
pycaching Documentation

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Source codes can be found at [GitHub repository](#).

CHAPTER 1

Features

- **login** to Geocaching.com
- **search** caches
 - normal search (unlimited number of caches from any point)
 - quick search (all caches inside some area) - currently not working, see below
- **get cache** and its details
 - normal loading (can load all details)
 - quick loading (can load just basic info but very quickly)
 - load logbook for given cache
- **get trackable** details by tracking code
- **post log** for a cache or a trackable
- **geocode** given location

2.1 Quickstart

2.1.1 Installation

Stable version - using pip:

```
pip install pycaching
```

Dev version - manually from GIT:

```
git clone https://github.com/tomasbedrich/pycaching.git
cd pycaching
pip install .
```

Pycaching has following requirements:

```
Python>=3.5
requests>=2.8
beautifulsoup4>=4.9
geopy>=1.11
```

Pycaching tests have the following additional requirements:

```
betamax >=0.8, <0.9
betamax-serializers >=0.2, <0.3
```

2.1.2 Examples

Login

Simply call `pycaching.login()` method and it will do everything for you.

```
import pycaching
geocaching = pycaching.login("user", "pass")
```

If you won't provide a username or password, pycaching will try to load `.gc_credentials` file from current directory or home folder. It will try to parse it as JSON and use the keys `username` and `password` from that file as login credentials.

```
# sample .gc_credentials JSON file
{ "username": "myusername", "password": "mypassword" }
```

You can also provide multiple username and password tuples in a file as login credentials. The tuple to be used can be chosen by providing its username when calling `pycaching.login()`, e.g. `pycaching.login("myusername2")`. The first username and password tuple specified will be used as default if `pycaching.login()` is called without providing a username.

```
# sample .gc_credentials JSON file with mutiple users
[ { "username": "myusername1", "password": "mypassword1" },
  { "username": "myusername2", "password": "mypassword2" } ]
```

```
import pycaching
geocaching = pycaching.login() # assume the .gc_credentials file is presented
```

In case you have a password manager in place featuring a command line interface (e.g. [GNU pass](#)) you may specify a password retrieval command using the `password_cmd` key instead of `password`.

```
# sample .gc_credentials JSON file with password command
{ "username": "myusername", "password_cmd": "pass geocaching.com/myUsername" }
```

Note that the `password` and `password_cmd` keys are mutually exclusive.

Load a cache details

```
cache = geocaching.get_cache("GC1PAR2")
print(cache.name) # cache.load() is automatically called
print(cache.location) # stored in cache, printed immediately
```

This uses lazy loading, so the `Cache` object is created immediately and the page is loaded when needed (accessing the name).

You can use a different method of loading cache details. It will be much faster, but it will load less details:

```
cache = geocaching.get_cache("GC1PAR2")
cache.load_quick() # takes a small while
print(cache.name) # stored in cache, printed immediately
print(cache.location) # NOT stored in cache, will trigger full loading
```

You can also load a logbook for cache:

```
for log in cache.load_logbook(limit=200):
    print(log.visited, log.type, log.author, log.text)
```

Or its trackables:

```
for trackable in cache.load_trackables(limit=5):
    print(trackable.name)
```

Post a log to cache

```
geocaching.post_log("GC1PAR2", "Found cache in the rain. Nice place, TFTC!")
```

It is also possible to call `post_log` on `Cache` object, but you would have to create `Log` object manually and pass it to this method.

Search for all traditional caches around

```
from pycaching import Point
from pycaching.cache import Type

point = Point(56.25263, 15.26738)

for cache in geocaching.search(point, limit=50):
    if cache.type == Type.traditional:
        print(cache.name)
```

Notice the `limit` in the search function. It is because `geocaching.search()` returns a generator object, which would fetch the caches forever in case of a simple loop.

Geocode adress and search around

```
point = geocaching.geocode("Prague")

for cache in geocaching.search(point, limit=10):
    print(cache.name)
```

Find caches with their approximate locations in some area

Warning: This is currently not working because of [this issue](#). Contributions are very welcome!

```
from pycaching import Point, Rectangle

rect = Rectangle(Point(60.15, 24.95), Point(60.17, 25.00))

for cache in geocaching.search_quick(rect, strict=True):
    print(cache.name, cache.location.precision)
```

Load trackable details

```
trackable = geocaching.get_trackable("TB3ZGT2")
print(trackable.name, trackable.goal, trackable.description, trackable.location)
```

Post a log for trackable

```
from pycaching.log import Log, Type as LogType
import datetime

log = Log(type=LogType.discovered_it, text="Nice TB!", visited=datetime.date.today())
tracking_code = "ABCDEF"
trackable.post_log(log, tracking_code)
```

Get geocaches by log type

```
from pycaching.log import Type as LogType

for find in geocaching.my_finds(limit=5):
    print(find.name)

for dnf in geocaching.my_dnfs(limit=2):
    print(dnf.name)

for note in geocaching.my_logs(LogType.note, limit=6):
    print(note.name)
```

2.1.3 Testing

Pycaching uses [Betamax](#) for testing, which speeds it up by recording network requests so that they can be mocked.

If you haven't written or modified any tests, tests can be run like so:

```
python3 setup.py test
```

If you have written or modified tests, you must provide a username and password for testing. Don't worry, these will not leave your computer. Betamax will insert a placeholder when it records any new cassettes. To run new tests, first set up the following environment variables:

```
PYCACHING_TEST_USERNAME="yourusername" PYCACHING_TEST_PASSWORD="yourpassword" python3 _
↪setup.py test
```

Substitute your username for `yourusername` and your password for `yourpassword`. After you have exported the environment variables once, you do not need to export them again, and can run tests with just `python3 setup.py test`.

To re-record a specific cassette in case of site changes, delete the corresponding JSON file and provide username and password as explained above. The missing cassette will be recorded for future usages.

2.2 API reference

Here you can find an overview of all available classes and methods.

Warning: Deprecated methods will be removed in next minor version.

For example: if you rely on some non-deprecated method in version 3.3, then it's fine to update once to 3.4. If the method gets deprecated in 3.4, then it will be removed in 3.5!

`pycaching.login(username=None, password=None)`

A shortcut for user login.

Create a *Geocaching* instance and try to login a user. See *Geocaching.login()*.

Returns Created *Geocaching* instance.

2.2.1 Geocaching

class `pycaching.geocaching.Geocaching(*, session=None)`

Provides some basic methods for communicating with geocaching.com website.

Provides methods to login and search. There are also some shortcut methods in this class to make working with pycaching more convenient.

geocode (*location*)

Return a *Point* object from geocoded location.

Parameters *location* (*str*) – Location to geocode.

get_cache (*wp=None, guid=None*)

Return a *Cache* object by its waypoint or GUID.

Parameters

- **wp** (*str*) – Cache waypoint.
- **guid** (*str*) – Cache GUID.

Note: Provide only the GUID or the waypoint, not both.

get_logged_user (*login_page=None*)

Return the name of currently logged user.

Parameters *login_page* (*bs4.BeautifulSoup*) – Object containing already loaded page.

Returns User's name or *None*, if no user is logged in.

Return type *str* or *None*

get_trackable (*tid*)

Return a *Trackable* object by its trackable ID.

Parameters *tid* (*str*) – Trackable ID.

login (*username=None, password=None*)

Log in the user for this instance of Geocaching.

If username or password is not set, try to load credentials from file. Then load login page and do some checks about currently logged user. As a last thing post the login form and check result.

Parameters

- **username** (*str*) – User's username or *None* to use data from credentials file.

- **password** (*str*) – User’s password or `None` to use data from credentials file.

Raises `LoginFailedException` – If login fails either because of bad credentials or non-existing credentials file.

logout ()

Log out the user for this instance.

my_dnfs (*limit=inf*)

Get an iterable of the logged-in user’s DNFs.

Parameters **limit** – The maximum number of results to return (default: infinity).

my_finds (*limit=inf*)

Get an iterable of the logged-in user’s finds.

Parameters **limit** – The maximum number of results to return (default: infinity).

my_logs (*log_type=None, limit=inf*)

Get an iterable of the logged-in user’s logs.

Parameters

- **log_type** – The log type to search for. Use a `Type` value. If set to `None`, all logs will be returned (default: `None`).
- **limit** – The maximum number of results to return (default: infinity).

post_log (*wp, text, type=<Type.found_it: '2'>, date=None*)

Post a log for cache.

Parameters

- **wp** (*str*) – Cache waypoint.
- **text** (*str*) – Log text.
- **type** (*log.Type*) – Type of log.
- **date** (*datetime.date*) – Log date. If set to `None`, `datetime.date.today()` is used instead.

search (*point, limit=inf*)

Return a generator of caches around some point.

Search for caches around some point by loading search pages and parsing the data from these pages. Yield `Cache` objects filled with data from search page. You can provide `limit` as a convenient way to stop generator after certain number of caches.

Parameters

- **point** (*geo.Point*) – Search center point.
- **limit** (*int*) – Maximum number of caches to generate.

search_quick (*area, *, strict=False, zoom=None*)

Return a generator of caches in some area.

Area is converted to map tiles, each tile is then loaded and `Cache` objects are then created from its blocks.

Parameters

- **strict** (*bool*) – Whether to return caches strictly in the *area* and discard others.
- **zoom** (*int*) – Zoom level of tiles. You can also specify it manually, otherwise it is automatically determined for whole `Area` to fit into one `Tile`. Higher zoom level is more precise, but requires more tiles to be loaded.

search_rect (*rect*: *pycaching.geo.Rectangle*, *, *per_query*: *int* = 200, *sort_by*: *Union[str, pycaching.geocaching.SortOrder]* = <*SortOrder.date_last_visited*: 'datelastvisited'>, *origin*: *Optional[pycaching.geo.Point]* = None, *wait_sleep*: *bool* = True)
Return a generator of caches in given Rectangle area.

Parameters

- **rect** – Search area.
- **per_query** (*int*) – Number of caches requested in single query.
- **sort_by** – Order cached by given criterion.
- **origin** – Origin point for search by distance.
- **wait_sleep** – In case of rate limits exceeding, wait appropriate time if set True, otherwise just yield None.

class *pycaching.geocaching.SortOrder*
Enum of possible cache sort orderings returned in Groundspeak API.

2.2.2 Cache

class *pycaching.cache.Cache* (*geocaching*, *wp*, ***kwargs*)
Represents a geocache with its properties and methods for loading them.

Provides some getters and setters for geocache properties like name, size, terrain, etc. Also contains two possible methods to load cache details and ensures, that these methods are called when accessing a property which hasn't been filled yet.

There are also methods for posting and loadings logs here. For more detail about Logs, please refer to [Log](#).

In summary, this class contains everything, which is possible to see or do on geocache page on [geocaching.com](#).

classmethod *from_block* (*block*)
Return *Cache* instance from *Block*.

Used during quick search. The Cache will have only GC code, name and approximate location filled in.

Parameters *block* (*Block*) – Source block

classmethod *from_trackable* (*trackable*)
Return *Cache* instance from *Trackable*.

This only makes sense, if trackable is currently placed in cache. Otherwise it will have unexpected behavior.

Parameters *trackable* (*Trackable*) – Source trackable.

load ()
Load all possible cache details.

Use full cache details page. Therefore all possible properties are filled in, but the loading is a bit slow.

If you want to load basic details about a PM only cache, the *PMOnlyException* is still thrown, but available details are filled in. If you know, that the cache you are loading is PM only, please consider using *load_quick()* as it will load the same details, but quicker.

Note: This method is called automatically when you access a property which isn't yet filled in (so-called "lazy loading"). You don't have to call it explicitly.

Raises

- ***PMOnlyException*** – If cache is PM only and current user is basic member.
- ***LoadError*** – If cache loading fails (probably because of not existing cache).

load_by_guid()

Load cache details using the GUID to request and parse the caches ‘print-page’. Loading as many properties as possible except the following ones, since they are not present on the ‘print-page’:

- original_location
- state
- found
- pm_only

Raises ***PMOnlyException*** – If the PM only warning is shown on the page

load_logbook(limit=inf)

Return a generator of logs for this cache.

Yield instances of *Log* filled with log data.

Parameters **limit** (*int*) – Maximum number of logs to generate.

load_quick()

Load basic cache details.

Use information from geocaching map tooltips. Therefore loading is very quick, but the only loaded properties are: *name*, *type*, *state*, *size*, *difficulty*, *terrain*, *hidden*, *author*, *favorites* and *pm_only*.

Raises ***LoadError*** – If cache loading fails (probably because of not existing cache).

load_trackables(limit=inf)

Return a generator of trackables in this cache.

Yield instances of *Trackable* filled with trackable data.

Parameters **limit** (*int*) – Maximum number of trackables to generate.

post_log(log)

Post a log for this cache.

Parameters **log** (*Log*) – Previously created *Log* filled with data.

attributes

The cache attributes.

Setter Set a cache attributes. Walk through passed *dict* and use *str* keys as attribute names and *bool* values as positive / negative attributes. Unknown attributes are ignored with warning (you can find possible attribute keys in *Cache._possible_attributes*).

Type *dict*

author

The cache author.

Type *str*

description

The cache long description.

Type *str*

difficulty

The cache difficulty.

Setter Set a cache difficulty. It must be in a common range - 1 to 5 in 0.5 steps.

Type `float`

favorites

The cache favorite points.

Type `int`

found

The cache found status.

True if cache is found by current user, False if not.

Type `bool`

geocaching

A reference to *Geocaching* used for communicating with geocaching.com.

Type *Geocaching* instance

guid

The cache GUID. An identifier used at some places on geocaching.com

Type `str`

hidden

The cache hidden date.

Setter Set a cache hidden date. If `str` is passed, then `util.parse_date()` is used and its return value is stored as a date.

Type `datetime.date`

hint

The cache hint.

Setter Set a cache hint. Don't decode text, you have to use `util.rot13()` before.

Type `str`

location

The cache location.

Setter Set a cache location. If `str` is passed, then `Point.from_string()` is used and its return value is stored as a location.

Type *Point*

log_counts

The log count for each log type.

Setter Store a dictionary of log counts for each type used in the logbook of the current cache.

Type `dict`

name

A human readable name of cache.

Type `str`

original_location

The cache original location.

Setter Set a cache original location. If `str` is passed, then

`Point.from_string()` is used and its return value is stored as a location. :type: `Point`

pm_only

If the cache is PM only.

Type `bool`

size

The cache size.

Setter Set a cache size. If `str` is passed, then `cache.Size.from_string()` is used and its return value is stored as a size.

Type `cache.Size`

state

The cache status.

True if cache is enabled, False if cache is disabled.

Type `bool`

summary

The cache text summary.

Type `str`

terrain

The cache terrain.

Setter Set a cache terrain. It must be in a common range - 1 to 5 in 0.5 steps.

Type `float`

type

The cache type.

Setter Set a cache type. If `str` is passed, then `cache.Type.from_string()` is used and its return value is stored as a type.

Type `cache.Type`

visited

The cache log date (filled by function `geocaching.my_logs()` if cache is created there)

Setter Set a cache log date. If `str` is passed, then `util.parse_date()` is used and its return value is stored as a date.

Type `datetime.date`

waypoints

Any waypoints listed in the cache.

Setter Store a dictionary of locations using their lookup.

Type `dict`

wp

The cache GC code, must start with GC.

Type `str`

class `pypatching.cache.Waypoint` (`id=None`, `type=None`, `location=None`, `note=None`)

Waypoint represents a waypoint related to the cache. This may be a Parking spot, a stage in a multi-cache or similar.

Parameters

- **identifier** (*str*) – the unique identifier of the location
- **type** (*str*) – type of waypoint
- **location** (*Point*) – waypoint coordinates
- **note** (*str*) – Information about the waypoint

classmethod from_html (*soup*, *table_id*)

Return a dictionary of all waypoints found in the page representation

Parameters

- **soup** (*bs4.BeautifulSoup*) – parsed html document containing the waypoints table
- **table_id** (*str*) – html id of the waypoints table

identifier

The waypoint unique identifier.

Type *str*

location

The waypoint location.

Type *Point*

note

Any additional information about the waypoint.

Type *str*

type

The waypoint type.

Type *str*

class `pycaching.cache.Type`

Enum of possible cache types.

according to

- <https://www.geocaching.com/app/ui-icons/sprites/cache-types.svg>
- https://www.geocaching.com/about/cache_types.aspx

`cache_in_trash_out_event = '13'`

`cito = '13'`

`community_celebration = '3653'`

`earthcache = '137'`

`event = '6'`

`from_filename = <bound method Type.from_filename of <enum 'Type'>>`

`from_number = <bound method Type.from_number of <enum 'Type'>>`

`from_string = <bound method Type.from_string of <enum 'Type'>>`

`geocaching_hq = '3773'`

`giga_event = '7005'`

`gps_adventures_exhibit = '1304'`

```
gps_maze = '1304'
groundspk_block_party = '4738'
groundspk_hq = '3773'
hq_celebration = '3774'
letterbox = '5'
locationless = '12'
lost_and_found_event = '3653'
mega_event = '453'
multicache = '3'
mystery = '8'
project_ape = '9'
puzzle = '8'
reverse = '12'
traditional = '2'
unknown = '8'
virtual = '4'
webcam = '11'
wherigo = '1858'
```

class pycaching.cache.Size

Enum of possible cache sizes.

Naming follows Groundspk image filenames, values are human readable names.

```
from_filename = <bound method Size.from_filename of <enum 'Size'>>
from_number = <bound method Size.from_number of <enum 'Size'>>
from_string = <bound method Size.from_string of <enum 'Size'>>
large = 'large'
micro = 'micro'
not_chosen = 'not chosen'
other = 'other'
regular = 'regular'
small = 'small'
virtual = 'virtual'
```

2.2.3 Logs

class pycaching.log.Log(*, uuid=None, type=None, text=None, visited=None, author=None)

Represents a log record with its properties.

author

The log author.

Type `str`

text
The log text.

Type `str`

type
The log type.

Type `log.Type`

uuid
The log unique identifier.

Type `str`

visited
The log date.

Setter Set a log date. If `str` is passed, then `util.parse_date()` is used and its return value is stored as a date.

Type `datetime.date`

class `pycaching.log.Type`
Enum of possible log types.

Values are log type IDs (as used in HTML `<option value=XX>` on the log page). Also the log images can be found there - <https://www.geocaching.com/images/logtypes/{}VALUE{}.png>

`announcement = '74'`

`archive = '5'`

`attended = '10'`

`didnt_find_it = '3'`

`discovered_it = '48'`

`enable_listing = '23'`

`found_it = '2'`

`from_filename = <bound method Type.from_filename of <enum 'Type'>>`

`grabbed_it = '19'`

`marked_missing = '16'`

`needs_archive = '7'`

`needs_maintenance = '45'`

`note = '4'`

`oc_team_comment = '83'`

`owner_maintenance = '46'`

`placed_it = '14'`

`post_reviewer_note = '18'`

`publish_listing = '24'`

`retract = '25'`

```

retrieved_it = '13'
submit_for_review = '76'
temp_disable_listing = '22'
unarchive = '12'
update_coordinates = '47'
visit = '75'
webcam_photo_taken = '11'
will_attend = '9'

```

2.2.4 Trackables

```

class pycaching.trackable.Trackable(geocaching, tid, *, name=None, location=None,
                                     owner=None, type=None, description=None,
                                     goal=None, url=None)

```

Represents a trackable with its properties.

get_KML()

Return the KML route of the trackable.

Return type `str`

load()

Load all possible details about the trackable.

Note: This method is called automatically when you access a property which isn't yet filled in (so-called "lazy loading"). You don't have to call it explicitly.

Raises `LoadError` – If trackable loading fails (probably because of not existing cache).

post_log(log, tracking_code)

Post a log for this trackable.

Parameters

- **log** (`Log`) – Previously created `Log` filled with data.
- **tracking_code** (`str`) – A tracking code to verify current trackable holder.

description

The trackable long description.

Type `str`

geocaching

A reference to `Geocaching` used for communicating with geocaching.com.

Type `Geocaching` instance

goal

The trackable goal.

Type `str`

location

The trackable current location.

Can be either string with location description (eg. “in the hands of someone”) or cache URL.

Type `str`

name

A human readable trackable name.

Type `str`

owner

The trackable owner.

Type `str`

tid

The trackable ID, must start with TB.

Type `str`

type

The trackable type.

A type depends on the trackable icon. It can be either “Travel Bug Dog Tag” or specific geocoin name, eg. “Adventure Race Hracholusky 2015 Geocoin”.

Type `str`

2.2.5 Geo utilities

`pycaching.geo.to_decimal(deg, min)`

Convert coordinates from degrees minutes to decimal degrees format.

class `pycaching.geo.Point`

A point on earth defined by its latitude, longitude and possibly more attributes.

Subclass of `geopy.Point`.

classmethod `from_location(geocaching, location)`

Return a `Point` instance from geocoded location.

Parameters

- **geocaching** (`Geocaching`) – Reference to `Geocaching` instance, used to do a geocoding request.
- **location** (`str`) – Location to geocode.

Raises `GeocodeError` – If location cannot be geocoded (not found).

classmethod `from_string(string)`

Return a `Point` instance from coordinates in degrees minutes format.

This method can handle various malformed formats. Example inputs are:

- S 36 51.918 E 174 46.725 or
- N 6 52.861 w174 43.327

Parameters **string** (`str`) – Coordinates to parse.

Raises `ValueError` – If string cannot be parsed as coordinates.

class pycaching.geo.**Polygon** (*points)
Area defined by bordering Point instances.
Subclass of Area.
bounding_box
Get area's bounding box (*Rectangle* computed from min and max coordinates).
mean_point
Return *Point* with average latitude and longitude of all area's points.
class pycaching.geo.**Rectangle** (point_a, point_b)
Upright rectangle.
Subclass of *Polygon*.
__contains__ (p)
Return if the rectangle contains a point.
Parameters p (*Point*) – Examined point.
diagonal
Return a length of bounding box diagonal in meters as *int*.

2.2.6 Errors

exception pycaching.errors.**BadBlockError**
exception pycaching.errors.**Error**
General pycaching error.
exception pycaching.errors.**GeocodeError**
Geocoding failed.
Probably because of non-existing location.
exception pycaching.errors.**LoadError**
Object loading failed.
Probably because of non-existing object or missing informations required to load it.
exception pycaching.errors.**LoginFailedException**
Login failed.
The provided credentials probably doesn't work to log in.
exception pycaching.errors.**NotLoggedInException**
Tried to perform an operation which requires logging in first.
exception pycaching.errors.**PMOnlyException**
Requested cache is PM only.
exception pycaching.errors.**TooManyRequestsError** (url: str, rate_limit_reset: int = 0)
Geocaching API rate limit has been reached.
wait_for ()
Wait enough time to release Rate Limits.
exception pycaching.errors.**ValueError**
Wrapper for Python's native ValueError.
Can be raised in various situations, but most commonly when unexpected property value is set.

2.3 Contributing

2.3.1 First time

1. Clone a repository from GitHub:

```
git clone https://github.com/tomasbedrich/pycaching.git
cd pycaching
```

2. *Optional:* create a virtualenv:

```
python3 -m venv .
source bin/activate # Unix
Scripts\activate # Windows
```

3. Setup an environment:

```
python3 setup.py develop
```

2.3.2 Typical workflow

1. Pick an issue labeled as “[contributors friendly](#)” or create a new one. **Notify others** that you will solve this problem (write a comment on GitHub).
2. *Optional:* Activate the virtualenv:

```
source bin/activate # Unix
Scripts\activate # Windows
```

3. Write some **code and tests**. After that, don’t forget to update the **docs**. See coding style below.
4. Run the linter and tests:

```
python3 setup.py lint test
```

Make sure that:

- there are no lint errors,
- all tests are passing,
- the coverage is above 95%.

5. Push your work and create a **pull request**. Yay!

2.3.3 Coding style

- For code, follow [PEP8](#).
 - Use **double quotes**.
 - Try to keep line length below **100 characters** (or 120 if absolutely necessary).
 - Use `.format()` for string formatting.
- For docs, please follow [PEP257](#).

- **Importing modules** is okay for modules from standard library. If you want to include a third-party module, please consult it on GitHub before.
- Please use regular expressions only as a last resort. When possible, use string manipulations, such as `split()` and then list operations. It is more readable.

2.4 Appendix

2.4.1 Legal notice

Be sure to read [Geocaching.com's terms of use](#). By using this piece of software you break them and your Geocaching account may be suspended or *even deleted*. To prevent this, I recommend you to load the data you really need, nothing more. This software is provided “as is” and I am not responsible for any damage possibly caused by it.

2.4.2 Inspiration

Original version was inspired by these packages:

- [Geocache Grabber](#) (by Fuad Tabba)
- [geocaching-py](#) (by Lev Shamardin)

Although the new version was massively rewritten, I'd like to thank to their authors.

2.4.3 Authors

Authors of this project are [all contributors](#). Maintainer is [Tomáš Bedřich](#).

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