_W03_Coding_Assignment_1

Submit Assignment

Due Wednesday by 11:59pm **Points** 25 **Submitting** a file upload **Available** May 27 at 12am - Jun 5 at 11:59pm 10 days

Coding of MP algorithm for point-robot using Depth (or Breadth) First Search

1- Review lecture 2 (part 2) on MP for point robot.

2- Have python and IDE (e.g., Pycharm) installed on your local machine

3- Simulate a 2D space/grid of various sizes with obstacles and free spaces (up to 5000x5000 cells, 4 connected grid) -- see picture below. In Python it is just a 2D array with 0 and 1. You may use any python package you like (numpy, scikit-image, etc.)

- Assume a point-robot (can move in any direction)

-Start position/configuration at the top left corner

-Goal configuration - right bottom corner

-Set your own static obstacles randomly and along some diagonal points (similar to black region below)

- Create a flow-diagram of the search algorithm to implement

- Generate a graph representation of the space

- Run the search algorithm to find the shortest path

- Output generated path

What to Submit:

- Python code with problem setup & search using DFS (or BFS)

- pdf report with graph of solution cost v/s time for different obstacle configurations

submission file type: .zip