

# Package ‘googleLanguageR’

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**Title** Call Google's 'Natural Language' API, 'Cloud Translation' API, 'Cloud Speech' API and 'Cloud Text-to-Speech' API

**Version** 0.3.0

**Description** Call 'Google Cloud' machine learning APIs for text and speech tasks. Call the 'Cloud Translation' API <<https://cloud.google.com/translate/>> for detection and translation of text, the 'Natural Language' API <<https://cloud.google.com/natural-language/>> to analyse text for sentiment, entities or syntax, the 'Cloud Speech' API <<https://cloud.google.com/speech/>> to transcribe sound files to text and the 'Cloud Text-to-Speech' API <<https://cloud.google.com/text-to-speech/>> to turn text into sound files.

**URL** <http://code.markedmondson.me/googleLanguageR/>,  
<https://github.com/ropensci/googleLanguageR>,  
<https://docs.ropensci.org/googleLanguageR/>

**BugReports** <https://github.com/ropensci/googleLanguageR/issues>

**Depends** R (>= 3.3)

**License** MIT + file LICENSE

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**Suggests** cld2, testthat, knitr, rmarkdown, rvest, shiny, shinyjs, stringdist, tidyR, tuneR, xml2

**NeedsCompilation** no

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gl_auth	<i>Authenticate with Google language API services</i>
---------	---

---

### Description

Authenticate with Google language API services

### Usage

```
gl_auth(json_file)
```

```
gl_auto_auth(...)
```

### Arguments

json_file	Authentication json file you have downloaded from your Google Project
...	additional argument to pass to <a href="#">gar_attach_auto_auth</a> .

### Details

The best way to authenticate is to use an environment argument pointing at your authentication file.

Set the file location of your download Google Project JSON file in a `GL_AUTH` argument

Then, when you load the library you should auto-authenticate

However, you can authenticate directly using this function pointing at your JSON auth file.

**Examples**

```
## Not run:
library(googleLanguageR)
gl_auth("location_of_json_file.json")

## End(Not run)

## Not run:
library(googleLanguageR)
gl_auto_auth()
gl_auto_auth(environment_var = "GAR_AUTH_FILE")

## End(Not run)
```

gl\_nlp

*Perform Natural Language Analysis***Description**

Analyse text entities, sentiment, syntax and categorisation using the Google Natural Language API

**Usage**

```
gl_nlp(
  string,
  nlp_type = c("annotateText", "analyzeEntities", "analyzeSentiment", "analyzeSyntax",
    "analyzeEntitySentiment", "classifyText"),
  type = c("PLAIN_TEXT", "HTML"),
  language = c("en", "zh", "zh-Hant", "fr", "de", "it", "ja", "ko", "pt", "es"),
  encodingType = c("UTF8", "UTF16", "UTF32", "NONE")
)
```

**Arguments**

string	A vector of text to detect language for, or Google Cloud Storage URI(s)
nlp_type	The type of Natural Language Analysis to perform. The default annotateText will perform all features in one call.
type	Whether input text is plain text or a HTML page
language	Language of source, must be supported by API.
encodingType	Text encoding that the caller uses to process the output

**Details**

string can be a character vector, or a location of a file content on Google cloud Storage. This URI must be of the form gs://bucket\_name/object\_name

Encoding type can usually be left at default UTF8. [Read more here](#)

The current language support is available [here](#)

**Value**

A list of the following objects, if those fields are asked for via `nlp_type`:

- `sentences` - Sentences in the input document
- `tokens` - Tokens, along with their syntactic information, in the input document
- `entities` - Entities, along with their semantic information, in the input document
- `documentSentiment` - The overall sentiment for the document
- `classifyText` - Classification of the document
- `language` - The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language
- `text` - The original text passed into the API. NA if not passed due to being zero-length etc.

**See Also**

<https://cloud.google.com/natural-language/docs/reference/rest/v1/documents>

**Examples**

```
## Not run:

text <- "to administer medicine to animals is frequently a very difficult matter,
and yet sometimes it's necessary to do so"
nlp <- gl_nlp(text)

nlp$sentences

nlp$tokens

nlp$entities

nlp$documentSentiment

## vectorised input
texts <- c("The cat sat on the mat", "oh no it didn't you fool")
nlp_results <- gl_nlp(texts)

## End(Not run)
```

---

`gl_speech`*Call Google Speech API*

---

## Description

Turn audio into text

## Usage

```
gl_speech(  
  audio_source,  
  encoding = c("LINEAR16", "FLAC", "MULAW", "AMR", "AMR_WB", "OGG_OPUS",  
              "SPEEX_WITH_HEADER_BYTE"),  
  sampleRateHertz = NULL,  
  languageCode = "en-US",  
  maxAlternatives = 1L,  
  profanityFilter = FALSE,  
  speechContexts = NULL,  
  asynch = FALSE,  
  customConfig = NULL  
)
```

## Arguments

<code>audio_source</code>	File location of audio data, or Google Cloud Storage URI
<code>encoding</code>	Encoding of audio data sent
<code>sampleRateHertz</code>	Sample rate in Hertz of audio data. Valid values 8000-48000. Optimal and default if left NULL is 16000
<code>languageCode</code>	Language of the supplied audio as a BCP-47 language tag
<code>maxAlternatives</code>	Maximum number of recognition hypotheses to be returned. 0-30
<code>profanityFilter</code>	If TRUE will attempt to filter out profanities
<code>speechContexts</code>	An optional character vector of context to assist the speech recognition
<code>asynch</code>	If your <code>audio_source</code> is greater than 60 seconds, set this to TRUE to return an asynchronous call
<code>customConfig</code>	[optional] A <code>RecognitionConfig</code> object that will be converted from a list to JSON via <code>toJSON</code> - see <a href="#">RecognitionConfig documentation</a> . The <code>languageCode</code> will be taken from this functions arguments if not present since it is required.

## Details

Google Cloud Speech API enables developers to convert audio to text by applying powerful neural network models in an easy to use API. The API recognizes over 80 languages and variants, to support your global user base. You can transcribe the text of users dictating to an application's microphone, enable command-and-control through voice, or transcribe audio files, among many other use cases. Recognize audio uploaded in the request, and integrate with your audio storage on Google Cloud Storage, by using the same technology Google uses to power its own products.

## Value

A list of two tibbles: `$transcript`, a tibble of the transcript with a confidence; `$timings`, a tibble that contains `startTime`, `endTime` per word. If `maxAlternatives` is greater than 1, then the transcript will return near-duplicate rows with other interpretations of the text. If `asynch` is `TRUE`, then an operation you will need to pass to `gl_speech_op` to get the finished result.

## AudioEncoding

Audio encoding of the data sent in the audio message. All encodings support only 1 channel (mono) audio. Only FLAC and WAV include a header that describes the bytes of audio that follow the header. The other encodings are raw audio bytes with no header. For best results, the audio source should be captured and transmitted using a lossless encoding (FLAC or LINEAR16). Recognition accuracy may be reduced if lossy codecs, which include the other codecs listed in this section, are used to capture or transmit the audio, particularly if background noise is present.

Read more on audio encodings here <https://cloud.google.com/speech/docs/encoding>

## WordInfo

`startTime` - Time offset relative to the beginning of the audio, and corresponding to the start of the spoken word.

`endTime` - Time offset relative to the beginning of the audio, and corresponding to the end of the spoken word.

`word` - The word corresponding to this set of information.

## See Also

<https://cloud.google.com/speech/reference/rest/v1/speech/recognize>

## Examples

```
## Not run:

test_audio <- system.file("woman1_wb.wav", package = "googleLanguageR")
result <- gl_speech(test_audio)

result$transcript
result$timings

result2 <- gl_speech(test_audio, maxAlternatives = 2L)
```

```

result2$transcript

result_brit <- gl_speech(test_audio, languageCode = "en-GB")

## make an asynchronous API request (mandatory for sound files over 60 seconds)
asynch <- gl_speech(test_audio, asynch = TRUE)

## Send to gl_speech_op() for status or finished result
gl_speech_op(asynch)

## Upload to GCS bucket for long files > 60 seconds
test_gcs <- "gs://mark-edmondson-public-files/googleLanguageR/a-dream-mono.wav"
gcs <- gl_speech(test_gcs, sampleRateHertz = 44100L, asynch = TRUE)
gl_speech_op(gcs)

## Use a custom configuration
my_config <- list(encoding = "LINEAR16",
                  diarizationConfig = list(
                    enableSpeakerDiarization = TRUE,
                    minSpeakerCount = 2,
                    maxSpeakCount = 3
                  ))

# languageCode is required, so will be added if not in your custom config
gl_speech(my_audio, languageCode = "en-US", customConfig = my_config)

## End(Not run)

```

---

gl\_speech\_op

*Get a speech operation*


---

### Description

For asynchronous calls of audio over 60 seconds, this returns the finished job

### Usage

```
gl_speech_op(operation = .Last.value)
```

### Arguments

operation      A speech operation object from [gl\\_speech](#) when asynch = TRUE

### Value

If the operation is still running, another operation object. If done, the result as per [gl\\_speech](#)

**See Also**[gl\\_speech](#)**Examples**

```
## Not run:

test_audio <- system.file("woman1_wb.wav", package = "googleLanguageR")

## make an asynchronous API request (mandatory for sound files over 60 seconds)
asynch <- gl_speech(test_audio, asynch = TRUE)

## Send to gl_speech_op() for status or finished result
gl_speech_op(asynch)

## End(Not run)
```

---

gl\_talk

*Perform text to speech*

---

**Description**

Synthesizes speech synchronously: receive results after all text input has been processed.

**Usage**

```
gl_talk(  
  input,  
  output = "output.wav",  
  languageCode = "en",  
  gender = c("SSML_VOICE_GENDER_UNSPECIFIED", "MALE", "FEMALE", "NEUTRAL"),  
  name = NULL,  
  audioEncoding = c("LINEAR16", "MP3", "OGG_OPUS"),  
  speakingRate = 1,  
  pitch = 0,  
  volumeGainDb = 0,  
  sampleRateHertz = NULL,  
  inputType = c("text", "ssml"),  
  effectsProfileIds = NULL  
)
```



**Arguments**

input	The text to turn into speech
output	Where to save the speech audio file
languageCode	The language of the voice as a BCP-47 language code
gender	The gender of the voice, if available
name	Name of the voice, see list via <a href="#">gl_talk_languages</a> for supported voices. Set to NULL to make the service choose a voice based on languageCode and gender.
audioEncoding	Format of the requested audio stream
speakingRate	Speaking rate/speed between 0.25 and 4.0
pitch	Speaking pitch between -20.0 and 20.0 in semitones.
volumeGainDb	Volume gain in dB
sampleRateHertz	Sample rate for returned audio
inputType	Choose between text (the default) or SSML markup. The input text must be SSML markup if you choose ssml
effectsProfileIds	Optional. An identifier which selects 'audio effects' profiles that are applied on (post synthesized) text to speech. Effects are applied on top of each other in the order they are given

**Details**

Requires the Cloud Text-To-Speech API to be activated for your Google Cloud project.

Supported voices are here <https://cloud.google.com/text-to-speech/docs/voices> and can be imported into R via [gl\\_talk\\_languages](#)

To play the audio in code via a browser see [gl\\_talk\\_player](#)

To use Speech Synthesis Markup Language (SSML) select inputType=ssml - more details on using this to insert pauses, sounds and breaks in your audio can be found here: <https://cloud.google.com/text-to-speech/docs/ssml>

To use audio profiles, supply a character vector of the available audio profiles listed here: <https://cloud.google.com/text-to-speech/docs/audio-profiles> - the audio profiles are applied in the order given. For instance effectsProfileIds="wearable-class-device" will optimise output for smart watches, effectsProfileIds=c("wearable-class-device", "telephony-class-application") will apply sound filters optimised for smart watches, then telephonic devices.

**Value**

The file output name you supplied as output

**See Also**

<https://cloud.google.com/text-to-speech/docs/>

## Examples

```
## Not run:
library(magrittr)
gl_talk("The rain in spain falls mainly in the plain",
        output = "output.wav")

gl_talk("Testing my new audio player") %>% gl_talk_player()

# using SSML
gl_talk('<speak>The <say-as interpret-as="characters">SSML</say-as>
standard <break time="1s"/>is defined by the
<sub alias="World Wide Web Consortium">W3C</sub>.</speak>',
inputType = "ssml")

# using effects profiles
gl_talk("This sounds great on headphones",
        effectsProfileIds = "headphone-class-device")

## End(Not run)
```

---

gl\_talk\_languages      *Get a list of voices available for text to speech*

---

## Description

Returns a list of voices supported for synthesis.

## Usage

```
gl_talk_languages(languageCode = NULL)
```

## Arguments

languageCode      A BCP-47 language tag. If specified, will only return voices that can be used to synthesize this languageCode

---

gl\_talk\_player      *Play audio in a browser*

---

**Description**

This uses HTML5 audio tags to play audio in your browser

**Usage**

```
gl_talk_player(audio = "output.wav", html = "player.html")
```

**Arguments**

audio	The file location of the audio file. Must be supported by HTML5
html	The html file location that will be created host the audio

**Details**

A platform neutral way to play audio is not easy, so this uses your browser to play it instead.

**Examples**

```
## Not run:  
  
gl_talk("Testing my new audio player") %>% gl_talk_player()  
  
## End(Not run)
```

---

gl\_talk\_shiny      *Speak in Shiny module (server)*

---

**Description**

Call via shiny::callModule(gl\_talk\_shiny, "your\_id")

**Usage**

```
gl_talk_shiny(  
  input,  
  output,  
  session,  
  transcript,  
  ...,
```

```

    autoplay = TRUE,
    controls = TRUE,
    loop = FALSE,
    keep_wav = FALSE
  )

```

### Arguments

input	shiny input
output	shiny output
session	shiny session
transcript	The (reactive) text to talk
...	Arguments passed on to <a href="#">gl_talk</a>
languageCode	The language of the voice as a BCP-47 language code
name	Name of the voice, see list via <a href="#">gl_talk_languages</a> for supported voices. Set to NULL to make the service choose a voice based on languageCode and gender.
gender	The gender of the voice, if available
audioEncoding	Format of the requested audio stream
speakingRate	Speaking rate/speed between 0.25 and 4.0
pitch	Speaking pitch between -20.0 and 20.0 in semitones.
volumeGainDb	Volumne gain in dB
sampleRateHertz	Sample rate for returned audio
inputType	Choose between text (the default) or SSML markup. The input text must be SSML markup if you choose ssm1
effectsProfileIds	Optional. An identifier which selects 'audio effects' profiles that are applied on (post synthesized) text to speech. Effects are applied on top of each other in the order they are given
autoplay	passed to the HTML audio player - default TRUE plays on load
controls	passed to the HTML audio player - default TRUE shows controls
loop	passed to the HTML audio player - default FALSE does not loop
keep_wav	keep the generated wav files if TRUE.

---

gl\_talk\_shinyUI      *Speak in Shiny module (ui)*

---

### Description

Speak in Shiny module (ui)

### Usage

```
gl_talk_shinyUI(id)
```

**Arguments**

id                    The Shiny id

**Details**

Shiny Module for use with [gl\\_talk\\_shiny](#).

---

gl\_translate                    *Translate the language of text within a request*

---

**Description**

Translate character vectors via the Google Translate API

**Usage**

```
gl_translate(  
  t_string,  
  target = "en",  
  format = c("text", "html"),  
  source = "",  
  model = c("nmt", "base")  
)
```

**Arguments**

t\_string                A character vector of text to detect language for

target                 The target language

format                 Whether the text is plain or HTML

source                 Specify the language to translate from. Will detect it if left default

model                  What translation model to use

**Details**

You can translate a vector of strings, although if too many for one call then it will be broken up into one API call per element. This is the same cost as charging is per character translated, but will take longer.

If translating HTML set the `format = "html"`. Consider removing anything not needed to be translated first, such as JavaScript and CSS scripts. See example on how to do this with `rvest`

The API limits in three ways: characters per day, characters per 100 seconds, and API requests per 100 seconds. All can be set in the API manager <https://console.developers.google.com/apis/api/translate.googleapis.com/quotas>

**Value**

A tibble of translatedText and detectedSourceLanguage and text of length equal to the vector of text you passed in.

**See Also**

<https://cloud.google.com/translate/docs/reference/translate>

Other translations: [gl\\_translate\\_detect\(\)](#), [gl\\_translate\\_languages\(\)](#)

**Examples**

```
## Not run:

text <- "to administer medicine to animals is frequently a very difficult matter,
and yet sometimes it's necessary to do so"

gl_translate(text, target = "ja")

# translate webpages using rvest to process beforehand
library(rvest)
library(googleLanguageR)

# translate webpages

# dr.dk article
my_url <- "http://bit.ly/2yhrmrH"

## in this case the content to translate is in css selector '.wcms-article-content'
read_html(my_url) %>%
  html_node(css = ".wcms-article-content") %>%
  html_text %>%
  gl_translate(format = "html")

## End(Not run)
```

---

gl\_translate\_detect     *Detect the language of text within a request*

---

**Description**

Detect the language of text within a request

**Usage**

```
gl_translate_detect(string)
```

**Arguments**

string            A character vector of text to detect language for

**Details**

Consider using `library(cld2)` and `cld2::detect_language` instead of `offline`, since that is free and local without needing a paid API call.

[gl\\_translate](#) also returns a detection of the language, so you could also wish to do it in one step via that function.

**Value**

A tibble of the detected languages with columns `confidence`, `isReliable`, `language`, and `text` of length equal to the vector of text you passed in.

**See Also**

<https://cloud.google.com/translate/docs/reference/detect>

Other translations: [gl\\_translate\\_languages\(\)](#), [gl\\_translate\(\)](#)

**Examples**

```
## Not run:

gl_translate_detect("katten sidder på måtten")
# Detecting language: 39 characters - katten sidder på måtten...
# confidence isReliable language      text
# 1  0.536223      FALSE      da katten sidder på måtten

## End(Not run)
```

---

`gl_translate_languages`

*Lists languages from Google Translate API*

---

**Description**

Returns a list of supported languages for translation.

**Usage**

```
gl_translate_languages(target = "en")
```

**Arguments**

target            If specified, language names are localized in target language

**Details**

Supported language codes, generally consisting of its ISO 639-1 identifier. (E.g. 'en', 'ja'). In certain cases, BCP-47 codes including language + region identifiers are returned (e.g. 'zh-TW', 'zh-CH')

**Value**

A tibble of supported languages

**See Also**

<https://cloud.google.com/translate/docs/reference/languages>

Other translations: [gl\\_translate\\_detect\(\)](#), [gl\\_translate\(\)](#)

**Examples**

```
## Not run:  
  
# default english names of languages supported  
gl_translate_languages()  
  
# specify a language code to get other names, such as Danish  
gl_translate_languages("da")  
  
## End(Not run)
```

---

googleLanguageR

*googleLanguageR*

---

**Description**

This package contains functions for analysing language through the Google Cloud Machine Learning APIs

**Details**

For examples and documentation see the vignettes and the website:

<http://code.markedmondson.me/googleLanguageR/>

**See Also**

<https://cloud.google.com/products/machine-learning/>



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