

# Package ‘jiebaR’

May 8, 2018

**Type** Package

**Title** Chinese Text Segmentation

**Description** Chinese text segmentation, keyword extraction and speech tagging  
For R.

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**URL** <https://github.com/qinwf/jiebaR/>

**BugReports** <https://github.com/qinwf/jiebaR/issues>

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---

<=.keywords	<i>Keywords symbol</i>
-------------	------------------------

---

## Description

Keywords symbol to find keywords.

## Usage

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

```
## 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 <<http://qinwenfeng.com>>

## Examples

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

---

`<=.qseg`*Quick mode symbol*

---

## Description

Deprecated.

## Usage

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

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

qseg
```

## Arguments

<code>qseg</code>	a <code>qseg</code> object
<code>code</code>	a string

## Format

`qseg` an environment

## Details

Quick mode is deprecated, and is scheduled to be removed in v0.11.0. If you want to keep this feature, please submit an 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)
```

---

<=.segment

*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

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

---

<code>&lt;=.simhash</code>	<i>Simhash symbol</i>
----------------------------	-----------------------

---

## Description

Simhash symbol to compute simhash.

## Usage

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

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

## Arguments

<code>jiebar</code>	jiebaR Worker.
<code>code</code>	A Chinese sentence or the path of a text file.

## Author(s)

Qin Wenfeng <<http://qinwenfeng.com>>

## Examples

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

---

<code>&lt;=.tagger</code>	<i>Tagger symbol</i>
---------------------------	----------------------

---

**Description**

Tagger symbol to tag words.

**Usage**

```
## S3 method for class 'tagger'  
jiebar <= code
```

```
## S3 method for class 'tagger'  
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**

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

---

<code>apply_list</code>	<i>Apply list input to a worker</i>
-------------------------	-------------------------------------

---

**Description**

Apply list input to a worker

**Usage**

```
apply_list(input, worker)
```

**Arguments**

input	a list of characters
worker	a worker

**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)
```

---

DICTPATH	<i>The path of dictionary</i>
----------	-------------------------------

---

**Description**

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

**Usage**

DICTPATH

HMPATH

USERPATH

IDFPATH

STOPPATH

**Format**

character

---

distance	<i>Hamming distance of words</i>
----------	----------------------------------

---

**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**

code1	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**

[http://en.wikipedia.org/wiki/Hamming\\_distance](http://en.wikipedia.org/wiki/Hamming_distance)

**See Also**

[worker](#)

**Examples**

```
## Not run:

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**

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

**Arguments**

name            the name of dictionary including user, system, stop\_word.



### Details

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

There are two column 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 is 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>

---

file_coding	<i>Files encoding detection</i>
-------------	---------------------------------

---

### Description

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

### Usage

```
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**

<https://github.com/adah1972/tellenc>

**See Also**

<https://github.com/qinwf/checkenc>

---

filter_segment	<i>Filter segmentation result</i>
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---

**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	<i>The frequency of words</i>
------	-------------------------------

---

**Description**

This function returns the frequency of words

**Usage**

```
freq(x)
```

**Arguments**

x	a vector of words
---	-------------------

**Value**

The frequency of words

**Author(s)**

Qin wenfeng

**Examples**

```
freq(c("a", "a", "c"))
```

---

get\_idf

*generate IDF dict*

---

**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](https://en.wikipedia.org/wiki/Tf-idf#Inverse_document_frequency_2)

**Examples**

```
get_idf(list(c("abc", "def"), c("abc", " ")))
```

---

get_qsegmodel	<i>Set quick mode model</i>
---------------	-----------------------------

---

### Description

Deprecated.

### Usage

```
get_qsegmodel()
```

```
set_qsegmodel(qsegmodel)
```

```
reset_qsegmodel()
```

### Arguments

qsegmodel      a list which has the same structure as the return value of get\_qsegmodel

### Details

These function can get and modify quick mode model. get\_qsegmodel returns the default model parameters. set\_qsegmodel can modify quick mode model using a list, which has the same structure as the return value of get\_qsegmodel. reset\_qsegmodel can reset the default model to origin jiebaR default model.

### Author(s)

Qin Wenfeng <<http://qinwenfeng.com>>

### See Also

[qseg worker](#)

### Examples

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

## End(Not run)

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

```
set_qsegmodel(model)
reset_qsegmodel()

## End(Not run)
```

---

get_tuple	<i>get tuple from the segmentation result</i>
-----------	---

---

### 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 $\geq 2$
dataframe	return data.frame

### Examples

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

---

jiebaR	<i>A package for Chinese text segmentation</i>
--------	--

---

### 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**

```
### 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)
```

## 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

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

```
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

<http://en.wikipedia.org/wiki/Tf-idf>

## See Also

[<=.keywords worker](#)

## Examples

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

---

new_user_word	<i>Add user word</i>
---------------	----------------------

---

**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	<i>Print worker settings</i>
-----------	------------------------------

---

**Description**

These functoins 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, ...)
```



**Arguments**

x	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	<i>Show default path of dictionaries</i>
---------------	--

---

**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	<i>Simhash computation</i>
---------	----------------------------

---

**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.

**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"))
```

---

tagging

*Speech Tagging*

---

## Description

The function uses Speech Tagging worker to cut word and tags each word after segmentation using labels compatible with icclas. 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 icclas speech tag : <http://t.cn/RAEj7e1>

## See Also

[<=.tagger worker](#)

**Examples**

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

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

## End(Not run)
```

---

tobin	<i>simhash value to binary</i>
-------	--------------------------------

---

**Description**

simhash value to binary

**Usage**

```
tobin(x)
```

**Arguments**

x	simhash value
---	---------------

---

vector_tag	<i>Tag the a character vector</i>
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---

**Description**

Tag the a character vector

**Usage**

```
vector_tag(string, jiebar)
```

**Arguments**

string	a character vector of segmented words.
jiebar	jiebaR Worker.

## Examples

```
## 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 Detail for more information.

## Usage

```
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, full, query, 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.
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 an engine is initialized, and you can get then 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 enumerates 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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