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# **sport-activities-features**

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# USER DOCUMENTATION

<b>1</b>	<b>General outline of the framework</b>	<b>3</b>
<b>2</b>	<b>Detailed insights</b>	<b>5</b>
<b>3</b>	<b>Historical Weather Data</b>	<b>7</b>
<b>4</b>	<b>Documentation</b>	<b>9</b>
4.1	Getting Started . . . . .	9
4.1.1	Installation . . . . .	9
4.1.2	Examples . . . . .	9
4.2	Installation . . . . .	9
4.2.1	Setup development environment . . . . .	9
4.3	Testing . . . . .	10
4.4	Documentation . . . . .	10
4.5	API . . . . .	11
4.5.1	sport_activities_features . . . . .	11
4.6	Contributing to sport-activities-features . . . . .	18
4.6.1	Code of Conduct . . . . .	18
4.6.2	How Can I Contribute? . . . . .	18
4.7	Contributor Covenant Code of Conduct . . . . .	19
4.7.1	Our Pledge . . . . .	19
4.7.2	Our Standards . . . . .	19
4.7.3	Enforcement Responsibilities . . . . .	19
4.7.4	Scope . . . . .	20
4.7.5	Enforcement . . . . .	20
4.7.6	Enforcement Guidelines . . . . .	20
4.7.7	Attribution . . . . .	21
4.8	Contributors . . . . .	21
4.8.1	Credits . . . . .	21
4.9	License . . . . .	21
	<b>Bibliography</b>	<b>23</b>
	<b>Python Module Index</b>	<b>25</b>
	<b>Index</b>	<b>27</b>



sport-activities-features is a minimalistic toolbox for extracting features from sport activity files written in Python.

- **Free software:** MIT license
- **Github repository:** <https://github.com/firefly-cpp/sport-activities-features>
- **Python versions:** 3.6.x, 3.7.x, 3.8.x



## **GENERAL OUTLINE OF THE FRAMEWORK**

Monitoring of sport activities produces many geographic, topologic and personalized data, with a vast majority of details hidden. Thus, a rigorous ex-post data analysis and statistic evaluation are required to extract them. Namely, most of the mainstream solutions for analyzing sport activities files rely on integral metrics, such as total duration, total distance and average hearth rate, which may suffer of “overall (integral) metrics problem”. Among others, such problems are expressed in capturing sport activities in general only (ommiting crucial components), calculating potentially fallacious and misleading metrics, not recognizing different stages/phases of the sport activity (warm-up, endurance, intervals), and others.

The sport-activities-framework on the other side offers a detailed insight into the sport activity files. The framework supports both identification and extraction methods, such as identifying number of hills, extracting the average altitudes of identified hills, measuring total distance of identified hills, deriving climbing ratios (total distance of identified hills vs. total distance), average/total ascents of hills and so much more. The framework also integrates many other extensions, among others historical weather parsing, statistical evaluations and ex-post visualizations. Previous work on these topical questions were addressed in [1] [relevant scientific papers on data mining](#), also in a combination with the [generating/predicting automated sport training sessions](#).





## DETAILED INSIGHTS

The sport-activities-features framework is compatible with TCX & GPX activity files and [Overpass API](#) nodes. Current version withholds (but is not limited to) following functions:

- extracting integral metrics, such as total distance, total duration, calories ([see example](#)),
- extracting topographic features, such as number of hills, average altitude of identified hills, total distance of identified hills, climbing ratio, average ascent of hills, total ascent, total descent ([see example](#)),
- plotting identified hills ([see example](#)),
- extracting the intervals, such as number of intervals, maximum/minimum/average duration of intervals, maximum/minimum/average distance of intervals, maximum/minimum/average heart rate during intervals,
- plotting the identified intervals ([see example](#)),
- calculating the training loads, such as Bannister TRIMP, Lucia TRIMP ([see example](#)),
- parsing the historical weather data from an external service,
- extracting the integral metrics of the activity inside area given with coordinates (distance, heartrate, speed) ([see example](#)),
- extracting the activities from CSV file(s) and randomly selecting the specific number of activities ([see example](#)),
- extracting the dead ends,
- and much more.

The framework comes with two (testing) benchmark datasets, which are freely available to download from: [DATASET1](#), [DATASET2](#).



## HISTORICAL WEATHER DATA

Weather data parsed is collected from the [Visual Crossing Weather API](#). Please note that this is an external unaffiliated service and users must register to use the API. The service has a free tier (1000 Weather reports / day) but is otherwise operating on a pay-as-you-go model. For pricing and terms of use please read the [official documentation](#) of the API provider.



## DOCUMENTATION

The main documentation is organized into a couple of sections:

- *User Documentation*
- *Developer Documentation*
- *About*

### 4.1 Getting Started

This section is going to show you how to use the sport-activities-features toolbox.

#### 4.1.1 Installation

Firstly, install sport-activities-features package using the following command:

```
pip install sport-activities-features
```

To install sport-activities-features on Fedora, use:

```
dnf install python3-sport-activities-features
```

After the successful installation you are ready to run your first example.

#### 4.1.2 Examples

You can find usage examples [here](#).

### 4.2 Installation

#### 4.2.1 Setup development environment

##### Requirements

- Poetry: <https://python-poetry.org/docs/>

After installing Poetry and cloning the project from GitHub, you should run the following command from the root of the cloned project:

```
$ poetry install
```

All of the project's dependencies should be installed and the project ready for further development. **Note that Poetry creates a separate virtual environment for your project.**

## Development dependencies

List of sport-activities-features dependencies:

Package	Version	Platform
geopy	^2.0.0	All
matplotlib	^3.3.3	All
tcxreader	^0.3.0	All
requests	^2.25.1	All
niaaml	^1.1.0	All

List of development dependencies:

Package	Version	Platform
Sphinx	^3.5.1	Any
sphinx-rtd-theme	^0.5.1	Any

## 4.3 Testing

Before making a pull request, if possible provide tests for added features or bug fixes.

In case any of the test cases fails, those should be fixed before we merge your pull request to master branch.

For the purpose of checking if all test are passing locally you can run following command:

```
$ poetry run python -m unittest discover
```

## 4.4 Documentation

To locally generate and preview documentation run the following command in the project root folder:

```
$ poetry run sphinx-build ./docs ./docs/_build
```

If the build of the documentation is successful, you can preview the documentation in the docs/\_build folder by clicking the `index.html` file.

## 4.5 API

This is the sport-activities-features API documentation, auto generated from the source code.

### 4.5.1 sport\_activities\_features

**class** sport\_activities\_features.**AverageWeather**(*weather\_a: Optional[sport\_activities\_features.weather\_objects.Weather.Weather] = None, weather\_b: Optional[sport\_activities\_features.weather\_objects.Weather.Weather] = None, weight\_a=None*)

Bases: object

Class for providing average weather from two Weather objects

**class** sport\_activities\_features.**BanisterTRIMP**(*duration: float, avg\_hr: float*)

Bases: object

Class for calculation of Banisters TRIMP.

**Args:** duration (float): total duration in minutes avg\_hr (float): average heart rate in bpm

**calculate\_TRIMP()** → float

Method for the calculation of TRIMP.

**Returns:** float: TRIMP value

**class** sport\_activities\_features.**DataAnalysis**(*\*\*kwargs*)

Bases: object

Class for data analysis that uses automated machine learning to analyze extracted sport features.

**Args:** **\*\*kwargs**: various arguments

**analyze\_data**(*src: str, fitness\_name: str, population\_size: numpy.uint32, number\_of\_evaluations: numpy.uint32, optimization\_algorithm: str, classifiers: Iterable, feature\_selection\_algorithms: Optional[Iterable] = None, feature\_transform\_algorithms: Optional[Iterable] = None, imputer: Optional[str] = None*) → niaaml.pipeline.Pipeline

Method for running AutoML process using NiaAML PipelineOptimizer class instance.

**Args:** src (str): path to a CSV file fitness\_name (str): name of the fitness class to use as a function population\_size (uint): number of individuals in the optimization process number\_of\_evaluations (uint): number of maximum evaluations optimization\_algorithm (str): name of the optimization algorithm to use classifiers (Iterable[Classifier]): array of names of possible classifiers feature\_selection\_algorithms (Optional[Iterable[str]]): array of names of possible feature selection algorithms feature\_transform\_algorithms (Optional[Iterable[str]]): array of names of possible feature transform algorithms imputer (Optional[str]): name of the imputer used for features that contain missing values

**Returns:** Pipeline: instance of Pipeline object from the NiaAML framework

**Note:** See NiaAML's documentation for more details on possible input parameters' values and further usage of the returned Pipeline object.

**static load\_pipeline**(*file\_name: str*) → niaaml.pipeline.Pipeline

Method for loading a NiaAML's pipeline from a binary file.

**Args:** file\_name (str): path to a binary pipeline file

**Note:** See NiaAML's documentation for more details on the use of the Pipeline class.

```
class sport_activities_features.DataExtraction(activities: list)
    Bases: object
    Class for storing activities' analysed data in CSV files.
    Args: activities (list): list of activities
    extract_data(path: str) → None
        This method is used for extracting the data of the activities into separate CSV files.
        Args: path (str): absolute path where the CSV files should be saved
class sport_activities_features.DataExtractionFromCSV(activities: Optional[list] = None)
    Bases: object
    Class for extracting data from CSV files.
    Args: activities (list): list of activities
    from_all_files(path: str) → list
        Method for extracting data to list of dataframes from all CSV files in the folder.
        Args: path (str): absolute path to the folder with CSV files
        Returns: list: list of activities
    from_file(path: str) → list
        Method for extracting data from CSV file to dataframe.
        Args: path (str): absolute path to the CSV file
        Returns: list: list of activities
    select_random_activities(number: int) → list
        Method for selecting random activities.
        Args: number (int): desired number of random activities
        Returns: list: list of random activities
class sport_activities_features.ElevationIdentification(open_elevation_api: str = 'https://api.open-
    elevation.com/api/v1/lookup', positions: list
    = [])
    Bases: object
    Class for retrieving elevation data using Open Elevation Api.
    Args: open_elevation_api (str): address of the Open Elevation Api, default https://api.open-elevation.com/api/
    v1/lookup positions (list[(lat1, lon1), (lat2, lon2) ...]): list of tuples of latitudes and longitudes
    fetch_elevation_data(payload_formatting: bool = True) → list
        Method for making requests to the Open Elevation API to retrieve elevation data.
        Args: payload_formatting (bool): True -> break into chunks, False -> don't break self.positions into chunks
        Returns: list[int]: list of elevations for the given positions
class sport_activities_features.GPXFile
    Bases: object
    Class for reading GPX files.
    extract_integral_metrics(filename) → dict
        Method for parsing one GPX file and extracting integral metrics.
        Returns: int_metrics: {
```



```

        "activity_type": activity_type, "distance": distance, "duration": duration, "calories": calories,
        "hr_avg": hr_avg, "hr_max": hr_max, "hr_min": hr_min, "altitude_avg": altitude_avg,
        "altitude_max": altitude_max, "altitude_min": altitude_min, "ascent": ascent, "descent": descent,
    }

```

**read\_directory**(*directory\_name: str*) → list

Method for finding all GPX files in a directory.

**Args:** *directory\_name* (str): name of the directory in which to identify GPX files

**Returns:** list: array of paths to the identified files

**read\_one\_file**(*filename*)

Method for parsing one GPX file.

**Returns:** activity: {

```

        "activity_type": activity_type, "positions": positions, "altitudes": altitudes, "distances": distances,
        "total_distance": total_distance, "timestamps": timestamps, "heartrates": heartrates,
        "speeds": speeds
    }

```

**Note:** In the case of missing value in raw data, we assign None.

**class** sport\_activities\_features.**HillIdentification**(*altitudes: list, ascent\_threshold: float*)

Bases: object

Class for identification of hills from TCX file.

**Args:** *altitudes* (list): an array of altitude values extracted from TCX file *ascent\_threshold* (float): parameter that defines the hill (hill >= ascent\_threshold)

**identify\_hills**() → None

Method for identifying hills and extracting total ascent and descent from data.

**Note:** [WIP] Algorithm is still in its preliminary stage.

**return\_hill**(*ascent\_threshold: float*) → bool

Method for identifying whether the hill is steep enough to be identified as a hill.

**Args:** *ascent\_threshold* (float): threshold of the ascent that is used for identifying hills

**Returns:** bool: True if the hill is recognised, False otherwise

**return\_hills**() → list

Method for returning identified hills.

**Returns:** list: array of identified hills

**class** sport\_activities\_features.**IntervalIdentificationByHeartRate**(*distances: list, timestamps: list, altitudes: list, heart\_rates: list, minimum\_time: int = 30*)

Bases: object

Class for identifying intervals based on heart rate.

**Args:** *distances* (list): list of cumulative distances *timestamps* (list): list of timestamps *altitudes* (list): list of altitudes *heart\_rates* (list): list of heart rates *minimum\_time* (int): minimum time of an interval given in seconds

**calculate\_interval\_statistics()** → dict

Method for calculating interval statistics.

**Returns:**

```
data = { "number_of_intervals": number_of_intervals, "min_duration_interval": min_duration_interval,
         "max_duration_interval": max_duration_interval, "avg_duration_interval": avg_duration_interval,
         "min_distance_interval": min_distance_interval, "max_distance_interval": max_distance_interval,
         "avg_distance_interval": avg_distance_interval, "min_heartrate_interval": min_heartrate_interval,
         "max_heartrate_interval": max_heartrate_interval, "avg_heartrate_interval": avg_heartrate_interval,
       }
```

**identify\_intervals()** → None

Method for identifying intervals from given data.

**return\_intervals()** → list

Method for retrieving identified intervals.

**Returns:** list: identified intervals

**class** sport\_activities\_features.IntervalIdentificationByPower(*distances: list, timestamps: list, altitudes: list, mass: int, minimum\_time: int = 30*)

Bases: object

Class for identifying intervals based on power.

**Args:** distances (list): list of cumulative distances timestamps (list): list of timestamps altitudes (list): list of altitudes mass (int): total mass of an athlete given in kilograms minimum\_time (int): minimum time of an interval given in seconds

**calculate\_interval\_statistics()** → dict

Method for calculating interval statistics.

**Returns:**

```
data = { "number_of_intervals": number_of_intervals, "min_duration": min_duration_interval,
         "max_duration": max_duration_interval, "avg_duration": avg_duration_interval,
         "min_distance": min_distance_interval, "max_distance": max_distance_interval,
         "avg_distance": avg_distance_interval,
       }
```

**identify\_intervals()** → None

Method for identifying intervals from given data.

**return\_intervals()** → list

Method for retrieving identified intervals.

**Returns:** list: identified intervals

**class** sport\_activities\_features.PlotData

Bases: object

Class for plotting the extracted data.

**draw\_basic\_map()** → None

Method for plotting the whole topographic map and rendering the plot.

**draw\_hills\_in\_map**(*altitude: list, distance: list, identified\_hills: list*) → None

Method for plotting all hills identified in data on topographic map and rendering the plot.

**Args:** altitude (list): list of altitudes distance (list): list of distances identified\_hills (list): list of identified hills

**draw\_intervals\_in\_map**(*timestamp: list, distance: list, identified\_intervals: list*) → None  
Method for plotting all intervals identified in data on topographic map and rendering the plot.

**Args:** timestamp (datetime): list of timestamps distance (float): list of distances identified\_intervals (list): list of identified intervals

**get\_positions\_of\_hills**(*identified\_hills: list*) → list  
Method for retrieving positions of identified hills.

**Args:** identified\_hills (list): list of identified hills

**Returns:** list: list of hills

**get\_positions\_of\_intervals**(*identified\_intervals: list*) → list  
Method for retrieving positions of identified intervals.

**Args:** identified\_intervals (list): list of identified intervals

**Returns:** list: list of intervals

**plot\_basic\_map**(*altitude: list, distance: list*) → <module 'matplotlib.pyplot' from  
'/usr/lib/python3.10/site-packages/matplotlib/pyplot.py'>  
Method for plotting the whole topographic map.

**Args:** altitude (list): list of altitudes distance (list): list of distances

**Returns:** plt

**plot\_hills\_on\_map**(*altitude: list, distance: list, identified\_hills: list*) → <module 'matplotlib.pyplot' from  
'/usr/lib/python3.10/site-packages/matplotlib/pyplot.py'>  
Method for plotting all hills identified in data on topographic map.

**Args:** altitude (list): list of altitudes distance (list): list of distances identified\_hills (list): list of identified hills

**Returns:** plt

**plot\_intervals\_in\_map**(*timestamp: list, identified\_intervals: list*) → <module 'matplotlib.pyplot' from  
'/usr/lib/python3.10/site-packages/matplotlib/pyplot.py'>  
Method for plotting all intervals identified in data on topographic map.

**Args:** timestamp (list): list of timestamps identified\_intervals (list): list of identified intervals

**Returns:** plt

**class** sport\_activities\_features.StoredSegments(*segment, ascent*)

Bases: object

Class for stored segments.

**Args:** segment (): ascent ():

**Note:** [WIP] This class is still under developement, therefore its methods may not work as expected.

**class** sport\_activities\_features.TCXFile

Bases: object

Class for reading TCX files.

**extract\_integral\_metrics**(*filename: str*) → dict  
Method for parsing one TCX file and extracting integral metrics.

**Args:** filename (str): name of the TCX file to be read

**Returns:**

```
int_metrics = { "activity_type": activity_type, "distance": distance, "duration": duration, "calories":
    calories, "hr_avg": hr_avg, "hr_max": hr_max, "hr_min": hr_min, "altitude_avg": altitude_avg,
    "altitude_max": altitude_max, "altitude_min": altitude_min, "ascent": ascent, "descent": de-
    scent,
}
```

**read\_directory**(*directory\_name: str*) → list

Method for finding all TCX files in a directory.

**Args:** *directory\_name* (str): name of the directory in which to identify TCX files

**Returns:** str: array of paths to the identified files

**read\_one\_file**(*filename: str*) → dict

Method for parsing one TCX file using the TCXReader.

**Args:** *filename* (str): name of the TCX file to be read

**Returns:**

```
activity = { "activity_type": activity_type, "positions": positions, "altitudes": altitudes, "distances":
    distances, "total_distance": total_distance, "timestamps": timestamps, "heartrates": heartrates,
    "speeds": speeds
}
```

**Note:** In the case of missing value in raw data, we assign None.

**class** sport\_activities\_features.**TopographicFeatures**(*identified\_hills: list*)

Bases: object

Class for feature extraction from topographic maps.

**Args:** *identified\_hills* (list): identified hills are now passed to this class

**ascent**(*altitude\_data: list*) → float

Method for ascent calculation.

**Args:** *altitude\_data* (list): list of altitudes

**Returns:** float: total ascent

**Note:** [WIP] This method should be improved.

**avg\_altitude\_of\_hills**(*alts: list*) → float

Method for calculating the average altitude of all identified hills in sport activity.

**Args:** *alts* (list): list of altitudes

**Returns:** float: average altitude

**avg\_ascent\_of\_hills**(*alts: list*) → float

Method for calculating the average ascent of all hills in sport activity.

**Args:** *alts* (list): list of altitudes

**Returns:** float: average ascent

**calculate\_distance**(*latitude\_1: float, latitude\_2: float, longitude\_1: float, longitude\_2: float*) → float

Method for calculating the distance between the two pairs of coordinates.

**Args:** *latitude\_1* (float): first latitude *latitude\_2* (float): second latitude *longitude\_1* (float): first longitude  
*longitude\_2* (float): second longitude

**Returns:** float: distance in kilometers

**calculate\_hill\_gradient**(*latitude\_1: float, latitude\_2: float, longitude\_1: float, longitude\_2: float, height\_1: float, height\_2: float*) → float

Method for calculation of the hill gradient in percent.

**Args:** latitude\_1 (float): first latitude latitude\_2 (float): second latitude longitude\_1 (float): first longitude longitude\_2 (float): second longitude height\_1 (float): first altitude height\_2 (float): second altitude

**Returns:** float: gradient in degrees

**descent**(*altitude\_data: list*) → float

Method for descent calculation.

**Args:** altitude\_data (list): list of altitudes

**Returns:** float: total descent

**Note:** [WIP] This method should be improved.

**distance\_of\_hills**(*positions: list*) → float

Method for calculating the total distance of all identified hills in sport activity.

**Args:** positions (list): list of positions

**Returns:** float: distance of hills

**num\_of\_hills**() → int

Method for calculating the number of identified hills in sport activity.

**Returns:** int: number of hills

**share\_of\_hills**(*hills\_dist: float, total\_dist: float*) → float

Method for calculating the share of hills in sport activity (percentage).

**Args:** hills\_dict (float): distance of all hills total\_dist (float): total distance

**Returns:** float: share of hills

**class** sport\_activities\_features.**Weather**(*temperature: float = None, maximum\_temperature: float = None, minimum\_temperature: float = None, wind\_chill: float = None, heat\_index: float = None, precipitation: float = None, snow\_depth: float = None, wind\_speed: float = None, wind\_direction=None, wind\_gust=None, visibility: float = None, cloud\_cover: float = None, relative\_humidity: float = None, weather\_type: str = None, sea\_level\_pressure=None, dew\_point=None, solar\_radiation=None, conditions: str = None, date: <module 'datetime' from 'usr/lib/python3.10/datetime.py'> = None, location=None, index: int = None*)

Bases: object

A class for the Weather object files. Args reported based on VisualCrossing API description.

**class** sport\_activities\_features.**WeatherIdentification**(*locations: list[float, float], timestamps: list[datetime.datetime], vc\_api\_key: str, unit\_group='metric'*)

Bases: object

A class used for identification of Weather data from TCX file. For identification of weather an external API is used (<https://www.visualcrossing.com/>).

**Args:** locations (list[(float, float)]): coordinates of exercise recordings, found in TCXFile/GPXFile generated dictionary under “positions” timestamps (list[datetime]): timestamps of exercise recordings, found in TCX-File/GPXFile generated dictionary under “timestamps” vc\_api\_key (str): API key for accessing Visual-Crossing weather data unit\_group (str): Unit group of data recieved. Possible options ‘metric’ (default), ‘us’, ‘uk’, ‘base’.

**Warnings:** vc\_api\_key : api key is required

**classmethod** `get_average_weather_data`(*timestamps: list[datetime.datetime], weather: list[sport\_activities\_features.weather\_objects.Weather.Weather]*)  
→ list

Method generates average weather for each of the timestamps in training by averaging the weather before and after the timestamp, using the `__find_nearest_weathers()` method.

**Args:** timestamps (list[datetime]): datetime recordings from the TCXFile parsed data weather (list[Weather]): list of weather objects retrieved from VisualCrossing API

**Returns:** list[AverageWeather]: list which is an AverageWeather object for each of the given timestamps

**get\_weather**(*time\_delta: int = 30*) → list[sport\_activities\_features.weather\_objects.Weather.Weather]  
Method that queries the VisualCrossing weather API for meteorological data at provided (minute) time intervals.

**Args:** time\_delta (int): time between two measurements, default 30 mins

**Returns:** list[Weather]: list of Weather objects from the nearest meteorological station for every interval (time\_delta minutes) of training

## 4.6 Contributing to sport-activities-features

First off, thanks for taking the time to contribute!

### 4.6.1 Code of Conduct

This project and everyone participating in it is governed by the [Contributor Covenant Code of Conduct](#). By participating, you are expected to uphold this code. Please report unacceptable behavior to [iztok.fister1@um.si](mailto:iztok.fister1@um.si).

### 4.6.2 How Can I Contribute?

#### Reporting Bugs

Before creating bug reports, please check existing issues list as you might find out that you don’t need to create one. When you are creating a bug report, please include as many details as possible in the issue template.

## Suggesting Enhancements

Open new issue using the feature request template.

## Pull requests

Fill in the pull request template and make sure your code is documented.

## 4.7 Contributor Covenant Code of Conduct

### 4.7.1 Our Pledge

We as members, contributors, and leaders pledge to make participation in our community a harassment-free experience for everyone, regardless of age, body size, visible or invisible disability, ethnicity, sex characteristics, gender identity and expression, level of experience, education, socio-economic status, nationality, personal appearance, race, religion, or sexual identity and orientation.

We pledge to act and interact in ways that contribute to an open, welcoming, diverse, inclusive, and healthy community.

### 4.7.2 Our Standards

Examples of behavior that contributes to a positive environment for our community include:

- Demonstrating empathy and kindness toward other people
- Being respectful of differing opinions, viewpoints, and experiences
- Giving and gracefully accepting constructive feedback
- Accepting responsibility and apologizing to those affected by our mistakes, and learning from the experience
- Focusing on what is best not just for us as individuals, but for the overall community

Examples of unacceptable behavior include:

- The use of sexualized language or imagery, and sexual attention or advances of any kind
- Trolling, insulting or derogatory comments, and personal or political attacks
- Public or private harassment
- Publishing others' private information, such as a physical or email address, without their explicit permission
- Other conduct which could reasonably be considered inappropriate in a professional setting

### 4.7.3 Enforcement Responsibilities

Community leaders are responsible for clarifying and enforcing our standards of acceptable behavior and will take appropriate and fair corrective action in response to any behavior that they deem inappropriate, threatening, offensive, or harmful.

Community leaders have the right and responsibility to remove, edit, or reject comments, commits, code, wiki edits, issues, and other contributions that are not aligned to this Code of Conduct, and will communicate reasons for moderation decisions when appropriate.

#### 4.7.4 Scope

This Code of Conduct applies within all community spaces, and also applies when an individual is officially representing the community in public spaces. Examples of representing our community include using an official e-mail address, posting via an official social media account, or acting as an appointed representative at an online or offline event.

#### 4.7.5 Enforcement

Instances of abusive, harassing, or otherwise unacceptable behavior may be reported to the community leaders responsible for enforcement at [iztok.fister1@um.si](mailto:iztok.fister1@um.si). All complaints will be reviewed and investigated promptly and fairly.

All community leaders are obligated to respect the privacy and security of the reporter of any incident.

#### 4.7.6 Enforcement Guidelines

Community leaders will follow these Community Impact Guidelines in determining the consequences for any action they deem in violation of this Code of Conduct:

##### 1. Correction

**Community Impact:** Use of inappropriate language or other behavior deemed unprofessional or unwelcome in the community.

**Consequence:** A private, written warning from community leaders, providing clarity around the nature of the violation and an explanation of why the behavior was inappropriate. A public apology may be requested.

##### 2. Warning

**Community Impact:** A violation through a single incident or series of actions.

**Consequence:** A warning with consequences for continued behavior. No interaction with the people involved, including unsolicited interaction with those enforcing the Code of Conduct, for a specified period of time. This includes avoiding interactions in community spaces as well as external channels like social media. Violating these terms may lead to a temporary or permanent ban.

##### 3. Temporary Ban

**Community Impact:** A serious violation of community standards, including sustained inappropriate behavior.

**Consequence:** A temporary ban from any sort of interaction or public communication with the community for a specified period of time. No public or private interaction with the people involved, including unsolicited interaction with those enforcing the Code of Conduct, is allowed during this period. Violating these terms may lead to a permanent ban.



## 4. Permanent Ban

**Community Impact:** Demonstrating a pattern of violation of community standards, including sustained inappropriate behavior, harassment of an individual, or aggression toward or disparagement of classes of individuals.

**Consequence:** A permanent ban from any sort of public interaction within the community.

### 4.7.7 Attribution

This Code of Conduct is adapted from the [Contributor Covenant](https://www.contributor-covenant.org/version/2/0/code_of_conduct.html), version 2.0, available at [https://www.contributor-covenant.org/version/2/0/code\\_of\\_conduct.html](https://www.contributor-covenant.org/version/2/0/code_of_conduct.html).

Community Impact Guidelines were inspired by [Mozilla's code of conduct enforcement ladder](#).

For answers to common questions about this code of conduct, see the FAQ at <https://www.contributor-covenant.org/faq>. Translations are available at <https://www.contributor-covenant.org/translations>.

## 4.8 Contributors

### 4.8.1 Credits

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#### Contributors

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- Luka Pečnik
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- Alen Rajšp

## 4.9 License

### MIT License

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## PYTHON MODULE INDEX

### S

`sport_activities_features`, [11](#)



## INDEX

### A

`analyze_data()` (*sport\_activities\_features.DataAnalysis* method), 11  
`ascent()` (*sport\_activities\_features.TopographicFeatures* method), 16  
`AverageWeather` (class in *sport\_activities\_features*), 11  
`avg_altitude_of_hills()` (*sport\_activities\_features.TopographicFeatures* method), 16  
`avg_ascent_of_hills()` (*sport\_activities\_features.TopographicFeatures* method), 16

### B

`BanisterTRIMP` (class in *sport\_activities\_features*), 11

### C

`calculate_distance()` (*sport\_activities\_features.TopographicFeatures* method), 16  
`calculate_hill_gradient()` (*sport\_activities\_features.TopographicFeatures* method), 17  
`calculate_interval_statistics()` (*sport\_activities\_features.IntervalIdentificationByHeartRate* method), 13  
`calculate_interval_statistics()` (*sport\_activities\_features.IntervalIdentificationByPower* method), 14  
`calculate_TRIMP()` (*sport\_activities\_features.BanisterTRIMP* method), 11

### D

`DataAnalysis` (class in *sport\_activities\_features*), 11  
`DataExtraction` (class in *sport\_activities\_features*), 11  
`DataExtractionFromCSV` (class in *sport\_activities\_features*), 12  
`descent()` (*sport\_activities\_features.TopographicFeatures* method), 17  
`distance_of_hills()` (*sport\_activities\_features.TopographicFeatures* method), 17

`draw_basic_map()` (*sport\_activities\_features.PlotData* method), 14  
`draw_hills_in_map()` (*sport\_activities\_features.PlotData* method), 14  
`draw_intervals_in_map()` (*sport\_activities\_features.PlotData* method), 15

### E

`ElevationIdentification` (class in *sport\_activities\_features*), 12  
`extract_data()` (*sport\_activities\_features.DataExtraction* method), 12  
`extract_integral_metrics()` (*sport\_activities\_features.GPXFile* method), 12  
`extract_integral_metrics()` (*sport\_activities\_features.TCXFile* method), 15

### F

`fetch_elevation_data()` (*sport\_activities\_features.ElevationIdentification* method), 12  
`from_all_files()` (*sport\_activities\_features.DataExtractionFromCSV* method), 12  
`from_file()` (*sport\_activities\_features.DataExtractionFromCSV* method), 12

### G

`get_average_weather_data()` (*sport\_activities\_features.WeatherIdentification* class method), 18  
`get_positions_of_hills()` (*sport\_activities\_features.PlotData* method), 15  
`get_positions_of_intervals()` (*sport\_activities\_features.PlotData* method), 15  
`get_weather()` (*sport\_activities\_features.WeatherIdentification* method), 18  
`GPXFile` (class in *sport\_activities\_features*), 12

## H

HillIdentification (class in *sport\_activities\_features*), 13

## I

identify\_hills() (*sport\_activities\_features.HillIdentification* method), 13

identify\_intervals() (*sport\_activities\_features.IntervalIdentificationByHeartRate* method), 14

identify\_intervals() (*sport\_activities\_features.IntervalIdentificationByPower* method), 14

IntervalIdentificationByHeartRate (class in *sport\_activities\_features*), 13

IntervalIdentificationByPower (class in *sport\_activities\_features*), 14

## L

load\_pipeline() (*sport\_activities\_features.DataAnalysis* static method), 11

## M

module *sport\_activities\_features*, 1, 11

## N

num\_of\_hills() (*sport\_activities\_features.TopographicFeatures* method), 17

## P

plot\_basic\_map() (*sport\_activities\_features.PlotData* method), 15

plot\_hills\_on\_map() (*sport\_activities\_features.PlotData* method), 15

plot\_intervals\_in\_map() (*sport\_activities\_features.PlotData* method), 15

PlotData (class in *sport\_activities\_features*), 14

## R

read\_directory() (*sport\_activities\_features.GPXFile* method), 13

read\_directory() (*sport\_activities\_features.TCXFile* method), 16

read\_one\_file() (*sport\_activities\_features.GPXFile* method), 13

read\_one\_file() (*sport\_activities\_features.TCXFile* method), 16

return\_hill() (*sport\_activities\_features.HillIdentification* method), 13

return\_hills() (*sport\_activities\_features.HillIdentification* method), 13

return\_intervals() (*sport\_activities\_features.IntervalIdentificationByHeartRate* method), 14

return\_intervals() (*sport\_activities\_features.IntervalIdentificationByPower* method), 14

## S

select\_random\_activities() (*sport\_activities\_features.DataExtractionFromCSV* method), 12

share\_of\_hills() (*sport\_activities\_features.TopographicFeatures* method), 17

*sport\_activities\_features* module, 1, 11

StoredSegments (class in *sport\_activities\_features*), 15

## T

TCXFile (class in *sport\_activities\_features*), 15

TopographicFeatures (class in *sport\_activities\_features*), 16

## W

Weather (class in *sport\_activities\_features*), 17

WeatherIdentification (class in *sport\_activities\_features*), 17