Package 'gemini.R'

March 29, 2025

Title Interface for 'Google Gemini' API

Version 0.11.0

Maintainer Jinhwan Kim <hwanistic@gmail.com>

Description Provides a comprehensive interface for Google Gemini API,
enabling users to access and utilize Gemini Large Language Model (LLM) functionalities directly from R.
This package facilitates seamless integration with Google Gemini, allowing for advanced language processing,
text generation, and other AI-driven capabilities within the R environment.
For more information, please visit <https://ai.google.dev/docs/gemini_api_overview>.

License MIT + file LICENSE

Depends R (>= 4.1.0)

URL https://github.com/jhk0530/gemini.R

BugReports https://github.com/jhk0530/gemini.R/issues

Encoding UTF-8

Imports base64enc, cli, httr2, jsonlite, rstudioapi, tools

RoxygenNote 7.3.2

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

Config/Needs/website rmarkdown

NeedsCompilation no

Author Jinhwan Kim [aut, cre, cph] (<https://orcid.org/0009-0009-3217-2417>),
Maciej Nasinski [ctb]

Repository CRAN

Date/Publication 2025-03-29 06:20:02 UTC

Contents

`addHistory` *Add history for chating context*

Description

Add history for chating context

Usage

```
addHistory(history, role = NULL, item = NULL)
```

Arguments

`history`	The history of chat
`role`	The role of chat: "user" or "model"
`item`	The item of chat: "prompt" or "output"

Value

The history of chat

countTokens *Count Tokens for Gemini Content (Including Images)*

Description

Calculates the token count for a given content, including text and image data, using the Vertex AI Gemini API.

Usage

```
countTokens(
  jsonkey = NULL,
  model_id = NULL,
  content = NULL,
  region = "us-central1"
)
```

Arguments

jsonkey	A path to JSON file containing the service account key from Vertex AI.
model_id	The ID of the Gemini model.
content	The content (text, image, or list of text/image parts) for which to count tokens. • For text, provide a string. • For images, provide a list with data (base64 encoded image) and mimeType (e.g., "image/png", "image/jpeg"). • For multiple content parts, provide a list where each element is either a text string or an image list.
region	The Google Cloud region where your Vertex AI resources are located (default is "us-central1"). See https://cloud.google.com/vertex-ai/docs/regions for available regions.

Value

A numeric value representing the token count of the content.

Examples

```
## Not run:
library(gemini.R)

# For text content
key_file <- "YOURAPIKEY.json"
model <- "2.0-flash"
token_count_text <- countTokens(
  jsonkey = key_file,
  model_id = model,
  content = "Hello, world!"
```

```
)
print(token_count_text)

# For image content (assuming 'image.jpg' is in your working directory)
image_data <- base64enc::base64encode("image.jpg")
image_content <- list(data = image_data, mimeType = "image/jpeg")
token_count_image <- countTokens(
  jsonkey = key_file,
  model_id = model,
  content = image_content
)
print(token_count_image)

# For multiple content parts (text and image)
content_parts <- list(
  list(text = "This is the first part."),
  list(data = image_data, mimeType = "image/jpeg"),
  list(text = "This is the last part")
)
token_count_parts <- countTokens(
  jsonkey = key_file,
  model_id = model,
  content = content_parts
)
print(token_count_parts)

## End(Not run)
```

---

gemini *Generate text from text with Gemini*

Description

Generate text from text with Gemini

Usage

```
gemini(
  prompt,
  model = "2.0-flash",
  temperature = 1,
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234
)
```

Arguments

prompt	The prompt to generate text from
model	The model to use. Options are "2.0-flash", "2.0-flash-lite", "2.5-pro-exp-03-25". Default is '2.0-flash'. see https://ai.google.dev/gemini-api/docs/models/gemini
temperature	The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
maxOutputTokens	The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.
topK	The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
topP	The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
seed	The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

Value

Generated text

See Also

https://ai.google.dev/docs/gemini_api_overview#text_input

Examples

```
## Not run:
library(gemini.R)
setAPI("YOUR_API_KEY")
gemini("Explain dplyr's mutate function")

## End(Not run)
```

---

gemini.vertex *Generate text from text with Gemini Vertex API*

Description

Generate text from text with Gemini Vertex API

Usage

```
gemini.vertex(
  prompt = NULL,
  tokens = NULL,
  temperature = 1,
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234
)
```

Arguments

prompt	A character string containing the prompt for the Gemini model.
tokens	A list containing the API URL and key from token.vertex() function.
temperature	The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
maxOutputTokens	The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.
topK	The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
topP	The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
seed	The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

Value

A character string containing the generated text.

See Also

https://ai.google.dev/docs/gemini_api_overview#text_input

Examples

```
## Not run:
# token should be created before this. using the token.vertex() function
prompt <- "What is sachins Jersey number?"
gemini.vertex(prompt, tokens)

## End(Not run)
```

gemini_audio *Analyze audio using Gemini*

Description

This function sends audio to the Gemini API and returns a text description.

Usage

```
gemini_audio(
  audio = NULL,
  prompt = "Describe this audio",
  model = "2.0-flash",
  temperature = 1,
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234
)
```

Arguments

audio	Path to the audio file (default: uses a sample file). Must be an MP3.
prompt	A string describing what to do with the audio.
model	The model to use. Options are "2.0-flash", "2.0-flash-lite", "2.5-pro-exp-03-25". Default is '2.0-flash' see https://ai.google.dev/gemini-api/docs/models/gemini
temperature	The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
maxOutputTokens	The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.
topK	The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
topP	The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
seed	The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

Value

A character vector containing the Gemini API's response.

Examples

```
## Not run:
library(gemini.R)
setAPI("YOUR_API_KEY")
gemini_audio(audio = system.file("docs/reference/helloworld.mp3", package = "gemini.R"))

## End(Not run)
```

`gemini_audio.vertex` *Analyze Audio using Gemini Vertex API*

Description

This function sends audio to the Gemini API and returns a text description.

Usage

```
gemini_audio.vertex(
  audio = NULL,
  prompt = "Describe this audio",
  tokens = NULL,
  temperature = 1,
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234
)
```

Arguments

`audio`	Path to the audio file (character string). only supports "mp3".
`prompt`	A prompt to guide the Gemini API's analysis (character string, defaults to "Describe this audio").
`tokens`	A list containing the API URL and key from token.vertex() function.
`temperature`	The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
`maxOutputTokens`	The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.
`topK`	The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
`topP`	The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
`seed`	The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

Value

A character vector containing the Gemini API's description of the audio.

`gemini_chat` *Multi-turn conversations (chat)*

Description

Generate text from text with Gemini

Usage

```
gemini_chat(
  prompt,
  history = list(),
  model = "2.0-flash",
  temperature = 1,
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234
)
```

Arguments

`prompt`	The prompt to generate text from
`history`	history object to keep track of the conversation
`model`	The model to use. Options are "2.0-flash", "2.0-flash-lite", "2.5-pro-exp-03-25". Default is '2.0-flash' see https://ai.google.dev/gemini-api/docs/models/gemini
`temperature`	The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
`maxOutputTokens`	The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.
`topK`	The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
`topP`	The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
`seed`	The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

Value

Generated text

See Also

https://ai.google.dev/docs/gemini_api_overview#chat

Examples

```
## Not run:
library(gemini.R)
setAPI("YOUR_API_KEY")

chats <- gemini_chat("Pretend you're a snowman and stay in character for each")
print(chats$outputs)

chats <- gemini_chat("What's your favorite season of the year?", chats$history)
print(chats$outputs)

chats <- gemini_chat("How do you think about summer?", chats$history)
print(chats$outputs)

## End(Not run)
```

---

gemini_image *Generate text from text and image with Gemini*

Description

Generate text from text and image with Gemini

Usage

```
gemini_image(
  image = NULL,
  prompt = "Explain this image",
  model = "2.0-flash",
  temperature = 1,
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234,
  type = "png"
)
```

Arguments

image	The image to generate text
prompt	The prompt to generate text, Default is "Explain this image"
model	The model to use. Options are "2.0-flash", "2.0-flash-lite", "2.5-pro-exp-03-25". Default is '2.0-flash' see https://ai.google.dev/gemini-api/docs/models/gemini

temperature — The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

maxOutputTokens — The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.

topK — The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

topP — The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

seed — The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

type — The type of image. Options are 'png', 'jpeg', 'webp', 'heic', 'heif'. Default is 'png'

Value

Generated text

See Also

https://ai.google.dev/docs/gemini_api_overview#text_image_input

Examples

```
## Not run:
library(gemini.R)
setAPI("YOUR_API_KEY")
gemini_image(image = system.file("docs/reference/figures/image.png", package = "gemini.R"))

## End(Not run)
```

---

gemini_image.vertex *Generate text from text and image with Gemini Vertex API*

Description

Generate text from text and image with Gemini Vertex API

Usage

```
gemini_image.vertex(
  image = NULL,
  prompt = "Explain this image",
  type = "png",
  tokens = NULL,
  temperature = 1,
```

```
  maxOutputTokens = 8192,
  topK = 40,
  topP = 0.95,
  seed = 1234
)
```

Arguments

image	The image to generate text
prompt	A character string specifying the prompt to use with the image. Defaults to "Explain this image".
type	A character string specifying the image type ("png", "jpeg", "webp", "heic", "heif"). Defaults to "png".
tokens	A list containing the API URL and key from token.vertex() function.
temperature	The temperature to use. Default is 1 value should be between 0 and 2 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
maxOutputTokens	The maximum number of tokens to generate. Default is 8192 and 100 tokens correspond to roughly 60-80 words.
topK	The top-k value to use. Default is 40 value should be between 0 and 100 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
topP	The top-p value to use. Default is 0.95 value should be between 0 and 1 see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters
seed	The seed to use. Default is 1234 value should be integer see https://ai.google.dev/gemini-api/docs/models/generative-models#model-parameters

Value

A character string containing Gemini's description of the image.

---

gen_docs *Generate Roxygen Documentation*

Description

Generates Roxygen2 documentation for an R function based on the currently selected code.

Usage

```
gen_docs(prompt = NULL)
```

Arguments

prompt	A character string specifying additional instructions for the LLM. Defaults to a prompt requesting Roxygen2 documentation without the original code.

Value

A character string containing the generated Roxygen2 documentation.

`gen_image` *Generate and save image using Gemini*

Description

Generate an image using Gemini's image generation capabilities and save it to a file

Usage

```
gen_image(
  prompt,
  filename = "gemini_image.png",
  overwrite = TRUE,
  model = "2.0-flash-exp-image-generation",
  temperature = 1,
  seed = 1234
)
```

Arguments

`prompt`	The prompt to generate an image from
`filename`	The filename to save the image to. Default is "gemini_image.png"
`overwrite`	Logical, whether to overwrite existing file. Default is TRUE
`model`	The model to use. Default is "2.0-flash-exp-image-generation"
`temperature`	The temperature to use. Default is 1
`seed`	The seed to use. Default is 1234

Value

The path to the saved file

Examples

```
## Not run:
library(gemini.R)
setAPI("YOUR_API_KEY")
gen_image("Create an image of a cat wearing sunglasses")

## End(Not run)
```

gen_tests *Generates unit test code for an R function.*

Description

Generates unit test code for an R function.

Usage

```
gen_tests(prompt = NULL)
```

Arguments

prompt	A character string specifying the prompt for the Gemini model. If NULL, a default prompt is used.

Value

#' A character string containing the generated unit test code.

setEnv *Store API key in local environment file*

Description

Saves the API key to a local .Renviron file for persistent access across R sessions

Usage

```
setEnv(api_key, overwrite = TRUE, install_message = TRUE)
```

Arguments

api_key	The API key to store
overwrite	Whether to overwrite the existing API key if already present in .Renviron (default: TRUE)
install_message	Whether to display a message about how to use the API (default: TRUE)

Value

No return value, called for side effects.

See Also

setAPI which sets the API key for the current session only

Examples

```
## Not run:
setEnv("your_api_key")

## End(Not run)
```

`token.vertex` *Generate Gemini Access Token and Endpoint URL*

Description

Generates an access token for the Gemini model and constructs the corresponding endpoint URL.

Usage

```
token.vertex(
  jsonkey = NULL,
  model_id = NULL,
  expTime = 3600,
  region = "us-central1"
)
```

Arguments

`jsonkey`	A path to JSON file containing the service account key from Vertex AI.
`model_id`	The ID of the Gemini model. This will be prepended with "gemini-".
`expTime`	The expiration time of the access token in seconds (default is 3600 seconds, or 1 hour).
`region`	The Google Cloud region where your Vertex AI resources are located (default is "us-central1"). See https://cloud.google.com/vertex-ai/docs/general/locations for available regions.

Value

A list containing:

`key`	The generated access token.
`url`	The endpoint URL for the Gemini model.

Examples

```
## Not run:
library(gemini.R)
tokens <- token.vertex(jsonkey = "YOURAPIKEY.json", model_id = "1.5-flash")

# Specify a different region
tokens <- token.vertex(jsonkey = "YOURAPIKEY.json", model_id = "1.5-flash", region = "europe-west4")

## End(Not run)
```

Index