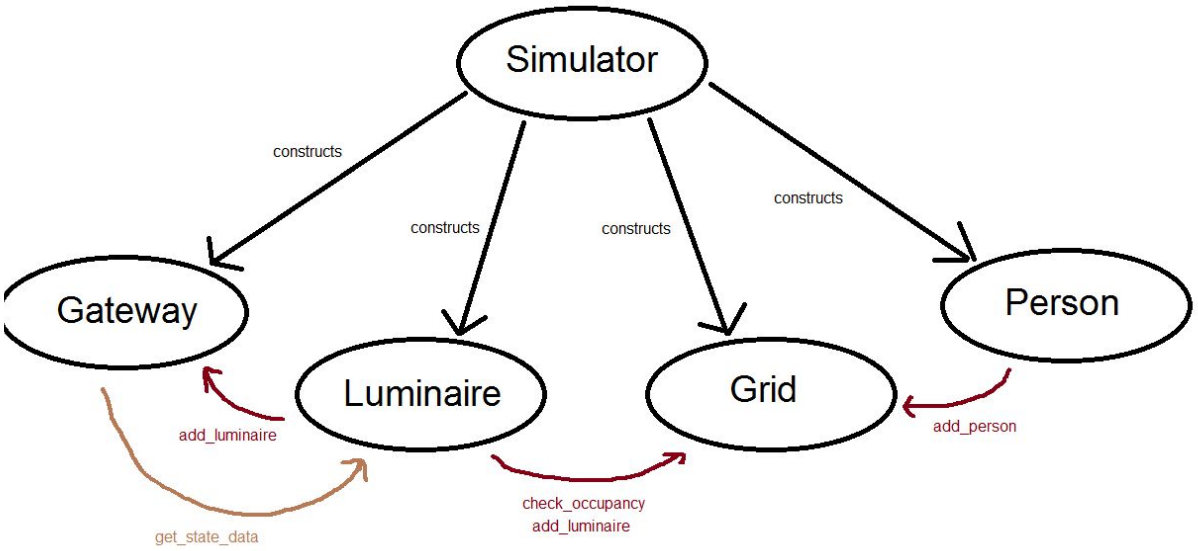
Litegrid-Simulation Documentation

Architecture



Modes

- The simulation can be run in either random, or controlled mode.
  In random mode, Person objects are moved one step each tick in a randomly decided direction.
- In controlled mode, user supplies the direction to move using WASD keys.

Simulator Class

The Simulator class is a singleton class that has 3 classmethods.

1. `setup` : Constructs Grid, Gateway, Luminaires and Person objects and registers them appropriately with each other. First argument determines number of Person objects in the grid. Optionally pass `grid_width` and `grid_height` to change default size of the grid.
2. `run_random` : runs the simulation with random movement of Person objects. Takes number of steps to run and whether or not to wait for user input for progressing to next step as first and second arguments respectively.
3. `run_controlled` : runs the simulation with controlled movement of Person objects. Recommended to create only one Person object for this mode.

Grid Class

Contains the grid representation with icons for Luminaire and Person class objects, at their respective locations. They can be added using the `add_luminaire` and `add_person` methods.
The `track_people` method updates the icons according to changing positions of the Person objects and `refresh_grid` helps redraw the icons into the grid.
The `is_occupied` method can be used to check if a Person object is present in any of the grid locations.

Luminaire Class

Contains all the attributes for a luminaire. `get_state` is used to get a dictionary containing the state variables as keys pointing to their current values.
Has a reverse link to the grid that it is contained in and can use the `check_occupancy` method to query the grid for the presence of a Person object in its location.

Person Class

Contains coordinates of the represented person in the grid. `random_move` and `controlled_move` methods are used to update the location of the object in a random or given direction respectively.

Gateway Class

Has a list of luminaires it tracks by using `get_state_data` method to obtain a dictionary containing the luminaires' state data snapshot at a certain timestamp. `publish_state_data` outputs a list of dictionaries with all the snapshots obtained during the simulation.

Global Variables in Main

- Separate variables, `PEOPLE_COUNT_RANDOM` and `PEOPLE_COUNT_CONTROLLED`, determine number of people to be added to each mode of simulation.
- `STEP_COUNT` is used to specify number of ticks the simulation should run in random mode.
- `USER_PROMPT` (default False) should be switched to True if 'press to continue' functionality is desired for stepping through a random mode simulation. By default there is a 2 second pause between each step.
- `GRID_WIDTH` and `GRID_HEIGHT` determine size of the grid.