Package 'PurpleAir'

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Title Query the 'PurpleAir' Application Programming Interface

Version 1.1.1

Description Send requests to the 'PurpleAir' Application Programming Interface (API; <https://community.purpleair.com/c/data/api/18>). Check a 'PurpleAir' API key and get information about the related organization. Download real-time data from a single 'PurpleAir' sensor or many sensors by sensor identifier, geographical bounding box, or time since modified. Download historical data from a single sensor. Stream real time data from monitors on a local area network.

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Encoding UTF-8

RoxygenNote 7.3.2

Suggests sf, testthat (>= 3.0.0)

Config/testthat/edition 3

URL https://github.com/cole-brokamp/PurpleAir

BugReports https://github.com/cole-brokamp/PurpleAir/issues

Imports httr2, purrr (>= 1.1.0), tibble, rlang, cli, dplyr, glue

Depends R (>= 4.1.0)

NeedsCompilation no

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Repository CRAN

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Contents

`check_api_key` *Check Purple Air API Key*

Description

Use the PurpleAir API to validate your Purple Air API Key. Find more details on this function at https://api.purpleair.com/#api-keys-check-api-key. Storing your key in the environment variable `PURPLE_AIR_API_KEY` is safer than storing it in source code and is used by default in each PurpleAir function.

Usage

```
check_api_key()
```

Value

If the key is valid, a message is emitted and the input is invisibly returned; invalid keys will throw an R error which utilizes information from the underlying http error to inform the user.

See Also

get_organization_data

Examples

```
## Not run:
check_api_key()
try({
  old_key <- Sys.getenv("PURPLE_AIR_API_KEY")
  Sys.setenv(PURPLE_AIR_API_KEY = "foofy")
  check_api_key()
}, silent = TRUE)
Sys.setenv(PURPLE_AIR_API_KEY = old_key)

## End(Not run)
```

find_local_pam *find purple area monitors on a local network*

Description

All IP addresses within the network are pinged to possibly return a purple air monitor sensor ID.

Usage

```
find_local_pam(network_prefix = "192.168.1", timeout = 1)
```

Arguments

network_prefix	character string; base IPv4 prefix (first three octets) used to generate IP addresses
timeout	numeric; number of seconds to wait for each ping

Details

If the mirai package is available, this function will ensure that at least version 1.1.0 of the purrr package is installed to scan the network in parallel, according to `mirai::daemons()` set by the user. This reduces the time it takes, but does not use a progress bar.

Value

a list of purple air monitor IP addresses named according to their Sensor IDs

Examples

```
## Not run:
mirai::daemons(12)
find_local_pam()
mirai::daemons(0)

## End(Not run)
```

get_organization_data *Get Organization Data*

Description

Use the PurpleAir API to retrieve information for the organization containing the provided api_key Find more details on this function at https://api.purpleair.com/#api-organization-get-organization-data

Usage

```
get_organization_data()
```

Value

A list of organization info

See Also

check_api_key

Examples

```
## Not run:
get_organization_data()

## End(Not run)
```

`get_sensors_data` *Get Sensors Data*

Description

Retrieves the latest data of multiple sensors matching the provided parameters. Find more details on sensor fields at https://api.purpleair.com/#api-sensors-get-sensors-data.

Usage

```
get_sensors_data(
  x,
  fields,
  location_type = c("both", "inside", "outside"),
  max_age = as.integer(604800),
  read_keys = NULL
)
```

Arguments

`x`	an input object used to define multiple sensors: • an integer (or numeric or character) vector will select sensors based on `sensor_index` (API: `show_only`) • a st_bbox object will select sensors geographically (API: `nwlat`, `nwlon`, `selat`, `selon`) • `sf` and `sfc` objects are not currently supported directly; use `sf::st_bbox()` first • a POSIXct object will select sensors modified since the given time (API: `modified_since`)
`fields`	A character vector of which 'sensor data fields' to return
`location_type`	character; restrict to only "outside" or "inside" sensors (Outside: 0, Inside: 1)
`max_age`	integer; filter results to only include sensors modified or updated within the last number of seconds
`read_keys`	A character vector of keys required to read data from private devices

Value

A list of sensor data, named by the provided `fields`

See Also

get_sensor_data

Examples

```
## Not run:
# get sensors data by integer, numeric, or character vector of `sensor_index`
get_sensors_data(
  x = as.integer(c(175257, 175413)),
  fields = c("name", "last_seen", "pm2.5_cf_1", "pm2.5_atm")
)
get_sensors_data(
  x = c(175257, 175413),
  fields = c("name", "last_seen", "pm2.5_cf_1", "pm2.5_atm")
)
get_sensors_data(
  x = c("175257", "175413"),
  fields = c("name"), location_type = "outside"
)
# get sensors by bounding box around Hamilton County, OH
sf::st_bbox(c("xmin" = -84.82030, "ymin" = 39.02153,
              "xmax" = -84.25633, "ymax" = 39.31206),
            crs = 4326) |>
  get_sensors_data(fields = c("name"))
# sensors modified in the last 60 seconds
get_sensors_data(as.POSIXct(Sys.time()) - 60, fields = "name")

## End(Not run)
```

`get_sensor_data` *Get Sensor Data*

Description

Retrieves the latest data of a single sensor matching the provided `sensor_index`. Find more details on sensor fields at https://api.purpleair.com/#api-sensors-get-sensor-data.

Usage

```
get_sensor_data(sensor_index, fields, read_key = NULL)
```

Arguments

`sensor_index`	Integer (or numeric, character object coerceable to integer) `sensor_index`
`fields`	A character vector of which 'sensor data fields' to return
`read_key`	A character key required to read data from private devices

Value

A list of sensor data, named by the provided `fields`

See Also

get_sensors_data get_sensor_history

Examples

```
## Not run:
get_sensor_data(sensor_index = 175413, fields = c("name", "last_seen", "pm2.5_cf_1", "pm2.5_atm"))
get_sensor_data(sensor_index = "175413", fields = c("name", "last_seen", "pm2.5_cf_1", "pm2.5_atm"))

## End(Not run)
```

`get_sensor_history` *get sensor history*

Description

Retrieves the latest history of a single sensor matching the provided `sensor_index`. Find more details on sensor fields at https://api.purpleair.com/#api-sensors-get-sensor-history. NULL values are converted to `NA` in R.

Usage

```
get_sensor_history(
  sensor_index,
  fields,
  start_timestamp,
  end_timestamp,
 average = c("10min", "30min", "60min", "6hr", "1day", "1week", "1month", "1year",
    "real-time"),
  read_key = NULL
)
```

Arguments

`sensor_index`	Integer (or numeric, character object coerceable to integer) `sensor_index`
`fields`	A character vector of which 'sensor data fields' to return
`start_timestamp`	time stamp of first required history entry (inclusive)
`end_timestamp`	end time stamp of history to return (exclusive)
`average`	time frame to request averaged results for
`read_key`	A character key required to read data from private devices

Value

a list of sensor data, named by the provided `fields`

Examples

```
## Not run:
get_sensor_history(
  sensor_index = 175413,
  fields = c("pm1.0_cf_1", "pm1.0_atm", "pm2.5_cf_1", "pm2.5_atm"),
  start_timestamp = as.POSIXct("2024-07-02"),
  end_timestamp = as.POSIXct("2024-07-05")
)

## End(Not run)
```

`ip_pam_id` *get purple air monitor id from ip address*

Description

get purple air monitor id from ip address

Usage

```
ip_pam_id(ip_address, timeout = 1)
```

Arguments

`ip_address`	character; address to send sensor id request to
`timeout`	numeric; number of seconds to wait for each ping

Value

NULL if address doesn't respond to a SensorId request; if ip address is a purple air monitor, the monitor id is returned

Examples

```
ip_pam_id("192.168.1.144") # purple air
ip_pam_id("192.168.1.148") # no server
ip_pam_id("192.168.1.141") # non-purple air
```

local_sensor_data *local_sensor_data*

Description

Get latest data (updated every two minutes) from a sensor the local area network.

Usage

```
local_sensor_data(ip_address)
```

Arguments

ip_address	address of purple air monitor on local area network to request data from

Value

a list of data returned by the sensor

Examples

```
## Not run:
local_sensor_data("192.168.1.144") |>
  _[c("DateTime", "current_temp_f", "current_humidity", "pm2_5_cf_1", "p25aqic")]

## End(Not run)
```

local_sensor_live *local_sensor_live*

Description

Stream the latest data from a sensor on the local area network. Data is updated every second on the device; this function waits half a second after each call, which takes less than half a second, ensuring sub one second updating freqency.

Usage

```
local_sensor_live(ip_address)
```

Arguments

ip_address	address of purple air monitor on local area network to request data from

Examples

```
## Not run:
local_sensor_live("192.168.1.144")

## End(Not run)
```

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