PyGCE

API Documentation

April 17, 2017

Contents

Co	ontents	1
1	Package pygce 1.1 Modules	3 3
2	Package pygce.analysis 2.1 Modules	4 4
3	Module pygce.analysis.cli 3.1 Functions	5
4	4.4.2 Properties	6 6 7 7 7 8 8 8 9 10 10 11 11
5	5.1 Functions	12 12 13
	6.1 Modules	14 14 14
7	Module pygce.models.bot	15

CONTENTS

	7.1	Class GarminConnectBot	15
			15
		7.1.2 Properties	17
		7.1.3 Class Variables	17
8	Pacl	kage pygce.models.garmin	18
	8.1		18
	8.2		18
9	Mod	dule pygce.models.garmin.activities	19
	9.1		19
10	Mod	dule pygce.models.garmin.timeline	20
10			20
			20
	10.2		20
			21
	10.3	<u>.</u>	21
	10.5	10.3.1 Methods	22
		10.3.2 Properties	23
	10.4	Class GCDaySteps	23
	10.1	10.4.1 Methods	23
		10.4.2 Properties	24
	10.5		25
	10.0	10.5.1 Methods	25
		10.5.2 Properties	26
	10.6	Class GCDayActivities	26
		10.6.1 Methods	27
		10.6.2 Properties	28
	10.7	Class GCDayBreakdown	29
			29
			30
	10.8	Class GCDayTimeline	30
		10.8.1 Methods	31
		10.8.2 Properties	32
11	Mod	dule pygce.models.garmin.utils	33
			33
			33
In	dex		35

Variables Package pygce

1 Package pygce

1.1 Modules

```
analysis (Section 2, p. 4)

cli (Section 3, p. 5)
models (Section 4, p. 6)

cli (Section 5, p. 12)
models (Section 6, p. 14)

bot (Section 7, p. 15)
garmin (Section 8, p. 18)
activities (Section 9, p. 19)
timeline (Section 10, p. 20)
utils (Section 11, p. 33)
```

1.2 Variables

Name	Description
package	Value: None

2 Package pygce.analysis

2.1 Modules

- cli (Section 3, p. 5)
- models (Section 4, p. 6)

2.2 Variables

Name	Description
package	Value: None

3 Module pygce.analysis.cli

3.1 Functions

create_args()

:return: ArgumentParser
 Parser that handles cmd arguments.

parse_args(parser)

:param parser: ArgumentParser
 Object that holds cmd arguments.
:return: tuple
 Values of arguments.

check_args(folder_path)

:param folder_path: str
 Path to folder with data files to analyse

 $\mathbf{main}()$

4 Module pygce.analysis.models

4.1 Class GarminDataFilter

```
object — pygce.analysis.models.GarminDataFilter

Parses and fixes raw data
```

4.1.1 Methods

```
__init__(self, dataset_file)

:param dataset_file: str
    Path to folder with data to analyse

Overrides: object.__init__
```

```
parse_csv(self)
:return: tuple [], [] of []
    Headers of csv file and data
```

```
convert_time_columns(headers, headers_to_convert, data)

:param headers: [] of str
    Column names of data
:param headers_to_convert: [] of str
    Column names of data to convert from time format to float
:param data: [] of []
    Raw data
:return: [] of []
    Input data but with converted time columns
```

```
fix_floats(headers, headers_to_fix, data)

:param headers: [] of str
    Column names of data
:param headers_to_fix: [] of str
    Column names of data to fix the float format
:param data: [] of []
    Raw data
:return: [] of []
    Input data but with fixed floats in columns
```

Inherited from object

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

4.1.2 Properties

Name	Description
Inherited from object	
class	

4.2 Class StatsAnalysis

object —
pygce.analysis.models.GarminDataFilter —
pygce.analysis.models.StatsAnalysis

Computes correlation of data

4.2.1 Methods

-_init__(self, dataset_file)

:param dataset_file: str
 Path to folder with data to analyse
Overrides: object.__init__

```
show_correlation_matrix(self, title_image, headers_to_analyze)

:param title_image: str
    Title of output image
:param headers_to_analyze: [] of str
    Compute correlation matrix of only these headers
:return: void
    Shows correlation matrix of data of files in folder
```

 $Inherited\ from\ pygce.analysis.models.GarminDataFilter(Section\ 4.1)$

convert_time_columns(), fix_floats(), parse_csv()

Inherited from object

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

4.2.2 Properties

Name	Description
Inherited from object	
class	

4.3 Class TimelineDataAnalysis

object —

pygce.analysis.models.GarminDataFilter —

pygce.analysis.models.StatsAnalysis —

pygce.analysis.models.TimelineDataAnalysis

Machine-learn timeline data

4.3.1 Methods

```
__init__(self, dataset_file)

:param dataset_file: str
    Path to folder with data to analyse

Overrides: object.__init__
```

```
parse_csv(self)

:return: tuple [], [] of []
   Headers of csv file and data
Overrides: pygce.analysis.models.GarminDataFilter.parse_csv
```

show_correlation_matrix_of_data(self)

:return: void

Shows correlation matrix of data of files in folder

predict_feature(self, feature)

:param feature: str

Name of feature (column name) to predict

:return: TODO TODO

cluster_analyze(self, n_clusters=6)

:param n_clusters: int Number of clusters

:return: void

Computes cluster analysis: see days based on differences.

Each day is different from one another, there are days where you trained more, of The goal is to divide your days into categories (e.g highly-active, active ...) This way, the input matrix consists of multiple vectors with each one consisting

Inherited from pygce.analysis.models.StatsAnalysis(Section 4.2)

show_correlation_matrix()

$Inherited\ from\ pygce.analysis.models.GarminDataFilter(Section\ 4.1)$

convert_time_columns(), fix_floats()

Inherited from object

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

4.3.2 Properties

Name	Description
Inherited from object	
class	

4.3.3 Class Variables

Name	Description
HEADERS_TO_ANALYZ-	Value: ["SUMMARY:kcal_count",
E	"STEPS:distance", "SLEEP:light_sle
TIME_HEADERS_TO_C-	Value: ["SLEEP:nap_time",
ONVERT	"SLEEP:light_sleep_time",
	"SLEEP:awake

4.4 Class ActivitiesDataAnalysis

object —

pygce.analysis.models.GarminDataFilter —

pygce.analysis.models.StatsAnalysis —

pygce.analysis.models.ActivitiesDataAnalysis

Machine-learn activities data

4.4.1 Methods

__init__(self, dataset_file)

:param dataset_file: str
 Path to folder with data to analyse
Overrides: object.__init__

```
parse_csv(self)

:return: tuple [], [] of []

Headers of csv file and data

Overrides: pygce.analysis.models.GarminDataFilter.parse_csv
```

shows_correlation_matrix_of_data(self)

:return: void

Shows correlation matrix of data of files in folder

Inherited from pygce.analysis.models.StatsAnalysis(Section 4.2)

show_correlation_matrix()

$Inherited\ from\ pygce.analysis.models.GarminDataFilter(Section\ 4.1)$

convert_time_columns(), fix_floats()

Inherited from object

4.4.2 Properties

Name	Description
Inherited from object	
_class	

4.4.3 Class Variables

Name	Description
HEADERS_TO_ANALYZ-	Value: ["Distance", "Time", "Avg
E	Speed(Avg Pace)", "Max Speed(Be
TIME_HEADERS_TO_C-	Value: ["Time", "Avg Speed(Avg Pace)",
ONVERT	"Max Speed(Best Pace)"]
HEADERS_WITH_MALF-	Value: ["Distance", "Training Effect"]
ORMED_FLOATS	

5 Module pygce.cli

5.1 Functions

$\mathbf{parse_yyyy_mm_dd}(\mathit{d})$

:param d: str

Date in the form yyyy-mm-dd to parse

:return: datetime
Date parsed

create_args()

:return: ArgumentParser

Parser that handles cmd arguments.

$parse_args(parser)$

:param parser: ArgumentParser

Object that holds cmd arguments.

:return: tuple

Values of arguments.

Variables Module pygce.cli

```
check_args(user, password, chromedriver, days, format_out, path_out)

:param user: str
    User to use
:param password: str
    Password to use
:param chromedriver: str
    Path to chromedriver to use
:param days: [] of datetime.date
    Days to save
:param format_out: str
    Format of output file (json, csv)
:param path_out: str
    File to use as output
:return: bool
    True iff args are correct
```

 $\mathbf{main}()$

5.2 Variables

Name	Description
AVAILABLE_OUTPUT	Value: ["json", "csv"]
FORMATS	

6 Package pygce.models

6.1 Modules

- bot (Section 7, p. 15)
- garmin (Section 8, p. 18)
 - activities (Section 9, p. 19)
 - timeline (Section 10, p. 20)
 - utils (Section 11, p. 33)

6.2 Variables

Name	Description
package	Value: None

7 Module pygce.models.bot

7.1 Class GarminConnectBot

 $\begin{array}{c} \text{object} \ \ \, \\ \ \ \, \\ \ \ \, \text{pygce.models.bot.GarminConnectBot} \end{array}$

Navigate through Garmin Connect app via a bot

7.1.1 Methods

:param user_name: str
 Username (email) to login to Garmin Connect
:param password: str
 Password to login to Garmin Connect
:param chromedriver_path: str
 Path to Chrome driver to use as browser
Overrides: object.__init__

 $\frac{\mathbf{login}(self)}{\text{:return: bool}}$ True iff correctly logged in

get_user_id(self)

:return: void
 Retrieves user unique id and token

go_to_dashboard(self)

:return: void
 Navigates to user homepage

go_to_day(self, date_time)

:param date_time: datetime
 Datetime object with date

:return: void

Navigates to daily summary of given date

get_day(self, date_time)

:param date_time: datetime
 Datetime object with date

:return: GCDayTimline
Data about day

get_days(self, min_date_time, max_date_time)

:param min_date_time: datetime

Datetime object with date, this is the date when to start downloading data

:param max_date_time: datetime

Datetime object with date, this is the date when to stop downloading data

:return: [] of GCDayTimline List of data about days

save_json_days(self, min_date_time, max_date_time, output_file)

:param min_date_time: datetime

Datetime object with date, this is the date when to start downloading data

:param max_date_time: datetime

Datetime object with date, this is the date when to stop downloading data

:param output_file: str

Path where to save output to

:return: void

Retrieves data about days in given range, then saves json dump

save_csv_days(self, min_date_time, max_date_time, output_file)

:param min_date_time: datetime

Datetime object with date, this is the date when to start downloading data

:param max_date_time: datetime

Datetime object with date, this is the date when to stop downloading data

:param output_file: str

Path where to save output to

:return: void

Retrieves data about days in given range, then saves csv dump

Inherited from object

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

7.1.2 Properties

Name	Description
Inherited from object	
class	

7.1.3 Class Variables

Name	Description	
USER_DASHBOARD	Value:	
	"https://connect.garmin.com/modern/"	
LOGIN_URL	Value:	
	"https://sso.garmin.com/sso/login?service	=https%3A%2F%2Fc.
LOGIN_BUTTON_ID	Value: "login-btn-signin"	
USERNAME_FIELD_NA-	Value: "username"	
ME		
PASSWORD_FIELD_NA-	Value: "password"	
ME		
BROWSER_WAIT_TIME-	Value: 5	
OUT_SECONDS		

8 Package pygce.models.garmin

8.1 Modules

- activities (Section 9, p. 19)
- timeline (Section 10, p. 20)
- utils (Section 11, p. 33)

8.2 Variables

Name	Description
_package	Value: None

9 Module pygce.models.garmin.activities

9.1 Variables

Name	Description
package	Value: None

10 Module pygce.models.garmin.timeline

10.1 Variables

Name	Description
package	Value: 'pygce.models.garmin'

10.2 Class GCDaySection

object —

pygce.models.garmin.timeline.GCDaySection

Known Subclasses: pygce.models.garmin.timeline.GCDayActivities, pygce.models.garmin.timeline.GCDaySleep, pygce.models.garmin.timeline.GCDaySteps, pygce.models.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.GCDaySteps.garmin.timeline.garmin.timel

Standard section in the Garmin Connect timeline of day.

10.2.1 Methods

:param raw_html: str
 HTML source snippet with information about section
:param tag: str
 Unique str in order not to mistake this GCDaySection with another one
Overrides: object.__init__

parse(self)

:return: void
 Parses raw html source and tries to finds all information

 $\underline{\mathbf{to_dict}(\mathit{self})}$

:return: dict

Dictionary with keys (obj fields) and values (obj values)

 $to_{-j}son(self)$

:return: json object

A json representation of this object

to_csv_dict(self)

:return: {}

Like self.to_json() but with a unique str before each key to spot against differ

Inherited from object

10.2.2 Properties

Name	Description
Inherited from object	
class	

10.3 Class GCDaySummary

object —

pygce.models.garmin.timeline.GCDay Section

pygce.models.garmin.timeline.GCDaySummary

Standard activity in the Garmin Connect timeline of day. Common features are likes, comment, kcal

10.3.1 Methods

 $_$ **init** $_$ ($self, raw_html$)

:param raw_html: str

HTML source snippet with information about section

Overrides: object.__init__

parse(self)

:return: void

Parses raw html source and tries to finds all information

 $Overrides:\ pygce.models.garmin.timeline.GCDay Section.parse\ extit (inherited$

documentation)

parse_likes(self)

:return: void

Finds likes count and stores value

 $parse_comment(self)$

:return: void

Finds comment value and stores value

parse_kcal_count(self)

:return: void

Finds kcal value and stores value

 $\mathbf{to_dict}(\mathit{self})$

:return: dict

Dictionary with keys (obj fields) and values (obj values)

Overrides: pygce.models.garmin.timeline.GCDaySection.to_dict extit(inherited

documentation)

$Inherited\ from\ pygce.models.garmin.timeline.GCDaySection(Section\ 10.2)$

Inherited from object

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

10.3.2 Properties

Name	Description
Inherited from object	
class	

10.4 Class GCDaySteps

object —

pygce.models.garmin.timeline.GCDaySection

pygce.models.garmin.timeline.GCDay Steps

Standard activity in the Garmin Connect timeline of day. Common features are total, goal, distance, avg daily

10.4.1 Methods

 $_init_(self, raw_html)$

:param raw_html: str

HTML source snippet with information about section

Overrides: object.__init__

parse(self)

:return: void

Parses raw html source and tries to finds all information

 $Overrides:\ pygce.models.garmin.timeline.GCDay Section.parse\ extit (inherited a constant of the constant of$

documentation)

parse_steps_count(self)

:return: void

Parses HTML source and finds goal and daily steps

parse_steps_stats(self)

:return: void

Parses HTML source and finds daily distance and avg daily steps

 $\mathbf{to_dict}(\mathit{self})$

:return: dict

Dictionary with keys (obj fields) and values (obj values)

 $Overrides:\ pygce.models.garmin.timeline.GCDaySection.to_dict\ extit (inherited and all other pygce.models.garmin.timeline.GCDaySection.to_dict\ extit (inherited and all other pygce.garmin.timeline.garmin.garmin.timeline.garmin.timeline.garmin.timeline.garmin.timeline.garmin.garmin.timeline.garmin.$

documentation)

 $Inherited\ from\ pygce.models.garmin.timeline.GCDaySection(Section\ 10.2)$

to_csv_dict(), to_json()

Inherited from object

__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()

10.4.2 Properties

Name	Description
Inherited from object	
class	

10.5 Class GCDaySleep

object —

pygce.models.garmin.timeline.GCDaySection -

pygce.models.garmin.timeline.GCDaySleep

Standard activity in the Garmin Connect timeline of day. Common features are total, deep total, light total, awake total

10.5.1 Methods

 $_$ **init** $__(self, raw_html)$

:param raw_html: str

HTML source snippet with information about section

Overrides: object._init__

parse(self)

:return: void

Parses raw html source and tries to finds all information

Overrides: pygce.models.garmin.timeline.GCDaySection.parse extit(inherited

documentation)

parse_sleep_totals(self)

:return: void

Finds value of night/nap/total sleep times

 $parse_bed_time(self)$

:return: void

Finds hour start/end sleep



Finds deep/light/awake sleep times

 $\mathbf{to_dict}(self)$

:return: dict

Dictionary with keys (obj fields) and values (obj values)

 $Overrides: \ pygce.models.garmin.timeline.GCDaySection.to_dict\ extit(inherited\ documentation)$

$Inherited\ from\ pygce.models.garmin.timeline.GCDaySection(Section\ 10.2)$

to_csv_dict(), to_json()

$Inherited\ from\ object$

10.5.2 Properties

Name	Description
Inherited from object	
class	

10.6 Class GCDayActivities

object —

pygce.models.garmin.timeline.GCDaySection

pygce.models.garmin.timeline.GCDayActivities

Standard activity in the Garmin Connect timeline of day. Common features are kcal, time, distance, type, name, link

10.6.1 Methods

 $_$ **init** $_$ (self, raw_html)

:param raw_html: str

HTML source snippet with information about section

Overrides: object.__init__

parse(self)

:return: void

Parses raw html source and tries to finds all information

 $Overrides:\ pygce.models.garmin.timeline.GCDay Section.parse\ extit (inherited$

documentation)

parse_activity(raw_html)

:param raw_html: str html code

Raw HTML code of row of table containing activity to parse

:return: dict

Dict with values of activity

 $to_dict(self)$

:return: dict

Dictionary with keys (obj fields) and values (obj values)

 $Overrides:\ pygce.models.garmin.timeline.GCDaySection.to_dict\ extit (inherited) and the pygce.models.garmin.timeline.GCDaySection.to_dict\ extit (inherited) and the pygce.garmin.timeline.GCDaySection.to_dict\ extit (inherited) and the pygce.garmin.timeline.garmin.g$

documentation)

to_json(self)

:return: json object

A json representation of this object

Overrides: pygce.models.garmin.timeline.GCDaySection.to_json extit(inherited

documentation)

```
to_csv_dict(self)

:return: {}
    Like super.to_csv_dict() but with totals instead
Overrides: pygce.models.garmin.timeline.GCDaySection.to_csv_dict
```

```
get_total_kcal(self)

:return: float
   Total kcal of all activities
```

```
:return: timedelta
    Total duration of all activities
```

```
get_total_distance(self)

:return: float
    Total distance of all activities
```

```
get_totals_dict(self)

:return: {}
    Self dict but with totals instead (total kcal, total distance ...)
```

Inherited from object

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

10.6.2 Properties

Name	Description
Inherited from object	
class	

10.7 Class GCDayBreakdown

object —

pygce.models.garmin.timeline.GCDaySection -

pygce.models.garmin.timeline.GCDayBreakdown

Standard activity in the Garmin Connect timeline of day. Common features are highly active %, active %, sedentary %, sleep %

10.7.1 Methods

 $_$ init $_$ (self, raw $_$ html)

:param raw_html: str

HTML source snippet with information about section

Overrides: object.__init__

parse(self)

:return: void

Parses raw html source and tries to finds all information

Overrides: pygce.models.garmin.timeline.GCDaySection.parse extit(inherited

documentation)

to_dict(self)

:return: dict

Dictionary with keys (obj fields) and values (obj values)

 $Overrides:\ pygce.models.garmin.timeline.GCDaySection.to_dict\ extit (inherited) and the pygce.models.garmin.timeline.GCDaySection.to_dict\ extit (inherited) and the pygce.garmin.timeline.GCDaySection.to_dict\ extit (inherited) and the pygce.garmin.timeline.garmin.g$

documentation)

 $Inherited\ from\ pygce.models.garmin.timeline.GCDaySection(Section\ 10.2)$

to_csv_dict(), to_json()

Inherited from object

__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(),

10.7.2 Properties

Name	Description
Inherited from object	
class	

10.8 Class GCDayTimeline

object —

pygce.models.garmin.timeline.GCDayTimeline

Standard Garmin Connect timeline of day as in webpage. Each standard day consists of different sections:

- summary (day, likes, comment, kcal)
- steps (total, goal, distance, avg daily)
- sleep (total, deep total, light total, awake total)
- activities (for each one: kcal, time, distance, type, name, link)
- breakdown (highly active %, active %, sedentary %, sleep %)

10.8.1 Methods

__init__(self, date_time, summary_html, steps_section_html, selep_section_html, breakdown_section_html)

:param date_time: datetime
 Datetime of day
:param summary_html: str
 HTML source snippet with information about the day
:param steps_section_html: str
 HTML source snippet with information about daily steps
:param sleep_section_html: str
 HTML source snippet with information about daily sleep
:param activities_section_html: str
 HTML source snippet with information about daily activities
:param breakdown_section_html: str
 HTML source snippet with information about daily breakdown
Overrides: object.__init__

```
parse(self)
:return: void
```

Finds all sections to parse, then builds corresponding objects and parses every

```
__getattr__(self, item)
```

```
:return: dict
    Dictionary with keys (obj fields) and values (obj values)
```

```
to_csv_dict(self)

:return: {}
```

Like self.to_dict() but with a set with keys and values NOT nested. Also for act

```
to_json(self)

:return: json object
    A json representation of this object
```

$Inherited\ from\ object$

```
__delattr__(), __format__(), __getattribute__(), __hash__(), __new__(), __reduce__(), __reduce_ex__(), __repr__(), __setattr__(), __sizeof__(), __str__(), __subclasshook__()
```

10.8.2 Properties

Name	Description
Inherited from object	
class	

11 Module pygce.models.garmin.utils

11.1 Functions

```
parse_num(n)

:param n: str
   Number to parse
:return: float
   Parses numbers written like 123,949.99
```

```
parse_hh_mm_ss(h)

:param h: str
   Hours, minutes and seconds in the form hh:mm:ss to parse
:return: datetime.time
   Time parsed
```

```
get_seconds(s)

:param s: str
    Datetime in the form %H:%M:%S
:return: int
    Seconds in time
```

```
parse_hh_mm(h)

:param h: str
   Hours and minutes in the form hh:mm to parse
:return: datetime.time
   Time parsed
```

11.2 Variables

Name	Description
GARMIN_CONNECT_UR-	Value: 'https://connect.garmin.com'
L	

continued on next page

Name	Description
GARMIN_CONNECT_AC-	Value:
TIVITIES_URL	'https://connect.garmin.com/modern/activities
package	Value: 'pygce.models.garmin'

Index

```
pygce (package), 3
pygce.analysis (package), 4
pygce.analysis.cli (module), 5
pygce.analysis.models (module), 6–11
pygce.cli (module), 12–13
pygce.cli.check_args (function), 12
pygce.cli.create_args (function), 12
pygce.cli.main (function), 13
pygce.cli.parse_args (function), 12
pygce.cli.parse_yyyy_mm_dd (function), 12
pygce.models (package), 14
pygce.models.bot (module), 15–17
pygce.models.garmin (package), 18
```