

## Assignment 2- Robot Motion Planning

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1000 iterations of RRT and RRT\* were executed on the map defined below-

### Obstacle map –

obstacleList = [

(5, 5, 1),

(3, 6, 2),

(3, 8, 2),

(3, 10, 2),

(7, 5, 2),

(9, 5, 2)]

### The start and goal nodes were-

start = [0.0, 0.0, np.deg2rad(-50.0)]

goal = [10.0, 10.0, np.deg2rad(50.0)]

### Map area-

map\_area = [-2.0, 15.0, -2.0, 15.0]

**The final map is-**

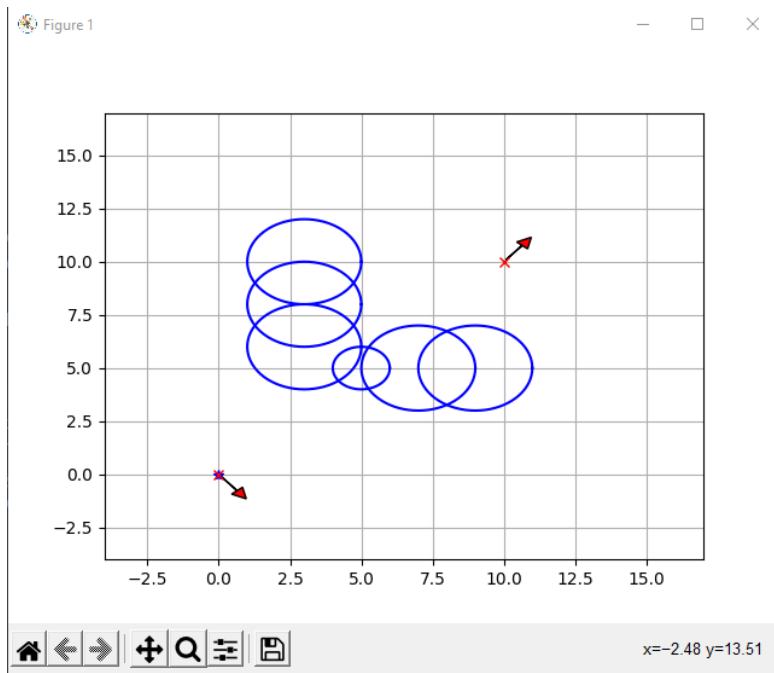


Figure 1 Testing MAP

**The random seed used for the 1000 iterations is 101**

After running 1000 iterations of both planning algorithms, we plot a bar chart comparing the mean path cost of both approaches.

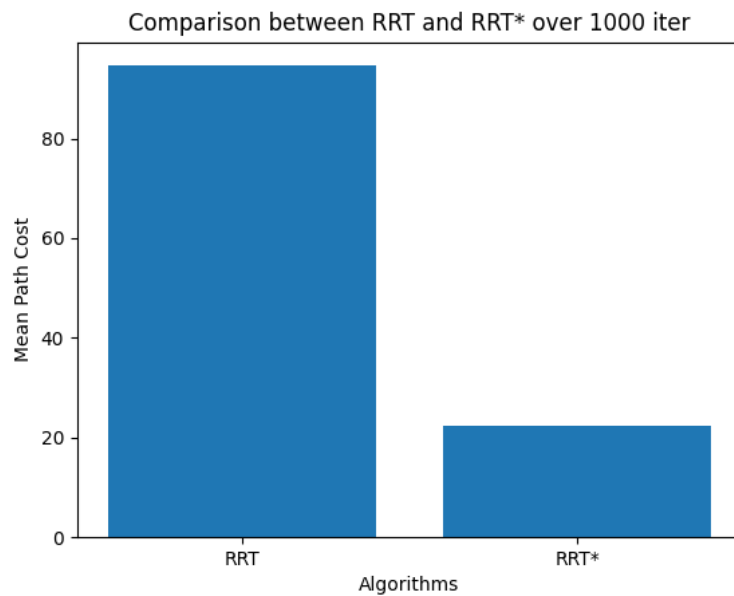


Figure 2 Bar chart comparing both Algorithms

From the bar chart it is seen that RRT has an avg path cost of about 94 while RRT\* has an average path cost of about 22. From this we can say RRT\* on average find a path that is 4 times shorter than RRT for the given map, which is a large difference.