

Usage

freq(x)

Arguments

x  a vector of words

Value

The frequency of words
get_idf

Author(s)
Qin wenfeng

Examples
freq(c("a","a","c"))

Description
Generate IDF dict from a list of documents.

Usage
get_idf(x, stop_word = STOPPATH, path = NULL)

Arguments
x a list of character
stop_word stopword path
path output path

Details
Input list contains multiple character vectors with words, and each vector represents a document. Stop words will be removed from the result. If path is not NULL, it will write the result to the path.

Value
a data.frame or a file

See Also
https://en.wikipedia.org/wiki/Tf-idf#Inverse_document_frequency_2

Examples
get_idf(list(c("abc","def"),c("abc"," ")))
get_qsegmodel

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<td>Qin Wenfeng</td>
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<tr>
<td>qseg &lt;= &quot;This is test&quot;</td>
</tr>
<tr>
<td>qseg &lt;= &quot;This is the second test&quot;</td>
</tr>
<tr>
<td>## End(Not run)</td>
</tr>
<tr>
<td>## Not run:</td>
</tr>
<tr>
<td>qseg &lt;= &quot;This is test&quot;</td>
</tr>
<tr>
<td>qseg$detect = T</td>
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<td>qseg</td>
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<tr>
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</tr>
<tr>
<td>model$detect = F</td>
</tr>
</tbody>
</table>
Description

get_tuple from the segmentation result

Usage

get_tuple(x, size = 2, dataframe = T)

Arguments

x a character vector or list
size a integer >= 2
dataframe return data.frame

Examples

get_tuple(c("sd","sd","sd","rd"),2)

jiebaR

A package for Chinese text segmentation

Description

This is a package for Chinese text segmentation, keyword extraction and speech tagging with Rcpp and cppjieba.

Details

You can use custom dictionary. JiebaR can also identify new words, but adding new words will ensure higher accuracy.

Author(s)

Qin Wenfeng <http://qinwenfeng.com>

References

CppJieba https://github.com/aszxqw/cppjieba;
See Also

JiebaR https://github.com/qinwf/jiebaR;

Examples

```r
## Not run:
words = "hello world"
engine1 = worker()
segment(words, engine1)

# "./temp.txt" is a file path
segment("./temp.txt", engine1)

engine2 = worker("hmm")
segment("./temp.txt", engine2)

engine2$write = T
segment("./temp.txt", engine2)

eengine3 = worker(type = "mix", dict = "dict_path", symbol = T)
segment("./temp.txt", engine3)

## End(Not run)

## Not run:
#### Keyword Extraction
eengine = worker("keywords", topn = 1)
keywords(words, engine)

#### Speech Tagging
tagger = worker("tag")
tagging(words, tagger)

#### Simhash
simhasher = worker("simhash", topn = 1)
simhash(words, simhasher)
distance("hello world", "hello world!", simhasher)

show_dictpath()

## End(Not run)
```
**keywords**

**Description**

Keyword Extraction worker uses MixSegment model to cut word and uses TF-IDF algorithm to find the keywords. `dict`, `hmm`, `idf`, `stop_word` and `topn` should be provided when initializing jiebaR worker.

**Usage**

```r
keywords(code, jiebar)
```

```r
vector_keywords(code, jiebar)
```

**Arguments**

- **code**: For `keywords`, a Chinese sentence or the path of a text file. For `vector_keywords`, a character vector of segmented words.
- **jiebar**: jiebaR Worker.

**Details**

There is a symbol <= for this function.

**Value**

- a vector of keywords with weight.

**Author(s)**

Qin Wenfeng

**References**


**See Also**

`<=.keywords worker`

**Examples**

```r
## Not run:
### Keyword Extraction
keys = worker("keywords", topn = 1)
keys <= "words of fun"
## End(Not run)
```
new_user_word  

Description
Add user word

Usage
new_user_word(worker, words, tags = rep("n", length(words)))

Arguments
worker  a jieba worker
words  the new words
tags  the new words tags, default "n"

Examples
cc = worker()
new_user_word(cc, "test")
new_user_word(cc, "do", "v")

print.inv  

Description
These funtions print the worker settings.

Usage
## S3 method for class 'inv'
print(x, ...)

## S3 method for class 'jieba'
print(x, ...)

## S3 method for class 'simhash'
print(x, ...)

## S3 method for class 'keywords'
print(x, ...)

## S3 method for class 'qseg'
print(x, ...)
segment

Arguments

- The jiebaR Worker.
- Other arguments.

Author(s)

Qin Wenfeng

---

**Segment** *Chinese text segmentation function*

**Description**

The function uses initialized engines for words segmentation. You can initialize multiple engines simultaneously using `worker()`. Public settings of workers can be got and modified using $\$, such as `WorkerName$symbol = T`. Some private settings are fixed when engine is initialized, and you can get then by `WorkerName$PrivateVariable`.

**Usage**

```
segment(code, jiebar, mod = NULL)
```

**Arguments**

- `code` A Chinese sentence or the path of a text file.
- `jiebar` jiebaR Worker.
- `mod` change default result type, value can be "mix","hmm","query","full" or "mp"

**Details**

There are four kinds of models:

- **Maximum probability segmentation model** uses Trie tree to construct a directed acyclic graph and uses dynamic programming algorithm. It is the core segmentation algorithm. `dict` and `user` should be provided when initializing jiebaR worker.

- **Hidden Markov Model** uses HMM model to determine status set and observed set of words. The default HMM model is based on People's Daily language library. `hmm` should be provided when initializing jiebaR worker.

- **MixSegment model** uses both Maximum probability segmentation model and Hidden Markov Model to construct segmentation. `dict`, `hmm` and `user` should be provided when initializing jiebaR worker.

- **QuerySegment model** uses MixSegment to construct segmentation and then enumerates all the possible long words in the dictionary. `dict`, `hmm` and `qmax` should be provided when initializing jiebaR worker.

There is a symbol `<=` for this function.
See Also

<=.segment worker

show_dictpath

Show default path of dictionaries

Description

Show the default dictionaries' path. HMMPATH, DICTPATH, IDFPATH, STOPPATH and USERPATH can be changed in default environment.

Usage

show_dictpath()

Author(s)

Qin Wenfeng

simhash

Simhash computation

Description

Simhash worker uses the keyword extraction worker to find the keywords and uses simhash algorithm to compute simhash. dict hmm, idf and stop_word should be provided when initializing jiebaR worker.

Usage

simhash(code, jiebar)

vector_simhash(code, jiebar)

Arguments

code For simhash, a Chinese sentence or the path of a text file. For vector_simhash, a character vector of segmented words.
jiebar jiebaR Worker.

Details

There is a symbol <= for this function.
simhash_dist

Author(s)

Qin Wenfeng

References

MS Charikar - Similarity Estimation Techniques from Rounding Algorithms

See Also

<-.simhash worker

Examples

## Not run:
### Simhash
words = "hello world"
simhasher = worker("simhash",topn=1)
simhasher <= words
distance("hello world", "hello world!", simhasher)

## End(Not run)

---

simhash_dist

*Compute Hamming distance of Simhash value*

Description

Compute Hamming distance of Simhash value

Usage

simhash_dist(x, y)

simhash_dist_mat(x, y)

Arguments

- x: a character vector of simhash value
- y: a character vector of simhash value

Value

a character vector
Examples

simhash_dist("1","1")
simhash_dist("1","2")
tobin("1")
tobin("2")
simhash_dist_mat(c("1","12","123"),c("2","1"))

description

The function uses Speech Tagging worker to cut word and tags each word after segmentation using labels compatible with ictclas. dict hmm and user should be provided when initializing jiebaR worker.

Usage

tagging(code, jiebar)

Arguments

code a Chinese sentence or the path of a text file
jiebar jiebaR Worker

Details

There is a symbol <= for this function.

Author(s)

Qin Wenfeng

References

The ictclas speech tag: http://t.cn/RAEj7e1

See Also

<=.tagger worker
**Examples**

```r
## Not run:
words = "hello world"

### Speech Tagging
tagger = worker("tag")
tagger <= words

## End(Not run)
```

---

**tobin**

*simhash value to binary*

---

**Description**

simhash value to binary

**Usage**

tobin(x)

**Arguments**

- **x**: simhash value

---

**vector_tag**

*Tag the a character vector*

---

**Description**

Tag a character vector

**Usage**

vector_tag(string, jiebar)

**Arguments**

- **string**: a character vector of segmented words.
- **jiebar**: jiebaR Worker.
Examples

```r
## Not run:
cc = worker()
(res = cc["this is test"])
vector_tag(res, cc)

## End(Not run)
```

---

**worker**  
*Initialize jiebaR worker*

### Description

This function can initialize jiebaR workers. You can initialize different kinds of workers including `mix`, `mp`, `hmm`, `query`, `full`, `tag`, `simhash`, and `keywords`. See `Details` for more information.

### Usage

```r
worker(type = "mix", dict = DICTPATH, hmm = HMMPATH,
user = USERPATH, idf = IDFPATH, stop_word = STOPPATH, write = T,
qmax = 20, topn = 5, encoding = "UTF-8", detect = T,
symbol = F, lines = 1e+05, output = NULL, bylines = F,
user_weight = "max")
```

### Arguments

- **type**  
The type of jiebaR workers including `mix`, `mp`, `hmm`, `query`, `full`, `tag`, `simhash`, and `keywords`.

- **dict**  
A path to main dictionary, default value is `DICTPATH`, and the value is used for `mix`, `mp`, `query`, `full`, `tag`, `simhash` and `keywords` workers.

- **hmm**  
A path to Hidden Markov Model, default value is `HMMPATH`, `full`, and the value is used for `mix`, `hmm`, `query`, `tag`, `simhash` and `keywords` workers.

- **user**  
A path to user dictionary, default value is `USERPATH`, and the value is used for `mix`, `full`, `tag` and `mp` workers.

- **idf**  
A path to inverse document frequency, default value is `IDFPATH`, and the value is used for `simhash` and `keywords` workers.

- **stop_word**  
A path to stop word dictionary, default value is `STOPPATH`, and the value is used for `simhash`, `keywords`, `tagger` and `segment` workers. Encoding of this file is checked by `file_coding`, and it should be UTF-8 encoding. For `segment` workers, the default `STOPPATH` will not be used, so you should provide another file path.

- **write**  
Whether to write the output to a file, or return a the result in a object. This value will only be used when the input is a file path. The default value is `TRUE`. The value is used for `segment` and `speech tagging` workers.
worker

qmax  Max query length of words, and the value is used for query workers.
topn  The number of keywords, and the value is used for simhash and keywords workers.
encoding  The encoding of the input file. If encoding detection is enable, the value of encoding will be ignore.
detect  Whether to detect the encoding of input file using file_coding function. If encoding detection is enable, the value of encoding will be ignore.
symbol  Whether to keep symbols in the sentence.
lines  The maximal number of lines to read at one time when input is a file. The value is used for segmentation and speech tagging workers.
output  A path to the output file, and default worker will generate file name by system time stamp, the value is used for segmentation and speech tagging workers.
bylines  return the result by the lines of input files
user_weight  the weight of the user dict words. "min" “max” or "median".

Details

The package uses initialized engines for word segmentation, and you can initialize multiple engines simultaneously. You can also reset the model public settings using $ such as WorkerName$symbol = T. Some private settings are fixed when a engine is initialized, and you can get them by WorkerName$PrivateVariable.

Maximum probability segmentation model uses Trie tree to construct a directed acyclic graph and uses dynamic programming algorithm. It is the core segmentation algorithm. dict and user should be provided when initializing jiebaR worker.

Hidden Markov Model uses HMM model to determine status set and observed set of words. The default HMM model is based on People's Daily language library. hmm should be provided when initializing jiebaR worker.

MixSegment model uses both Maximum probability segmentation model and Hidden Markov Model to construct segmentation. dict hmm and user should be provided when initializing jiebaR worker.

QuerySegment model uses MixSegment to construct segmentation and then enumerates all the possible long words in the dictionary. dict, hmm and qmax should be provided when initializing jiebaR worker.

FullSegment model will enumerate all the possible words in the dictionary.

Speech Tagging worker uses MixSegment model to cut word and tag each word after segmentation using labels compatible with ictclas. dict, hmm and user should be provided when initializing jiebaR worker.

Keyword Extraction worker uses MixSegment model to cut word and use TF-IDF algorithm to find the keywords. dict hmm, idf, stop_word and topn should be provided when initializing jiebaR worker.

Simhash worker uses the keyword extraction worker to find the keywords and uses simhash algorithm to compute simhash. dict hmm, idf and stop_word should be provided when initializing jiebaR worker.
Value

This function returns an environment containing segmentation settings and worker. Public settings can be modified using $.

Examples

### Note: Can not display Chinese characters here.
## Not run:
words = "hello world"
engine1 = worker()
segment(words, engine1)

# "./temp.txt" is a file path
segment("./temp.txt", engine1)

engine2 = worker("hmm")
segment("./temp.txt", engine2)

engine2\$write = T
segment("./temp.txt", engine2)

engine3 = worker(type = "mix", dict = "dict_path", symbol = T)
segment("./temp.txt", engine3)

## End(Not run)

## Not run:
### Keyword Extraction
engine = worker("keywords", topn = 1)
keywords(words, engine)

### Speech Tagging
tagger = worker("tag")
tagging(words, tagger)

### Simhash
simhasher = worker("simhash", topn = 1)
simhash(words, simhasher)
distance("hello world", "hello world!", simhasher)

show_dictpath()

## End(Not run)
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