Iain Lee
CS 521

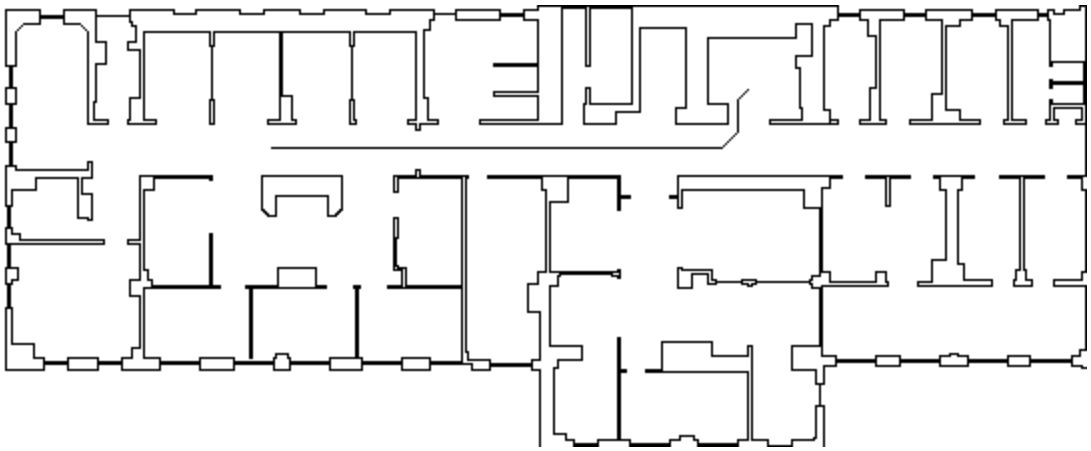
Project 4 Report

1) One of them main problems I had with this project was being able to understand if my paths were being built correctly since it is really hard to read the pnm files. Another problem was also having the robot not hit any walls or get too close to them so I had to create larger obstacles. Another problem was having obstacle avoidance making the robot act a little weirdly but that was somewhat fixed by having the distance of avoidance lowered so that it wouldn't affect the magnitude too much unless it was really close.

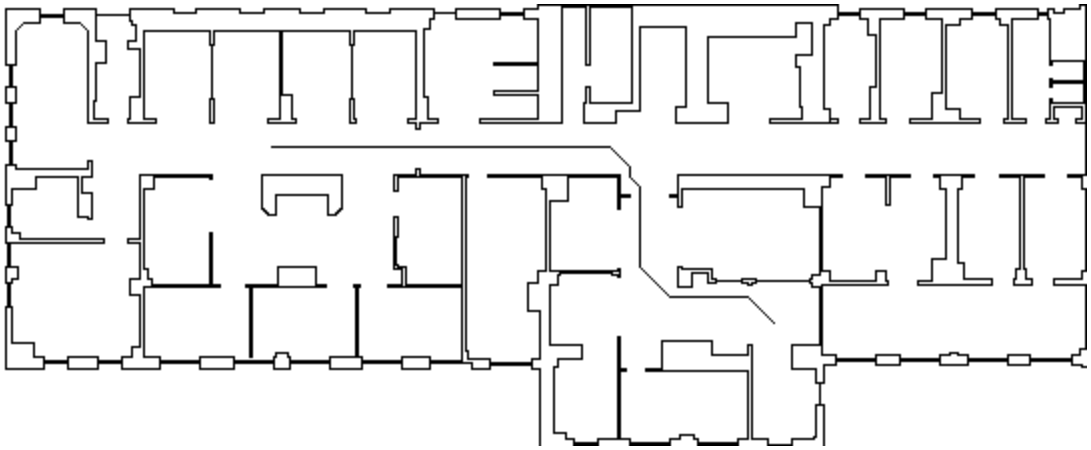
I set up the grid map by having it do the same thing as the conversion to the pnm file where I would read in the scaled pnm map and then create a gridmap of it. Using this gridmap I would detect all the 1s then place more 1s around it wherever there was a free space. This gridmap is then read by the wavefront planner and place the goal 2 where it will then search with every iteration for an empty space around and place a 3. Then find all the threes then place a four next to them and so on until the start point is found. Once this is done it will then use the get path where it will form a path by starting from the start point and decrementing downwards. So if it starts at a point with the number 74 it will look around for 73 then step there. It will do this till it decrements to 2 then stops. Each decrement adds a coordinate to an array and this array is the set of waypoints the robot should follow.

To smooth out these waypoints so that the robot doesn't have to go to every single little step I made it so that it will increment by 5 so 4 waypoints will be skipped.

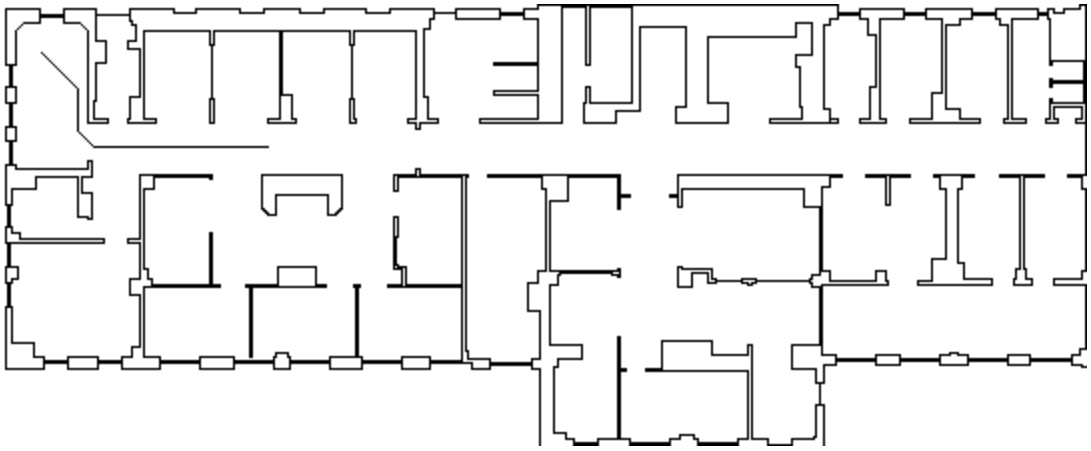
2) Path Planner Result:
For (7.5, 5.5)



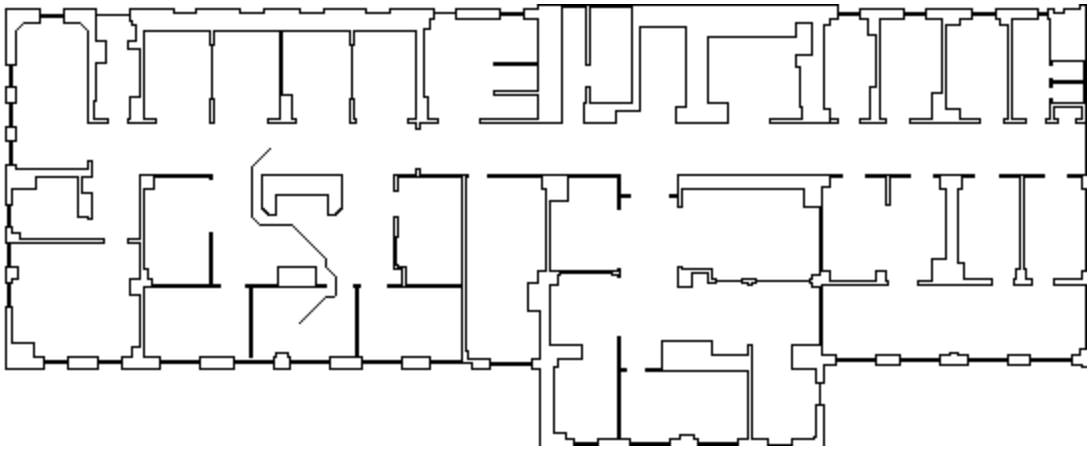
For (8.5, -4.0)



For(-18.5, 7)

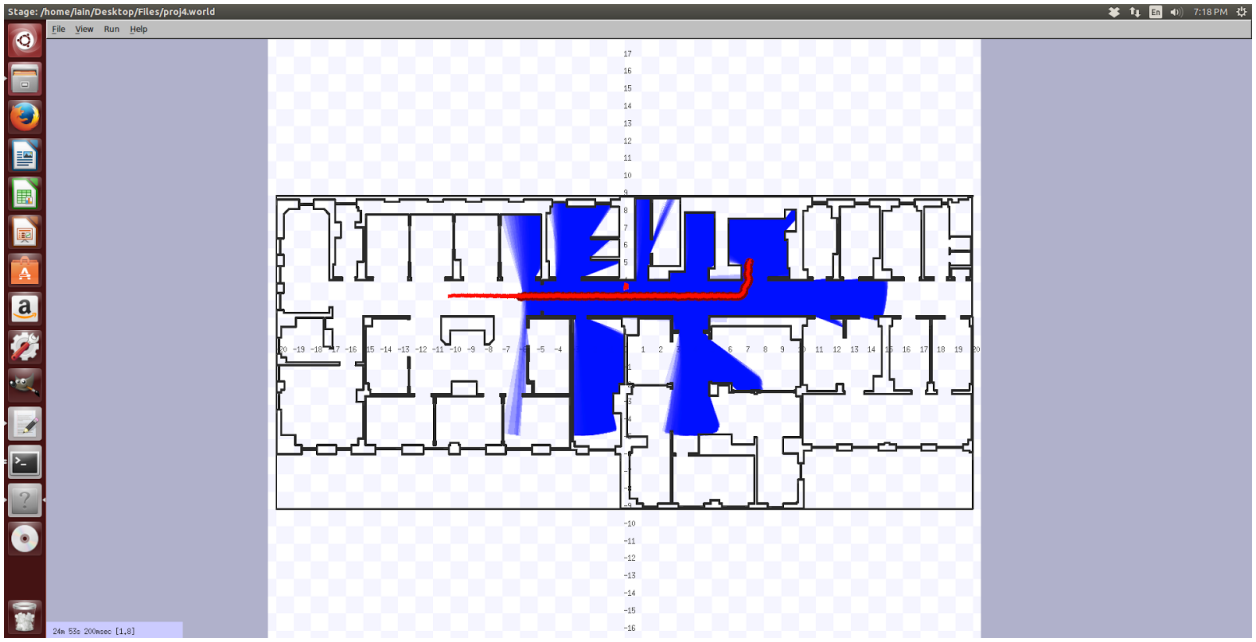


For (-9, -4)

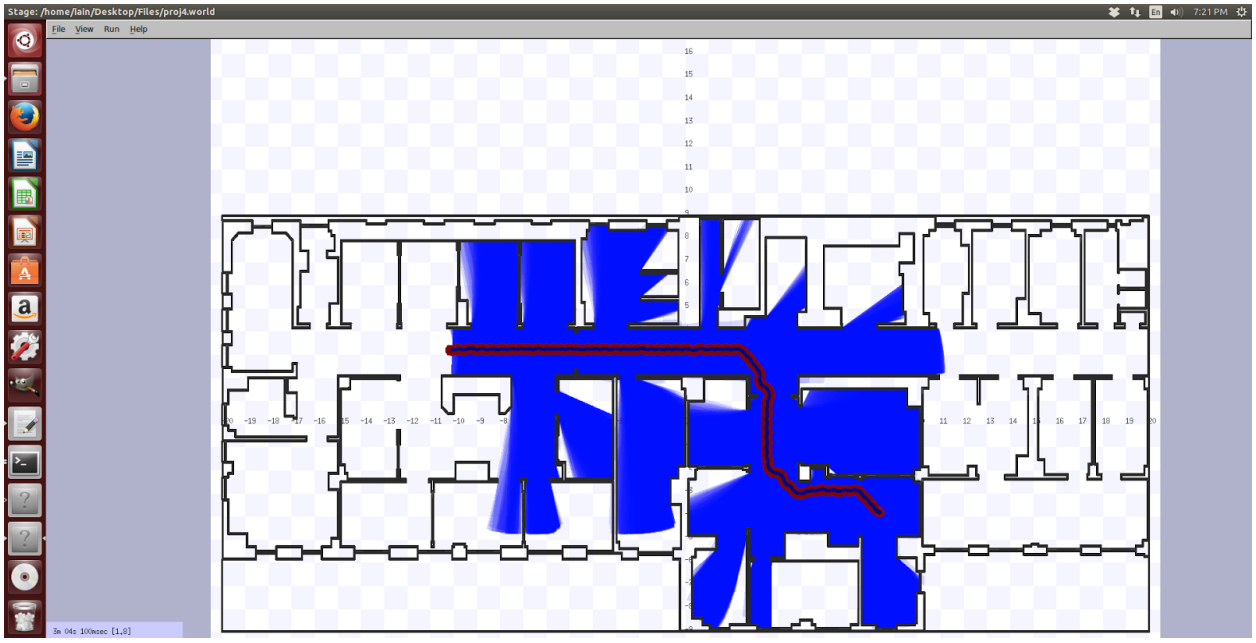


3) Screen dumps

For (7.5, 5.5)



For (8.5, -4.0)



For (-18.5, 7)

For (-9, -4)