

CSE 360 Workshop 3 Report

~Andrew Johnson~

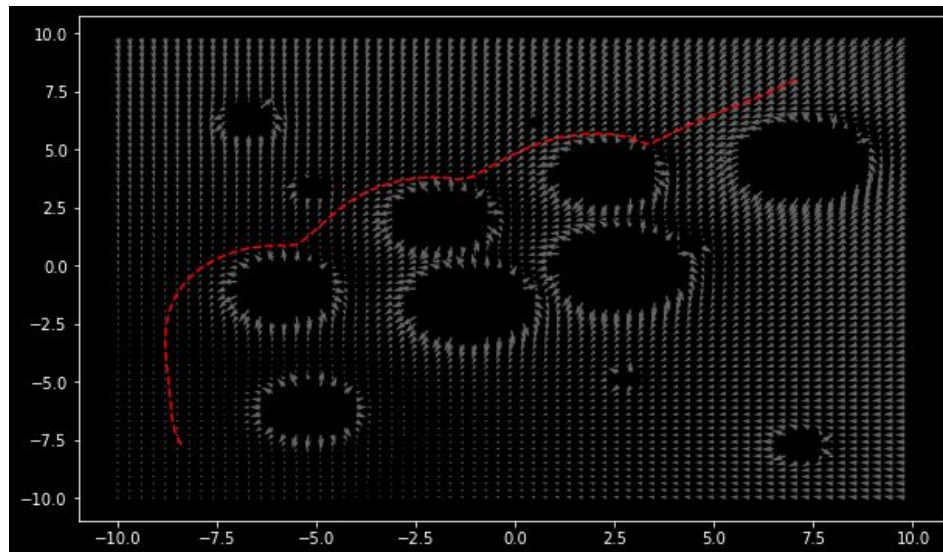
Link to GitHub repo:

<https://github.com/zaperone/cse-360-workshop-3>

1. Potential Fields (file:

“workspace/WS3_PotentialFunctions.ipynb”)

- Created each obstacle as a repelling charge, scaled to represent their size / how necessary it is to avoid the center of the object
- Ending point in an attractive charge

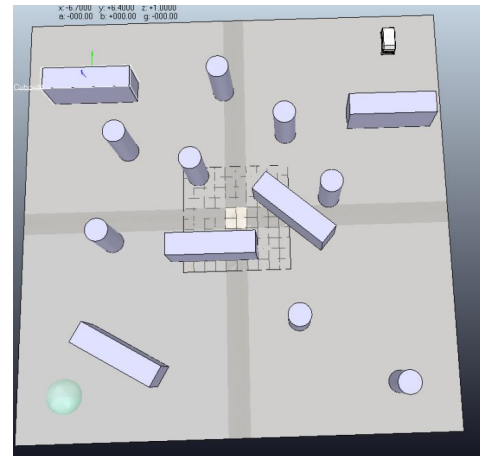
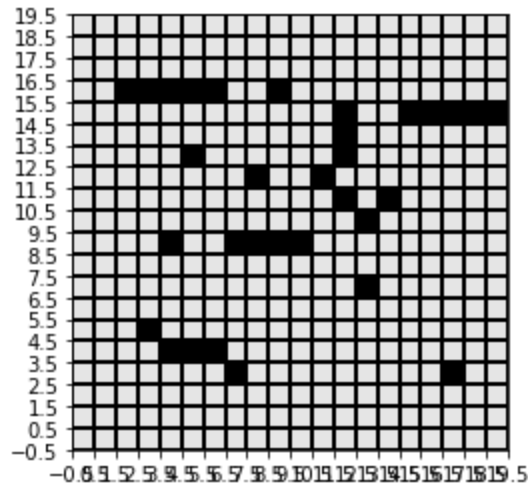


C.

- <https://youtu.be/vrRQB3hi3q0>

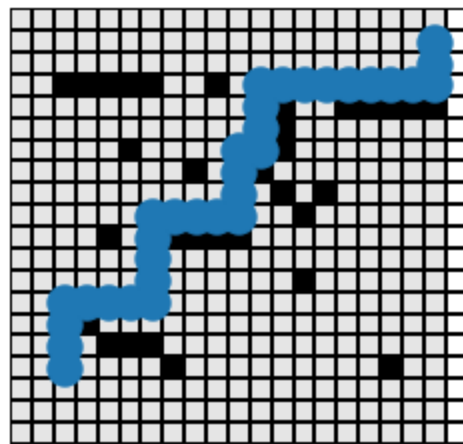
2. BFS (file: “workspace/Grid_bfs.ipynb”)

- Used networkx python lib
- Discretized environment to 20 x 20 grid, manually added in obstacles



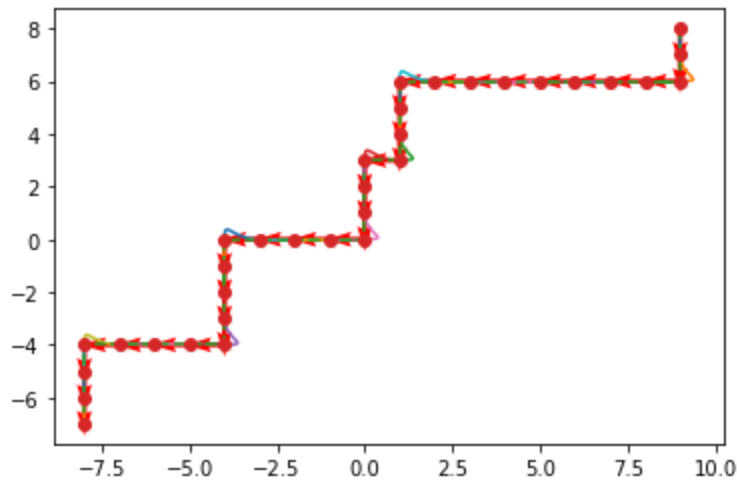
c.

i. (grid representation vs. actual environment)



d.

<- resulting path



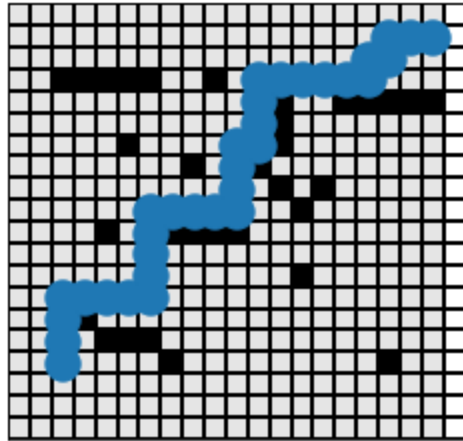
e.

i. Path represented as trajectory for robot

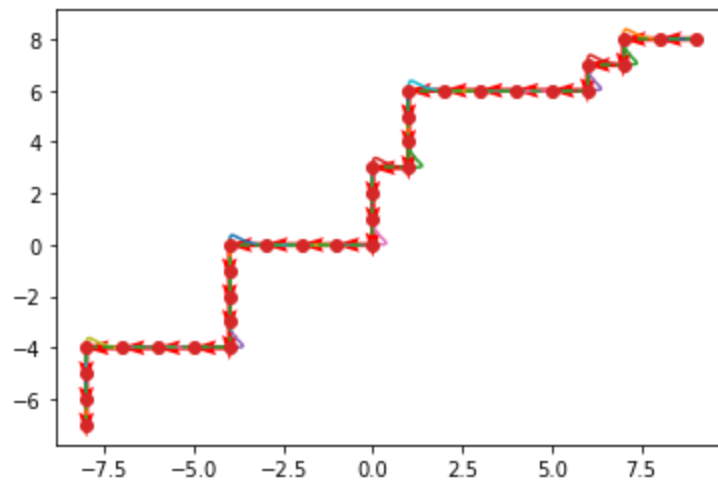
f. <https://youtu.be/GSnyowsOnQQ>

3. A* (file: "workspace/Grid_a_star.ipynb")

- a. Used networkx python lib
- b. Discretized environment to 20 x 20 grid, manually added in obstacles
- c. (see **2b** for environment representation)

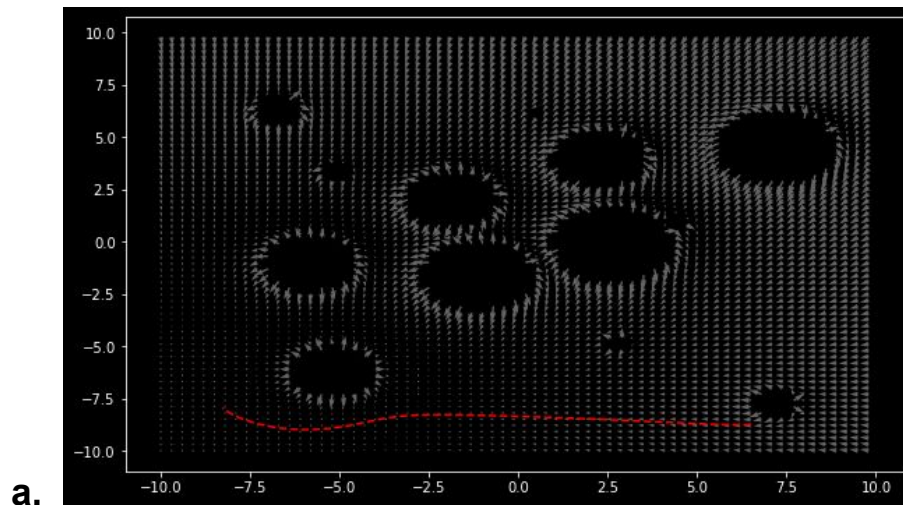


d. <- resulting path

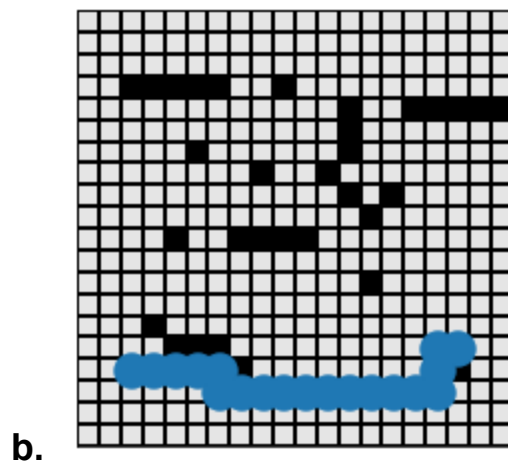


- e.
 - i. Path represented as trajectory for robot
 - f. <https://youtu.be/jIETK4-G1A0>

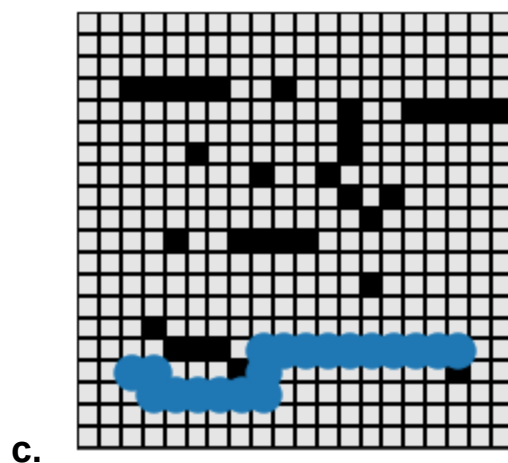
4. Comparison



i. Potential function starting at (7.1, -8.6)



i. BFS



i. A*

ii. BFS and A* are similar, but slightly different. The potential field representation seems more accurate.

