
pyagar Documentation

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pyagar is a python client for the popular online game at <http://agar.io>.

Warning: This software is not the official client and is not associated in any manner with the original website.

This package allows you to play the game, see the gameplay as an spectator, record and replay games and also develop your own bot.

Please, [checkout the documentation](#) for further instructions.

Enjoy!

User documentation

1.1 Installation

1.1.1 Dependencies

You'll need some software in order to run pyagar.

- Python \geq 3.4
- libsd12
- libsd12-gfx
- libsd12-ttf

1.1.2 Linux

Ubuntu 15.04

```
$ sudo apt-get install python3 python3-pip libsd12-2.0-0 libsd12-gfx-1.0-0 libsd12-ttf-2.0-0
$ sudo pip3 install pyagar
```

1.2 Command Line Interface

```
usage: pyagar [-h] [--disable-hw] [-n NICK] [-d] [-r REGION] [-s SAVE]
             [--version] [--create-party | --join-party JOIN_PARTY]
             {list-regions,play,spectate,bot,replay} ...
```

Options:

- disable-hw=False** disable hardware acceleration
- n=pyagar, --nick=pyagar** player cell's nickname
- d, --debug** enable debug mode; use multiple times to increase the debug level
- r=EU-London, --region=EU-London** the region you want to connect to
- s, --save** save the gameplay in a file; you can replay it later using the "replay" command
- version** show program's version number and exit

--create-party=False create a new party and print the shared token

--join-party join an already created party

Sub-commands:

list-regions print a table with the list of available regions

usage: pyagar list-regions [-h]

play start a new game

usage: pyagar play [-h]

spectate connect to the server in spectator mode

usage: pyagar spectate [-h]

bot like ‘‘play‘‘ mode but the cell is controlled by a ‘‘Controller‘‘ class

usage: pyagar bot [-h] (--list-types | --type TYPE | --from-file FROM_FILE)

Options:

--list-types=False print a table with the available ‘‘Controllers‘‘

--type type of controller to use

--from-file use a controller from a python file

replay play back a recorded gameplay

usage: pyagar replay [-h] gameplay_file

Positional arguments:

gameplay_file full path to the record file

1.3 Controls

Action	Peripheral	Detail
Eject	Keyboard	W
Exit	Keyboard	ESC
Fullscreen	Keyboard	F
Move	Mouse	
Split	Keyboard	Space
Start	Mouse	Left
Zoom	Mouse	Wheel

Developer documentation

2.1 pyagar.client

This module contains the Client class.

class `pyagar.client.Client` (*nick, region='EU-London', party=False*)
The client.

Manages the connection, receives the data from the server and sends back any command requested by the player.

connect ()

Connects to the server.

create_party ()

Create a new party.

eject ()

Sends the `mass eject` command.

classmethod **get_regions** ()

Request the list of regions.

get_server ()

Requests a new server and token.

move (*x, y*)

Sends the `movement` command.

read ()

Read, decode and queue data packets from the server.

spawn ()

Sends the `spawn` command.

spectate ()

Initiates the spectator mode.

split ()

Sends the `split cell` command.

`pyagar.client`.**build_request** (*set_header*)

Build a handshake request to send to the server.

Return the *key* which must be passed to `check_response()`.

2.2 pyagar.cmdline

Provides the cmdline facility.

`pyagar.cmdline.pyagar` (*argv=None*)
pyagar cli interface.

`pyagar.cmdline.pyagar_parser` ()
Generates the argument parser.

2.3 pyagar.controller

Some very simple bots.

class `pyagar.control.Center` (*client*)
Go to the center.

class `pyagar.control.Closer` (*client*)
Go to the closer “non-virus” cell, no matter the type.

class `pyagar.control.Controller` (*client*)
All bots should inherit from this class.

do_move ()
Make a movement.

edible
You can eat cells 10% smaller than you.

get_movement ()
The method that subclasses must implement.

get_name ()
Returns the name of this bot.

opponents
Return list of other cells.

player
Returns the player main cell. None if not exists.

predators
Cells that can eat me.

run ()
The main loop of the bot.

viruses
Returns a list of visible viruses.

class `pyagar.control.EatWhenNoPredators` (*client*)
Only eats when all visible cells are smaller than itself.

class `pyagar.control.Escape` (*client*)
Escape from bigger opponents.

compound_escape_vector (*vectors, cells*)
Returns the sum of all vectors.

static escape_vector (*player, cell*)
Movement to escape from a cell.

class `pyagar.control.Greedy` (*client*)
Only wants to eat.

class `pyagar.control.Movement` (*x, y*)

x
Alias for field number 0

y
Alias for field number 1

`pyagar.log`

Contains the logger.

2.4 `pyagar.messages`

Protocol implementation.

class `pyagar.messages.BaseMSG` (*buf, offset=0*)
All messages inherits from this class.

Contains utility methods for unpack the data.

get (*ctype*)
Unpack the given *ctype* and update the offset.

getFloat32 ()
Unpack an `FLOAT32`.

getFloat64 ()
Unpack an `FLOAT64`.

getInt16 ()
Unpack an `INT16`.

getInt32 ()
Unpack an `INT32`.

getInt64 ()
Unpack an `INT64`.

getInt8 ()
Unpack an `INT8`.

getUint16 ()
Unpack an `UINT16`.

getUint32 ()
Unpack an `UINT32`.

getUint64 ()
Unpack an `UINT64`.

getUint8 ()
Unpack an `UINT8`.

parse ()
This method must be implemented in the message subclass.

string (*ctype='H'*)
Unpack a string.

class pyagar.messages.**Camera** (*x, y, zoom*)

x
Alias for field number 0

y
Alias for field number 1

zoom
Alias for field number 2

class pyagar.messages.**CameraPosition** (*buf, offset=0*)
Change in the camera position and/or the zoom.

Only received in Spectate mode.

parse ()
Unpacks the data.

class pyagar.messages.**Cell** (*id, x, y, size, color, is_virus, name*)

color
Alias for field number 4

id
Alias for field number 0

is_virus
Alias for field number 5

name
Alias for field number 6

size
Alias for field number 3

x
Alias for field number 1

y
Alias for field number 2

class pyagar.messages.**Dissapear** (*id*)

id
Alias for field number 0

class pyagar.messages.**Eat** (*eater, eatee*)

eatee
Alias for field number 1

eater
Alias for field number 0

class pyagar.messages.**Leaderboard** (*buf, offset=0*)
The Leaderboard.

The top bigger cells in descending order.

This message is only received in FFA and Experimental mode.

parse ()
Unpacks the data.

class `pyagar.messages.MSG (buf, offset=0)`
All messages.

This class identify the specific message type and calls the proper parser.

parse ()
Unpacks the message identifier and instantiate the parser.

class `pyagar.messages.MSGType`
This enum contains the identifier of each message along with the name of the class which parses it.

cls
Returns the parser class of this enum.

class `pyagar.messages.Player (id, name)`

id
Alias for field number 0

name
Alias for field number 1

class `pyagar.messages.PlayerCell (buf, offset=0)`
ID of the player.

parse ()
Unpacks the data.

class `pyagar.messages.PlayerID (id)`

id
Alias for field number 0

class `pyagar.messages.ResetSomething (buf, offset=0)`
This message is present in the code but never seen.

parse ()
Unpacks the data.

class `pyagar.messages.Screen (x1, y1, x2, y2)`

x1
Alias for field number 0

x2
Alias for field number 2

y1
Alias for field number 1

y2
Alias for field number 3

class `pyagar.messages.ScreenAndCamera (buf, offset=0)`
Screen and Camera position, all in one.

This message is the first message in the stream.

```
parse ()  
    Unpacks the data.
```

```
class pyagar.messages.SetQARA (buf, offset=0)  
    This message is present in the code but never seen.
```

```
parse ()  
    Unpacks the data.
```

```
class pyagar.messages.Status (buf, offset=0)  
    The status of the stage.
```

Who eats who, what is visible, what dissapears...

```
parse ()  
    Unpacks the data.
```

```
class pyagar.messages.TeamsScore (buf, offset=0)  
    The TeamScore.
```

The percent of mass of each team.

This message is only received in the Team mode.

```
parse ()  
    Unpacks the data.
```

2.5 pyagar.utils

Non categorized stuff.

```
class pyagar.utils.GameReplay (filename)  
    Replay the messages saved with GameplaySaver.
```

```
class pyagar.utils.GameplaySaver (filename)  
    Store the gameplay messages in a file with a timestamp.
```

```
class pyagar.utils.Output  
    Prints every message received.
```

```
run ()  
    Logs all everything.
```

```
pyagar.utils.hub (src, *dsts)  
    Broadcasts msgs from src.messages to all dsts.messages.
```

```
pyagar.utils.print_regions (regions)  
    Prints a pretty table with the region data.
```

2.6 pyagar.visual

Provides the default visualizer.

```
class pyagar.visual.Visualizer (client, view_only=False, hardware=True)  
    SDL based visualizer.
```

refresh ()

Draw the current status of the game in window.

The overall process is:

- 1.The server send information about the board size and status.
 - 1.1. We keep the information about the board in gamescreen.
- 2.We draw the game in the texture stage. This texture can be smaller than gamescreen.
- 3.The rectangle camera (in game coordinates) is copied from stage to window.

static remap (*o_val, o_min, o_max, n_min, n_max*)

Map a value from one range to another.

stage = None

The texture we draw to.

tr_game2stage_coords (*x, y*)

Translate from game cords to stage coordinates.

tr_game2stage_size (*size*)

Translate a size (in pixels) from game to stage.

tr_win2game_coords (*x, y*)

Translate from window coords to game coordinates.

window = None

The window where we show the game.

pyagar.visual.asrt (*code*)

If there is an error on a SDL call raise an exception with the error description.

- Party mode implementation (creation and joining).
- Better mouse control.
- Game recording and replaying.
- Documentation.
- Leaderboard.
- Windows installer.

- Documenting pyagar module.

Other Implementations

- <https://github.com/Gjum/pyAgar.io>
- <https://github.com/Raeon/pygar>

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