

Package ‘graphhopper’

February 6, 2021

Title An R Interface to the 'GraphHopper' Directions API

Version 0.1.2

Date 2021-02-06

Maintainer Stefan Kuethe <crazycapivara@gmail.com>

Description Provides a quick and easy access to the 'GraphHopper' Directions API.
'GraphHopper' <<https://www.graphhopper.com/>> itself is a routing engine based on 'OpenStreetMap' data.

API responses can be converted to simple feature (sf) objects in a convenient way.

License MIT + file LICENSE

Encoding UTF-8

LazyData true

Imports magrittr, httr, googlePolylines, jsonlite, tibble, dplyr

Suggests sf, geojsonsf, ggplot2, testthat

RoxygenNote 6.1.1

URL <https://github.com/crazycapivara/graphhopper-r>

BugReports <https://github.com/crazycapivara/graphhopper-r/issues>

NeedsCompilation no

Author Stefan Kuethe [aut, cre]

Repository CRAN

Date/Publication 2021-02-06 16:50:02 UTC

R topics documented:

gh_as_sf	2
gh_available_spt_columns	3
gh_bbox	3
gh_get_info	4
gh_get_isochrone	4
gh_get_route	5
gh_get_routes	6

gh_get_spt	7
gh_instructions	8
gh_points	8
gh_set_api_url	9
gh_spt_as_linestrings_sf	9
gh_spt_columns	10
gh_time_distance	11

Index	12
--------------	-----------

gh_as_sf	<i>Convert a gh object into an sf object</i>
----------	--

Description

Convert a gh object into an sf object

Usage

```
gh_as_sf(data, ...)

## S3 method for class 'gh_route'
gh_as_sf(data, ..., geom_type = c("linestring",
  "point"))

## S3 method for class 'gh_spt'
gh_as_sf(data, ...)

## S3 method for class 'gh_isochrone'
gh_as_sf(data, ...)
```

Arguments

data	A gh_route or gh_spt object.
...	ignored
geom_type	Use geom_type = point to return the points of the route with ids corresponding to the instruction ids.

Examples

```
if (FALSE) {
  start_point <- c(52.592204, 13.414307)
  end_point <- c(52.539614, 13.364868)

  route_sf <- gh_get_route(list(start_point, end_point)) %>%
    gh_as_sf()
}
```

`gh_available_spt_columns`

Get a vector with available columns of the spt endpoint

Description

Get a vector with available columns of the spt endpoint

Usage

`gh_available_spt_columns()`

`gh_bbox`

Extract the bounding box from a gh object

Description

Extract the bounding box from a gh object

Usage

`gh_bbox(data)`

```
## S3 method for class 'gh_route'  
gh_bbox(data)
```

```
## S3 method for class 'gh_info'  
gh_bbox(data)
```

Arguments

`data` A `gh_route` or `gh_info` object.

`gh_get_info`*Get information about the GraphHopper instance*

Description

Get information about the GraphHopper instance

Usage

```
gh_get_info()
```

Examples

```
if (FALSE) {  
  info <- gh_get_info()  
  
  message(info$version)  
  message(info$data_date)  
  print(gh_bbox(info))  
}
```

`gh_get_isochrone`*Get isochrones for a given start point*

Description

Get isochrones for a given start point

Usage

```
gh_get_isochrone(start_point, time_limit = 180, distance_limit = -1,  
  ...)
```

Arguments

<code>start_point</code>	The start point as (lat, lon) pair.
<code>time_limit</code>	The travel time limit in seconds. Ignored if <code>distance_limit > 0</code> .
<code>distance_limit</code>	The distance limit in meters.
<code>...</code>	Additional parameters. See https://docs.graphhopper.com/#operation/getIsochrone .

Examples

```
if (FALSE) {
  start_point <- c(52.53961, 13.36487)

  isochrone_sf <- gh_get_isochrone(start_point, time_limit = 180) %>%
    gh_as_sf()
}
```

gh_get_route	<i>Get a route for a given set of points</i>
--------------	--

Description

Get a route for a given set of points

Usage

```
gh_get_route(points, ..., response_only = FALSE)
```

Arguments

points	A list of 2 or more points as (lat, lon) pairs.
...	Optional parameters that are passed to the query.
response_only	Whether to return the raw response object instead of just its content.

See Also

<https://docs.graphhopper.com/#tag/Routing-API> for optional parameters.

Examples

```
if (FALSE) {
  start_point <- c(52.592204, 13.414307)
  end_point <- c(52.539614, 13.364868)

  route_sf <- gh_get_route(list(start_point, end_point)) %>%
    gh_as_sf()
}
```

gh_get_routes	<i>Get multiple routes</i>
---------------	----------------------------

Description

Internally it just calls [gh_get_route](#) several times. See also [gh_get_spt](#).

Usage

```
gh_get_routes(x, y, ..., callback = NULL)
```

Arguments

x	A single start point as (lat, lon) pair
y	A matrix or a data frame containing columns with latitudes and longitudes that are used as endpoints. Needs (lat, lon) order.
...	Parameters that are passed to gh_get_route .
callback	A callback function that is applied to every calculated route.

Examples

```
if (FALSE) {
  start_point <- c(52.519772, 13.392334)

  end_points <- rbind(
    c(52.564665, 13.42083),
    c(52.564456, 13.342724),
    c(52.489261, 13.324871),
    c(52.48738, 13.454647)
  )

  time_distance_table <- gh_get_routes(
    start_point, end_points, calc_points = FALSE,
    callback = gh_time_distance
  ) %>%
    dplyr::bind_rows()

  routes_sf <- gh_get_routes(start_point, end_points, callback = gh_as_sf) %>%
    do.call(rbind, .)
}
```

gh_get_spt	<i>Get the shortest path tree for a given start point</i>
------------	---

Description

Get the shortest path tree for a given start point

Usage

```
gh_get_spt(start_point, time_limit = 600, distance_limit = -1,  
           columns = gh_spt_columns(), reverse_flow = FALSE, profile = "car")
```

Arguments

start_point	The start point as (lat, lon) pair.
time_limit	The travel time limit in seconds. Ignored if distance_limit > 0.
distance_limit	The distance limit in meters.
columns	The columns to be returned. See gh_spt_columns and gh_available_spt_columns for available columns.
reverse_flow	Use reverse_flow = TRUE to change the flow direction.
profile	The profile for which the spt should be calculated.

Examples

```
if (FALSE) {  
  start_point <- c(52.53961, 13.36487)  
  
  columns <- gh_spt_columns(  
    prev_longitude = TRUE,  
    prev_latitude = TRUE,  
    prev_time = TRUE  
  )  
  
  points_sf <- gh_get_spt(start_point, time_limit = 180, columns = columns) %>%  
    gh_as_sf()  
}
```

gh_instructions	<i>Extract the instructions from a gh route object</i>
-----------------	--

Description

Extract the instructions from a gh route object

Usage

```
gh_instructions(data, instructions_only = FALSE)
```

Arguments

data	A gh_route object.
instructions_only	Whether to return the instructions without the corresponding points.

See Also

[gh_get_route](#)

gh_points	<i>Extract the points from a gh route object</i>
-----------	--

Description

Extract the points from a gh route object

Usage

```
gh_points(data)
```

Arguments

data	A gh_route object.
------	--------------------

gh_set_api_url *Set gh API base url*

Description

Set gh API base url

Usage

gh_set_api_url(api_url)

Arguments

api_url API base url

Note

Internally it calls `Sys.setenv` to store the API url in an environment variable called `GH_API_URL`.

Examples

gh_set_api_url("http://localhost:8989")

gh_spt_as_linestrings_sf
 Build lines from a gh_spt object

Description

Build lines from a gh_spt object

Usage

gh_spt_as_linestrings_sf(data)

Arguments

data A gh_spt object.

Examples

```

if (FALSE) {
  start_point <- c(52.53961, 13.36487)

  columns <- gh_spt_columns(
    prev_longitude = TRUE,
    prev_latitude = TRUE,
    prev_time = TRUE
  )

  lines_sf <- gh_get_spt(start_point, time_limit = 180, columns = columns) %>%
    gh_spt_as_linestrings_sf()
}

```

gh_spt_columns	<i>Select the columns to be returned by a spt request</i>
----------------	---

Description

Times are returned in milliseconds and distances in meters.

Usage

```

gh_spt_columns(longitude = TRUE, latitude = TRUE, time = TRUE,
  distance = TRUE, prev_longitude = FALSE, prev_latitude = FALSE,
  prev_time = FALSE, prev_distance = FALSE, node_id = FALSE,
  prev_node_id = FALSE, edge_id = FALSE, prev_edge_id = FALSE)

```

Arguments

longitude, latitude
The longitude, latitude of the node.

time, distance
The travel time, distance to the node.

prev_longitude, prev_latitude
The longitude, latitude of the previous node.

prev_time, prev_distance
The travel time, distance to the previous node.

node_id, prev_node_id
The ID of the node, previous node.

edge_id, prev_edge_id
The ID of the edge, previous edge.

<code>gh_time_distance</code>	<i>Extract time and distance from a gh route object</i>
-------------------------------	---

Description

Extract time and distance from a gh route object

Usage

```
gh_time_distance(data)
```

Arguments

`data` A `gh_route` object.

Index

gh_as_sf, 2
gh_available_spt_columns, 3, 7
gh_bbox, 3
gh_get_info, 4
gh_get_isochrone, 4
gh_get_route, 5, 6, 8
gh_get_routes, 6
gh_get_spt, 6, 7
gh_instructions, 8
gh_points, 8
gh_set_api_url, 9
gh_spt_as_linestrings_sf, 9
gh_spt_columns, 7, 10
gh_time_distance, 11