
# CSE366: Artificial Intelligence (Section 4) [Spring 2024]

## Assignment 1: Enhanced Dynamic Robot Movement Simulation

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# Assignment: Enhanced Dynamic Robot Movement Simulation

**Summary:** We have solved all the problems mentioned in the "Detailed Requirements" section. Also, we have prepared a report along with all the documents requested.

Briefly, the robot used in the project can roam from grid to grid where each step costs 10% of charge out of 100% of charges. When the robot's battery runs out of charge, it can be charged again manually, adding that the grid obstacle will be generated automatically. The robot will search for the best path to reach its goal using the A* Search Algorithm and Uniform Cost Search algorithm. To better understand the project, we have developed a visualization using matplotlib.

The comparison between A* Search and Uniform Cost Search Algorithms based on the number of battery charges are also available in the project. But most of the time, both algorithm's number of battery recharges are the same.

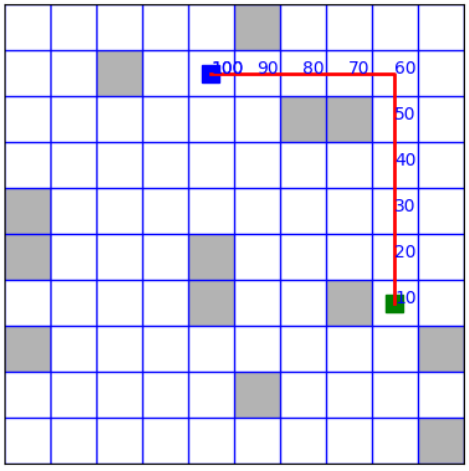
**Output:**

For A* Search Algorithm:

To recharge press 1: 1

Recharged Successfully

Solution Path: [(1, 4), (1, 4), (1, 5), (1, 6), (1, 7), (1, 8), (2, 8), (3, 8), (4, 8), (5, 8), (6, 8)]

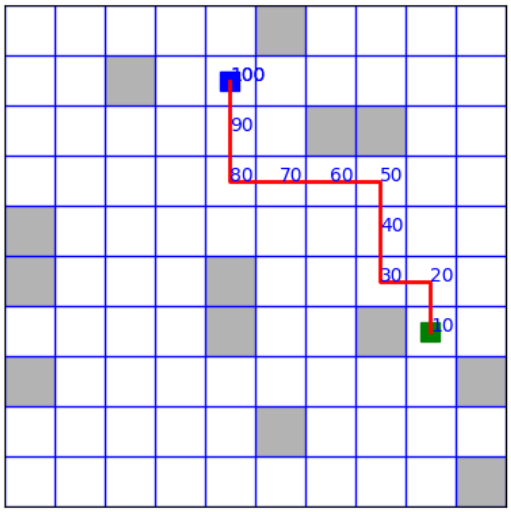



n:

To recharge press 1: 1

Recharged Successfully

Solution Path: [(1, 4), (1, 4), (2, 4), (3, 4), (3, 5), (3, 6), (3, 7), (4, 7), (5, 7), (5, 8), (6, 8)]




Compared both algorithms but found **no difference**