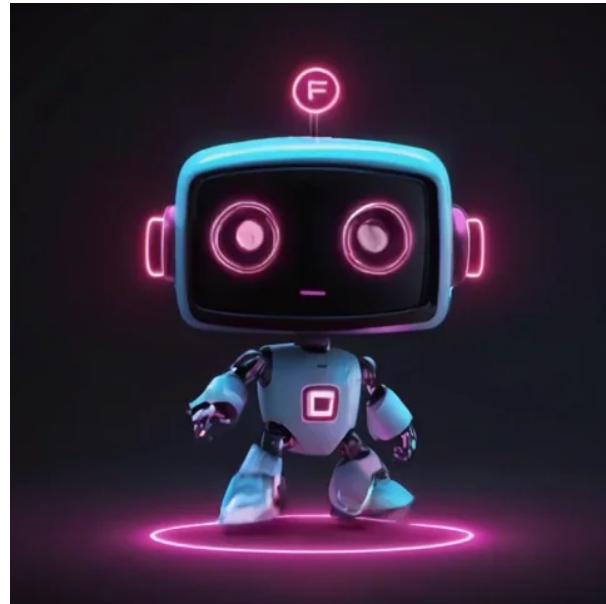


# Robotics-Assignment

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## Requirment 1

### How It Works

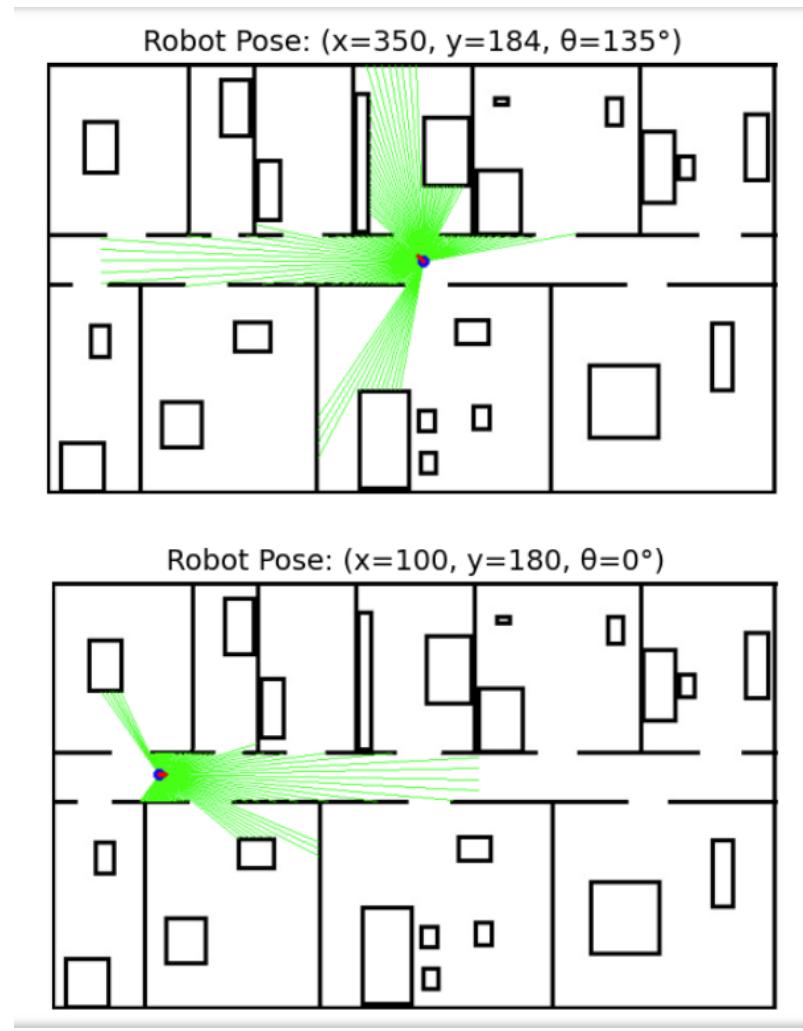
#### 1. The `laser_measurments` function:

- Converts the input map to grayscale.
- Casts laser rays from the robot's position at angles ranging from  $-125^\circ$  to  $125^\circ$ .
- Calculates the distance to obstacles and the endpoint of each laser beam.

#### 2. The `draw` function:

- Visualizes the robot's position and orientation.
- Plots the laser beams and obstacle endpoints on the map.

### Results:



## Requirement 2

### How It Works

1. Finding the Most Likely Pose: The function `find_most_likely_pose()` searches the entire map for the pose with the highest probability. It iterates over possible positions ( $x, y$ ) and orientations theta to find the best match.
2. Visualization: The function `draw_pose()` displays: The robot's best pose on the map. The likelihood map showing the probability distribution.

Results Given measurements from requirement 1:

