Pomdp Space Ship Environment Documentation

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POMDP_SPACESHIP_ENV

1.1 pomdp_spaceship_env package

1.1.1 Module contents

POMDP Space Ship Environment

class `pomdp_spaceship_env.`**`Config`**

Bases: `pybind11_builtins.pybind11_object`

`AutoReset`

Determines whether one Space Ship should be reset upon collision or goal condition Type: bool Default: True

`DynamicGoals`

Determines whether the goal points should be moving (dynamic) or not (static) Type: bool Default: False

`NumObs`

Number of obstacles to be generated per Space Ship Type: int Default: 0

`PrintLevel`

Output print Level Type: int Default: 0

`ResX`

Resolution in width. Type: int Default: 1920

`ResY`

Resolution in height. Type: int Default: 1080

`ShareEnvs`

Determines whether the Space Ships should share the Goal Point and Obstacles Type: bool Default: False

`SizeX`

Environment size width Type: float Default: 170

`SizeY`

Environment size height Type: float Default: 100

`Viz`

Visualize the environment. Type: bool Default: False

class `pomdp_spaceship_env.`**`Env`**

Bases: `pybind11_builtins.pybind11_object`

`Draw`(*self: pomdp_spaceship_env.env_core.Env*, *arg0: float*) → None

Draws the Environment without Stepping the Simulation.

ExportFrame (*self: pomdp_spaceship_env.env_core.Env*, *arg0: str*) → None

GetAgentDone (*self: pomdp_spaceship_env.env_core.Env*) → numpy.ndarray[bool[m, 1]]

Get an boolean array which contains "True" if the corresponding ship has collided or met the goal condition. Returns: Numpy Array of Shape (n_ships, 1)

GetMaxIn (*self: pomdp_spaceship_env.env_core.Env*) → List[float[4]]

Get upper actuation limit of the Environment. Returns: Numpy Array of Shape (control_dim, 1)

GetMinIn (*self: pomdp_spaceship_env.env_core.Env*) → List[float[4]]

Get lower actuation limit of the Environment. Returns: Numpy Array of Shape (control_dim, 1)

GetReward (*self: pomdp_spaceship_env.env_core.Env*) → numpy.ndarray[numpy.float32[m, 1]]

Get an array of the current rewards of all ships.

Returns a NumPy Array of Shape (n_ships, 1)

GetState (*self: pomdp_spaceship_env.env_core.Env*) → numpy.ndarray[numpy.float32[m, 521]]

Get an array of the current states of all ships. Returns: Numpy Array of Shape (n_ships, state_dim)

Reset (*self: pomdp_spaceship_env.env_core.Env*) → None

Resets the entire environment. All goal points are regenerated, all ships reinitialized and all obstacles resetted.

ResetToInit (*self: pomdp_spaceship_env.env_core.Env*, *id: int*) → None

Reset a specific ship, specified by its ID, to the initial position.

Input: id: int

SetControl (*self: pomdp_spaceship_env.env_core.Env*, *ControlIn: numpy.ndarray*) → None

Set the control inputs for all shapes. MUST BE OF TYPE np.float32! Input: Numpy Array of Shape (n_ships, control_dim)

SetGoal (*self: pomdp_spaceship_env.env_core.Env*, *id: int*, *x: float*, *y: float*) → None

Set a goal point, specified by the ID, to a specific position. Not working for dynamic goal points. Input: Ship Identifier, id: int x-coordinate, x: float y-coordinate, y: float

SetShip (*self: pomdp_spaceship_env.env_core.Env*, *id: int*, *x: float*, *y: float*, *phi: float*, *vx: float*, *vy: float*, *vphi: float*) → None

Set a specific ship, specified by its ID, to a specific Position. Input: Ship Identifier, id: int x-coordinate, x: float y-coordinate, y: float angle, phi: float x-velocity, vx: float y-velocity, vy: float angular-velocity, vphi: float

SetView (*self: pomdp_spaceship_env.env_core.Env*, *width: float*, *height: float*, *x0: float*, *y0: float*) → None

Set the camera view (viz only). Input: width: float height: float x0: float y0: float

SetViz (*self: pomdp_spaceship_env.env_core.Env*, *draw_rays: bool*, *draw_obs: bool*) → None

Disable or enable obstacle drawing and distance sensor ray drawing. Input: draw_rays: bool draw_obs: bool

Step (**args*, ***kwargs*)

Overloaded function.

1. Step(self: pomdp_spaceship_env.env_core.Env) -> bool

   Steps the environment. If viz was set to True, it will also draw the Environment.

2. Step(self: pomdp_spaceship_env.env_core.Env, dt: float) -> bool

   Steps the environment given an elapsed time. If viz was set to True, it will also draw the Environment.

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