Introduction to Artificial Intelligence

Project 1: Maze on Fire

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1 Maze Generation

The premise of the project is an agent being trapped in a maze. They start at the top left of the maze and need to get to the very bottom right of the maze. To create the maze environment, we created a function called buildMaze within maze.py which makes the maze in the form of a matrix.

Building the maze needs only a few requirements: the size of the maze (dim), and the obstacle density of the maze (p). The maze is generated as a matrix with all of its entries, from (0,0) to (dim - 1, dim - 1), are 1. Then, going through each tile one by one using a nested for loop, we used random() as a way to randomize the maze, and if the value obtained from random() was less than or equal to the obstacle density, it became the obstacle, which means the value of the matrix at that coordinate was 0. When it finishes going through all of the tiles of the maze, we need to make sure that (0,0) and (dim - 1, dim - 1) are not obstacles, as they serve as the start and goal spaces, respectfully. So, we simply force these two spaces to be 1 (non-obstacle spaces) so the agent can be loaded in and is able to walk on top of the goal space.

2 Problem 2

Answer here

3 Problem 3

Answer here

4 Problem 4

Answer here

5 Problem 5

Answer here

6 Problem 6

Answer here

7 Problem 7

Answer here

8 Problem 8

Answer here

9 Notable Information

Additional things / for fun thing go here