# Package 'tm.plugin.webmining'

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**Version** 1.3

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**Title** Retrieve Structured, Textual Data from Various Web Sources

**Depends** R (>= 3.1.0)

**Imports** NLP (>= 0.1-2), tm (>= 0.6), boilerpipeR, RCurl, XML, RJSONIO

**Suggests** testthat

**Description** Facilitate text retrieval from feed
formats like XML (RSS, ATOM) and JSON. Also direct retrieval from
HTML is supported. As most (news) feeds only incorporate small
fractions of the original text tm.plugin.webmining even retrieves
and extracts the text of the original text source.

**License** GPL-3

**URL** https://github.com/mannau/tm.plugin.webmining

**BugReports** https://github.com/mannau/tm.plugin.webmining/issues

**NeedsCompilation** no

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## R topics documented:

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`tm.plugin.webmining-package`

*Retrieve structured, textual data from various web sources*

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## Description

tm.plugin.webmining facilitates the retrieval of textual data through various web feed formats like XML and JSON. Also direct retrieval from HTML is supported. As most (news) feeds only incorporate small fractions of the original text tm.plugin.webmining goes a step further and even retrieves and extracts the text of the original text source. Generally, the retrieval procedure can be described as a two–step process:

**Meta Retrieval** In a first step, all relevant meta feeds are retrieved. From these feeds all relevant meta data items are extracted.

**Content Retrieval** In a second step the relevant source content is retrieved. Using the `boilerpipeR` package even the main content of `HTML` pages can be extracted.

## Author(s)

Mario Annau <mario.annau@gmail>

## See Also

`WebCorpus` `GoogleFinanceSource` `GoogleNewsSource` `NYTimesSource` `ReutersNewsSource` `YahooFinanceSource` `YahooInplaySource` `YahooNewsSource`

### Examples

```
## Not run:
googlefinance <- WebCorpus(GoogleFinanceSource("NASDAQ:MSFT"))
googlenews <- WebCorpus(GoogleNewsSource("Microsoft"))
nytimes <- WebCorpus(NYTimesSource("Microsoft", appid = nytimes_appid))
reutersnews <- WebCorpus(ReutersNewsSource("businessNews"))
yahoofinance <- WebCorpus(YahooFinanceSource("MSFT"))
yahooinplay <- WebCorpus(YahooInplaySource())
yahoonews <- WebCorpus(YahooNewsSource("Microsoft"))

## End(Not run)
```

---

## corpus.update *Update/Extend WebCorpus with new feed items.*

---

### Description

The corpus.update method ensures, that the original WebCorpus feed sources are downloaded and checked against already included TextDocuments. Based on the ID included in the TextDocument's meta data, only new feed elements are downloaded and added to the WebCorpus. All relevant information regariding the original source feeds are stored in the WebCorpus' meta data (meta).

### Usage

```
corpus.update(x, ...)
```

### Arguments

| | |
|---|---|
| x | object of type WebCorpus |
| ... | **fieldname** name of Corpus field name to be used as ID, defaults to "ID"<br>**retryempty** specifies if empty corpus elements should be downloaded again, defaults to TRUE<br>**...** additional parameters to Corpus function |

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## encloseHTML *Enclose Text Content in HTML tags*

---

### Description

Simple helper function which encloses text content of character (or TextDocument) in HTML-tags. That way, HTML content can be easier parsed by htmlTreeParse

### Usage

```
encloseHTML(x)
```

### Arguments

| | |
|---|---|
| x | object of PlainTextDocument class |

---

`extract` *Extract main content from* `TextDocument`*s.*

---

### Description

Use implemented extraction functions (through boilerpipeR) to extract main content from `TextDocuments`.

### Usage

```
extract(x, extractor, ...)
```

### Arguments

| | |
|---|---|
| x | PlainTextDocument |
| extractor | default extraction function to be used, defaults to `extractContentDOM` |
| ... | additional parameters to extractor function |

---

`extractContentDOM` *Extract Main HTML Content from DOM*

---

### Description

Function extracts main HTML Content using its Document Object Model. Idea comes basically from the fact, that main content of an HTML Document is in a subnode of the HTML DOM Tree with a high text-to-tag ratio. Internally, this function also calls `assignValues`, `calcDensity`, `getMainText` and `removeTags`.

### Usage

```
extractContentDOM(url, threshold, asText = TRUE, ...)
```

### Arguments

| | |
|---|---|
| url | character, url or filename |
| threshold | threshold for extraction, defaults to 0.5 |
| asText | boolean, specifies if url should be interpreted as character |
| ... | Additional Parameters to `htmlTreeParse` |

### Author(s)

Mario Annau

## References

http://www.elias.cn/En/ExtMainText, http://ai-depot.com/articles/the-easy-way-to-extract-useful-text
*Gupta et al., DOM-based Content Extraction of HTML Documents*,http://www2003.org/cdrom/papers/refereed/p583/p583-gupta.html

## See Also

xmlNode

---

`extractHTMLStrip` *Simply strip HTML Tags from Document*

---

## Description

`extractHTMLStrip` parses an url, character or filename, reads the DOM tree, removes all HTML tags in the tree and outputs the source text without markup.

## Usage

```
extractHTMLStrip(url, asText = TRUE, encoding, ...)
```

## Arguments

| | |
|---|---|
| `url` | character, url or filename |
| `asText` | specifies if url parameter is a `character`, defaults to TRUE |
| `encoding` | specifies local encoding to be used, depending on platform |
| `...` | Additional parameters for `htmlTreeParse` |

## Note

Input text should be enclosed in <html>'TEXT'</html> tags to ensure correct DOM parsing (issue especially under .Platform$os.type = 'windows')

## Author(s)

Mario Annau

## See Also

xmlNode

htmlTreeParse encloseHTML

## feedquery *Buildup string for feedquery.*

### Description

Function has partly been taken from `getForm` function. Generally, a feed query is a string built up as follows:
`<url>?<param1=value1>&<param2=value2>&...&<paramN=valueN>`
By specifying a feed url and parameter–value pairs (as list) we can easily generate a feed query in R.

### Usage

```
feedquery(url, params)
```

### Arguments

| | |
|---|---|
| `url` | character specifying feed url |
| `params` | list which contains feed parameters, e.g. list(param1="value1", param2="value2") |

### Author(s)

Mario Annau

### See Also

`xmlNode` `getForm`

### Examples

```
## Not run:
feedquery(url = "http://dummy.com",
params = list(param1 = "value1", param2 = "value2"))

## End(Not run)
```

## getEmpty *Retrieve Empty Corpus Elements through* `$postFUN`.

### Description

Retrieve content of all empty (textlength equals zero) corpus elements. If corpus element is empty, `$postFUN` is called (specified in `meta`)

### Usage

```
getEmpty(x, ...)
```

### Arguments

| | |
|---|---|
| x | object of type WebCorpus |
| ... | additional parameters to PostFUN |

### See Also

WebCorpus

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## getLinkContent *Get main content for corpus items, specified by links.*

---

### Description

getLinkContent downloads and extracts content from weblinks for Corpus objects. Typically it is integrated and called as a post-processing function (field:$postFUN) for most WebSource objects. getLinkContent implements content download in chunks which has been proven to be a stabler approach for large content requests.

### Usage

```
getLinkContent(corpus, links = sapply(corpus, meta, "origin"),
  timeout.request = 30, chunksize = 20, verbose = getOption("verbose"),
  curlOpts = curlOptions(verbose = FALSE, followlocation = TRUE, maxconnects =
  5, maxredirs = 20, timeout = timeout.request, connecttimeout =
  timeout.request, ssl.verifyhost = FALSE, ssl.verifypeer = FALSE, useragent =
  "R", cookiejar = tempfile()), retry.empty = 3, sleep.time = 3,
  extractor = ArticleExtractor, .encoding = integer(), ...)
```

### Arguments

| | |
|---|---|
| corpus | object of class Corpus for which link content should be downloaded |
| links | character vector specifyinig links to be used for download, defaults to sapply(corpus, meta, "Origin") |
| timeout.request | timeout (in seconds) to be used for connections/requests, defaults to 30 |
| chunksize | Size of download chunks to be used for parallel retrieval, defaults to 20 |
| verbose | Specifies if retrieval info should be printed, defaults to getOption("verbose") |
| curlOpts | curl options to be passed to getURL |
| retry.empty | Specifies number of times empty content sites should be retried, defaults to 3 |
| sleep.time | Sleep time to be used between chunked download, defaults to 3 (seconds) |
| extractor | Extractor to be used for content extraction, defaults to extractContentDOM |
| .encoding | encoding to be used for getURL, defaults to integer() (=autodetect) |
| ... | additional parameters to getURL |

## Value

corpus including downloaded link content

## See Also

WebSource getURL Extractor

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GoogleFinanceSource *Get feed Meta Data from Google Finance.*

---

## Description

Google Finance provides business and enterprise headlines for many companies. Coverage is particularly strong for US-Markets. However, only up to 20 feed items can be retrieved.

## Usage

```
GoogleFinanceSource(query, params = list(hl = "en", q = query, ie = "utf-8",
  start = 0, num = 20, output = "rss"), ...)
```

## Arguments

| | |
|---|---|
| query | ticker symbols of companies to be searched for, see http://www.google.com/finance. Please note that Google ticker symbols need to be prefixed with the exchange name, e.g. NASDAQ:MSFT |
| params | additional query parameters |
| ... | additional parameters to WebSource |

## Value

WebXMLSource

## Author(s)

Mario Annau

## See Also

WebSource

## Examples

```
## Not run:
corpus <- Corpus(GoogleFinanceSource("NASDAQ:MSFT"))

## End(Not run)
```

GoogleNewsSource *Get feed data from Google News Search* http://news.google.com/

## Description

Google News Search is one of the most popular news aggregators on the web. News can be retrieved for any customized user query. Up to 100 can be retrieved per request.

## Usage

```
GoogleNewsSource(query, params = list(hl = "en", q = query, ie = "utf-8", num
  = 100, output = "rss"), ...)
```

## Arguments

| | |
|---|---|
| query | Google News Search query |
| params, | additional query parameters |
| ... | additional parameters to WebSource |

## Value

WebXMLSource

## Author(s)

Mario Annau

## See Also

WebSource

## Examples

```
## Not run:
corpus <- Corpus(GoogleNewsSource("Microsoft"))

## End(Not run)
```

NYTimesSource *Get feed data from NYTimes Article Search (http://developer.nytimes.com/docs/read/article_search_api_v2).*

## Description

Excerpt from the website: "With the NYTimes Article Search API, you can search New York Times articles from 1981 to today, retrieving headlines, abstracts, lead paragraphs, links to associated multimedia and other article metadata. Along with standard keyword searching, the API also offers faceted searching. The available facets include Times-specific fields such as sections, taxonomic classifiers and controlled vocabulary terms (names of people, organizations and geographic locations)." Feed retrieval is limited to 1000 items (or 100 pages).

## Usage

```
NYTimesSource(query, n = 100, appid, count = 10, sleep = 1,
  params = list(format = "json", q = query, page = 1:ceiling(n/count),
  `api-key` = appid), curlOpts = curlOptions(followlocation = TRUE,
  maxconnects = 10, maxredirs = 10, timeout = 30, connecttimeout = 30), ...)
```

## Arguments

| | |
|---|---|
| query | character specifying query to be used to search NYTimes articles |
| n | number of items, defaults to 100 |
| appid | Developer App id to be used, obtained from http://developer.nytimes.com/ |
| count | number of results per page, defaults to 10 |
| sleep | integer; Seconds to sleep between feed retrieval. |
| params | additional query parameters, specified as list, see http://developer.nytimes.com/docs/read/article_search_api |
| curlOpts | CURLOptions; RCurl options used for feed retrieval. |
| ... | additional parameters to WebSource |

## Author(s)

Mario Annau

## See Also

WebSource, readNYTimes

## Examples

```
## Not run:
#nytimes_appid needs to be specified
corpus <- WebCorpus(NYTimesSource("Microsoft", appid = nytimes_appid))

## End(Not run)
```

---

`nytimes_appid` *AppID for the NYtimes-API.*

---

## Description

USED ONLY FOR PACKAGE TESTING. PLEASE DOWNLOAD YOUR OWN KEY AT http://developer.nytimes.com/!!!

## Author(s)

Mario Annau

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`parse` *Wrapper/Convenience function to ensure right encoding for different Platforms*

---

## Description

Depending on specified type one of the following parser functions is called:

**XML** `xmlInternalTreeParse`

**HTML** `htmlTreeParse`

**JSON** `fromJSON`

## Usage

```
parse(..., asText = TRUE, type = c("XML", "HTML", "JSON"))
```

## Arguments

| | |
|---|---|
| `...` | arguments to be passed to specified parser function |
| `asText` | defines if input should be treated as text/character, default to TRUE |
| `type` | either "XML", "HTML" or "JSON". Defaults to "XML" |

## readWeb *Read content from WebXMLSource/WebHTMLSource/WebJSONSource.*

### Description

readWeb is a FunctionGenerator which specifies content retrieval from a WebSource content elements. Currently, it is defined for XML, HTML and JSON feeds through readWebXML, readWebHTML and readWebJSON. Also content parsers (xml_content, json_content) need to be defined.

### Usage

```
readWeb(spec, doc, parser, contentparser, freeFUN = NULL)
```

### Arguments

| | |
|---|---|
| spec | specification of content reader |
| doc | document to be parsed |
| parser | parser function to be used |
| contentparser | content parser function to be used, see also tm:::xml_content or json_content |
| freeFUN | function to free memory from parsed object (actually only relevant for XML and HTML trees) |

### Value

FunctionGenerator

## removeNonASCII *Remove non-ASCII characters from Text.*

### Description

This is a helper function to generate package data without non-ASCII character and omit the warning at R CMD check.

### Usage

```
removeNonASCII(x, fields = c("Content", "Heading", "Description"),
  from = "UTF-8", to = "ASCII//TRANSLIT")
```

### Arguments

| | |
|---|---|
| x | object of PlainTextDocument class |
| fields | specifies fields to be converted, defaults to fields = c("Content", "Heading", "Description") |
| from | specifies encoding from which conversion should be done, defaults to "UTF-8" |
| to | speciefies target encoding, defaults to "ASCII//TRANSLIT" |

ReutersNewsSource *Get feed data from Reuters News RSS feed channels. Reuters provides numerous feed*

## Description

channels (http://www.reuters.com/tools/rss) which can be retrieved through RSS feeds. Only up to 25 items can be retrieved—therefore an alternative retrieval through the Google Reader API (link{GoogleReaderSource}) could be considered.

## Usage

```
ReutersNewsSource(query = "businessNews", ...)
```

## Arguments

| | |
|---|---|
| query | Reuters News RSS Feed, see http://www.reuters.com/tools/rss for a list of all feeds provided. Note that only string after 'http://feeds.reuters.com/reuters/' must be given. Defaults to 'businessNews'. |
| ... | additional parameters to WebSource |

## Value

WebXMLSource

## Author(s)

Mario Annau

## See Also

WebSource

## Examples

```
## Not run:
corpus <- Corpus(ReutersNewsSource("businessNews"))

## End(Not run)
```

## source.update *Update WebXMLSource/WebHTMLSource/WebJSONSource*

### Description

Typically, update is called from `link{corpus.update}` and refreshes `$Content` in Source object.

### Usage

```
source.update(x)
```

### Arguments

| | |
|---|---|
| x | Source object to be updated |

## trimWhiteSpaces *Trim White Spaces from Text Document.*

### Description

Transformation function, actually equal to stripWhiteSpace applicable for simple strings using Perl parser

### Usage

```
trimWhiteSpaces(txt)
```

### Arguments

| | |
|---|---|
| txt | character |

### Author(s)

Mario Annau

### See Also

stripWhitespace

## WebCorpus *WebCorpus constructor function.*

### Description

WebCorpus adds further methods and meta data to Corpus and therefore constructs a derived class of Corpus. Most importantly, WebCorpus calls $PostFUN on the generated WebCorpus, which retrieves the main content for most implemented WebSources. Thus it enables an efficient retrieval of new feed items (corpus.update). All additional WebCorpus fields are added to tm$meta like $source, $readerControl and $postFUN.

### Usage

```
WebCorpus(x, readerControl = list(reader = reader(x), language = "en"),
  postFUN = x$postFUN, retryEmpty = TRUE, ...)
```

### Arguments

| | |
|---|---|
| x | object of type Source, see also Corpus |
| readerControl | specifies reader to be used for Source, defaults to list(reader = x$DefaultReader, language = "en" |
| postFUN | function to be applied to WebCorpus after web retrieval has been completed, defaults to x$PostFUN |
| retryEmpty | specifies if retrieval for empty content elements should be repeated, defaults to TRUE |
| ... | additional parameters for Corpus function (actually Corpus reader) |

## WebSource *Read Web Content and respective Link Content from feedurls.*

### Description

WebSource is derived from Source. In addition to calling the base Source constructor function it also retrieves the specified feedurls and pre–parses the content with the parser function. The fields $Content, $Feedurls $Parser and $CurlOpts are finally added to the Source object.

### Usage

```
WebSource(feedurls, class = "WebXMLSource", reader, parser,
  encoding = "UTF-8", curlOpts = curlOptions(followlocation = TRUE,
  maxconnects = 20, maxredirs = 10, timeout = 30, connecttimeout = 30),
  postFUN = NULL, retrieveFeedURL = TRUE, ...)
```

### Arguments

| | |
|---|---|
| feedurls | urls from feeds to be retrieved |
| class | class label to be assigned to Source object, defaults to "WebXMLSource" |
| reader | function to be used to read content, see also readWeb |
| parser | function to be used to split feed content into chunks, returns list of content elements |
| encoding | specifies default encoding, defaults to 'UTF-8' |
| curlOpts | a named list or CURLOptions object identifying the curl options for the handle. Type listCurlOptions() for all Curl options available. |
| postFUN | function saved in WebSource object and called to retrieve full text content from feed urls |
| retrieveFeedURL | logical; Specify if feedurls should be downloaded first. |
| ... | additional parameters passed to WebSource object/structure |

### Value

WebSource

### Author(s)

Mario Annau

---

## YahooFinanceSource *Get feed data from Yahoo! Finance.*

---

### Description

Yahoo! Finance is a popular site which provides financial news and information. It is a large source for historical price data as well as financial news. Using the typical Yahoo! Finance ticker news items can easily be retrieved. However, the maximum number of items is 20.

### Usage

```
YahooFinanceSource(query, params = list(s = query, region = "US", lang =
  "en-US"), ...)
```

### Arguments

| | |
|---|---|
| query | ticker symbols of companies to be searched for, see http://finance.yahoo.com/lookup. |
| params, | additional query parameters, see http://developer.yahoo.com/rss/ |
| ... | additional parameters to WebSource |

### Value

WebXMLSource

### Author(s)

Mario Annau

### See Also

WebSource

### Examples

```
## Not run:
corpus <- Corpus(YahooFinanceSource("MSFT"))

## End(Not run)
```

---

## YahooInplaySource *Get News from Yahoo Inplay.*

---

### Description

Yahoo Inplay lists a range of company news provided by Briefing.com. Since Yahoo Inplay does not provide a structured XML news feed, content is parsed directly from the HTML page. Therefore, no further Source parameters can be specified. The number of feed items per request can vary substantially.

### Usage

```
YahooInplaySource(...)
```

### Arguments

| | |
|---|---|
| ... | additional parameters to WebSource |

### Value

WebHTMLSource

### Author(s)

Mario Annau

### Examples

```
## Not run:
corpus <- Corpus(YahooInplaySource())

## End(Not run)
```

---

yahoonews — *WebCorpus retrieved from Yahoo! News for the search term "Microsoft" through the YahooNewsSource. Length of retrieved corpus is 20.*

---

## Description

WebCorpus retrieved from Yahoo! News for the search term "Microsoft" through the YahooNewsSource. Length of retrieved corpus is 20.

## Author(s)

Mario Annau

## Examples

```
#Data set has been generated as follows:
## Not run:
yahoonews <- WebCorpus(YahooNewsSource("Microsoft"))

## End(Not run)
```

---

YahooNewsSource — *Get news data from Yahoo! News (https://news.search.yahoo.com/search/).*

---

## Description

Currently, only a maximum of 10 items can be retrieved.

## Usage

```
YahooNewsSource(query, params = list(p = query), ...)
```

## Arguments

| | |
|---|---|
| query | words to be searched in Yahoo News, multiple words must be separated by '+' |
| params, | additional query parameters, see http://developer.yahoo.com/rss/ |
| ... | additional parameters to WebSource |

## Value

WebXMLSource

## Author(s)

Mario Annau

## See Also

WebSource

## Examples

```
## Not run:
corpus <- Corpus(YahooNewsSource("Microsoft"))

## End(Not run)
```

# Index