

## Main\_loop.py

- Run this file to simulate the whole environment.
- Simulation environment for the live route planning algorithm for UC's NightRide.
- A 20×20 bi-dimensional space where customers are located, and vehicles can move. In each step, the vehicles move a fixed distance  $v$  towards the next way-point in their current route. If they reach a way-point, they pick-up or drop-off a customer and proceed to the next way-point. If the way-point they reach is the end of their current route, they execute the customer allocation.
- Routes are generated using an ACO algorithm.
- Parameters of the environment are described in lines 28-31.
- Parameters used in the ACO algorithm are described in lines 34-39.
- The program outputs:
  - Mean waiting time of customers.
  - Total distances traveled by each vehicle.
  - Customers served by each vehicle.

## Main\_loop\_manual.py

- Run this file to manually try to set the routes (with customer list provided by allocation algorithm).
- The random seed in line 26 must be the same as the seed in line 36 in the main\_loop.py to compare results.
- When run, the user will be asked to complete several routes. For every new route:
  - A plot with numbered nodes is displayed.
    - Triangles represent pick-up locations.
    - Stop signs represent drop-off locations.
    - Same color points represent one customer (pick-up and drop-off).
    - The vehicle (starting point) is represented with a black diamond.
  - The user must introduce manually the sequence of nodes that make the route, each number separated by a space. For example, if the route designed is 0-1-2-3-4-5, the user must write '0 1 2 3 4 5' (without the quotes).
    - 2 errors can happen: a drop-off node is scheduled in the route before the pick-up location, or there are nodes missing or repeated. In either case, an error message will appear and the user will be asked to input the route again.
- The program outputs:
  - Mean waiting time of customers.
  - Total distances traveled by each car.
  - Customers served by each car.