

Robot Homework9

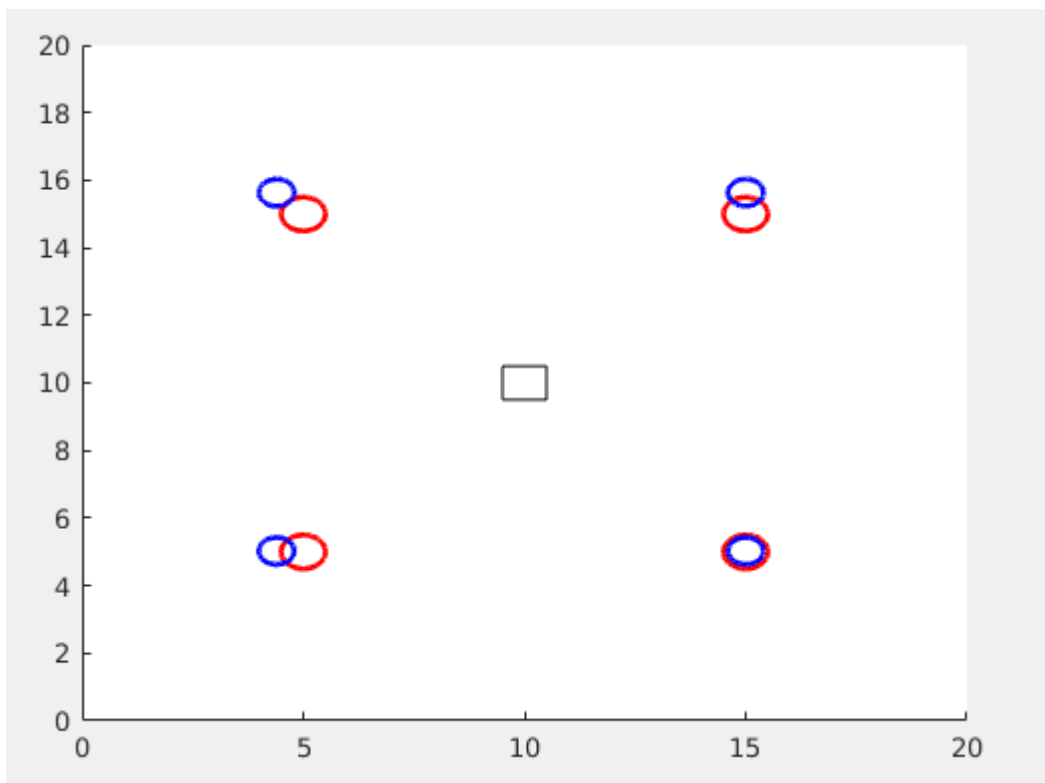
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Problem 1: estimate the Gaussian probabilistic distributions of the four landmarks given the robot position, $[x, y]$, and the range measurements of $[r1, r2, r3, r4]$.

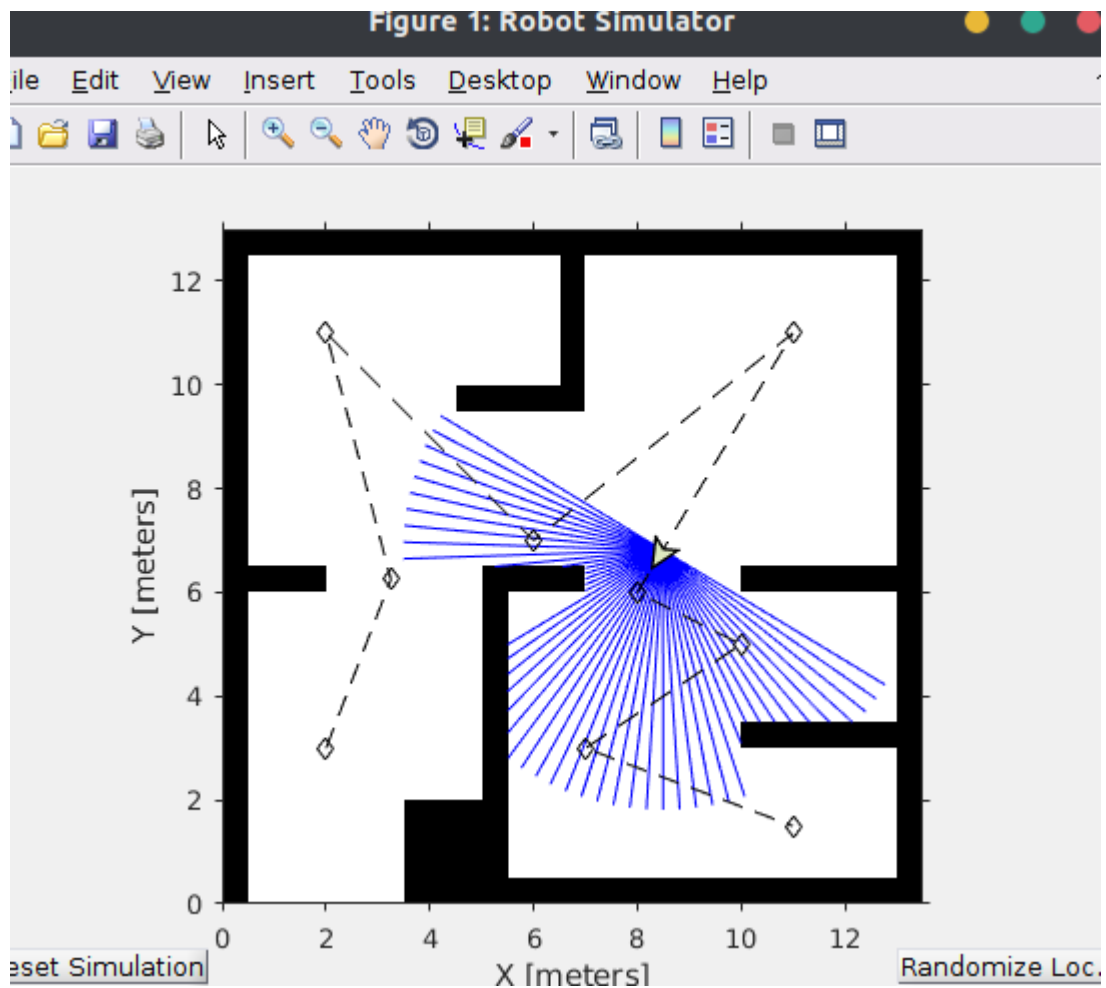
Use triangle area formula $S = \sqrt{p(p-a)(p-b)(p-c)}$ to calculate 4 triangle's area, and use

`fsolve` to solve the equation, which a is the variable that we want to solve, by doing this way, we can know a , so the landmark's position is easy to calculate.

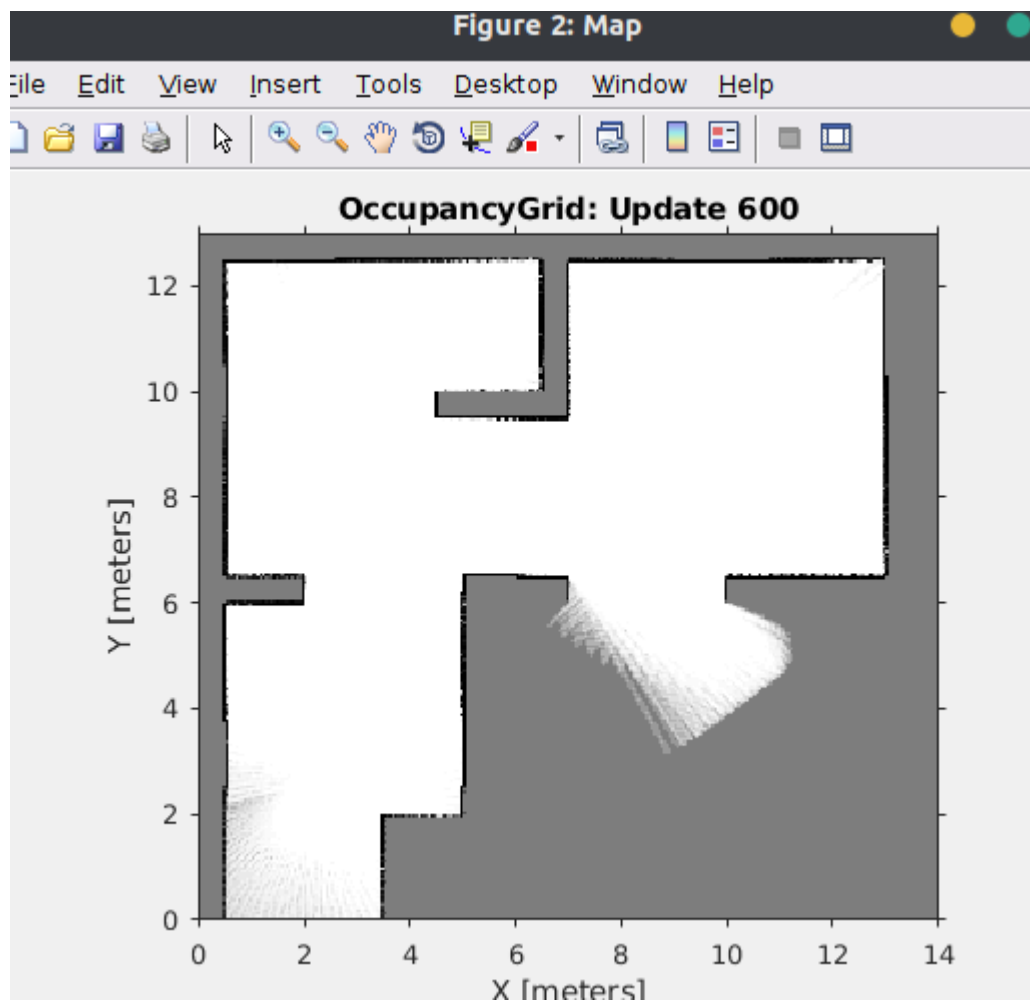
The red circle is landmark's real position, blue one is calculated result.

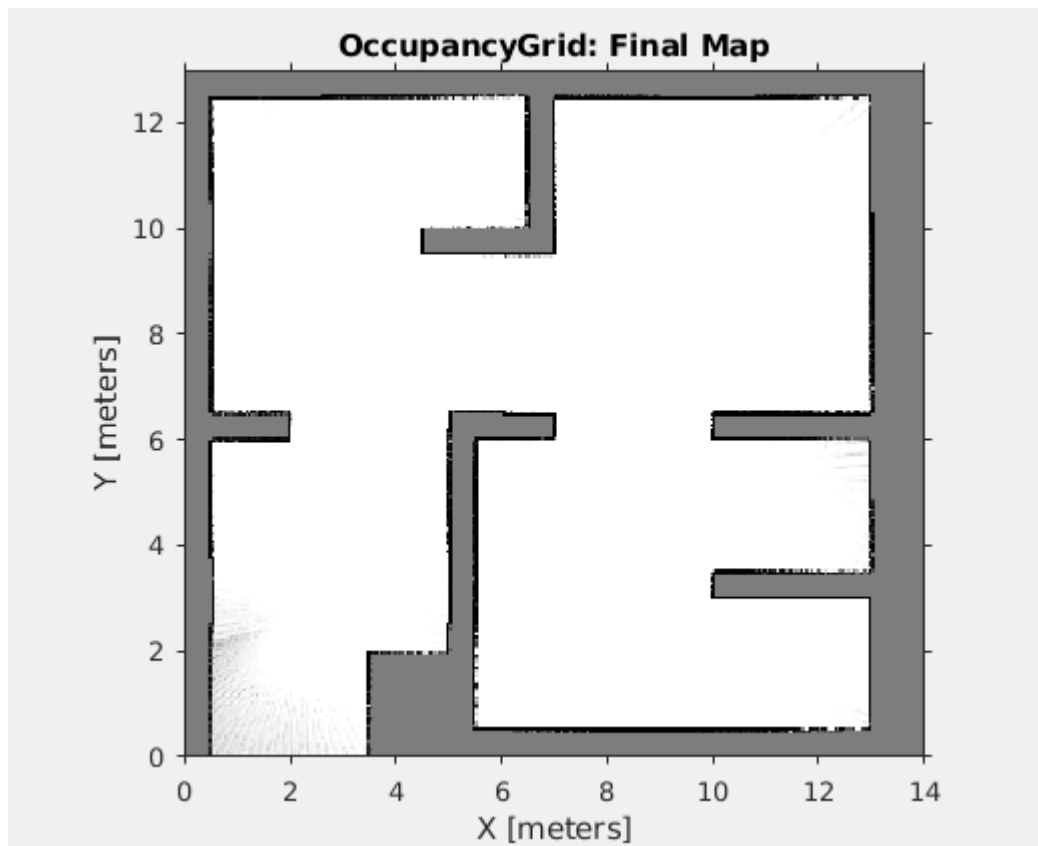


Problem 2: generate occupancy and ML grid maps (by using the threshold of 0.5)



The occupancy and ML grid map is showing above. We can see that it has some shadow.





Problem 3: generate the reflection map

The reflection maps is showing above. We can see that its shadow is few compared to occupancy map.

