

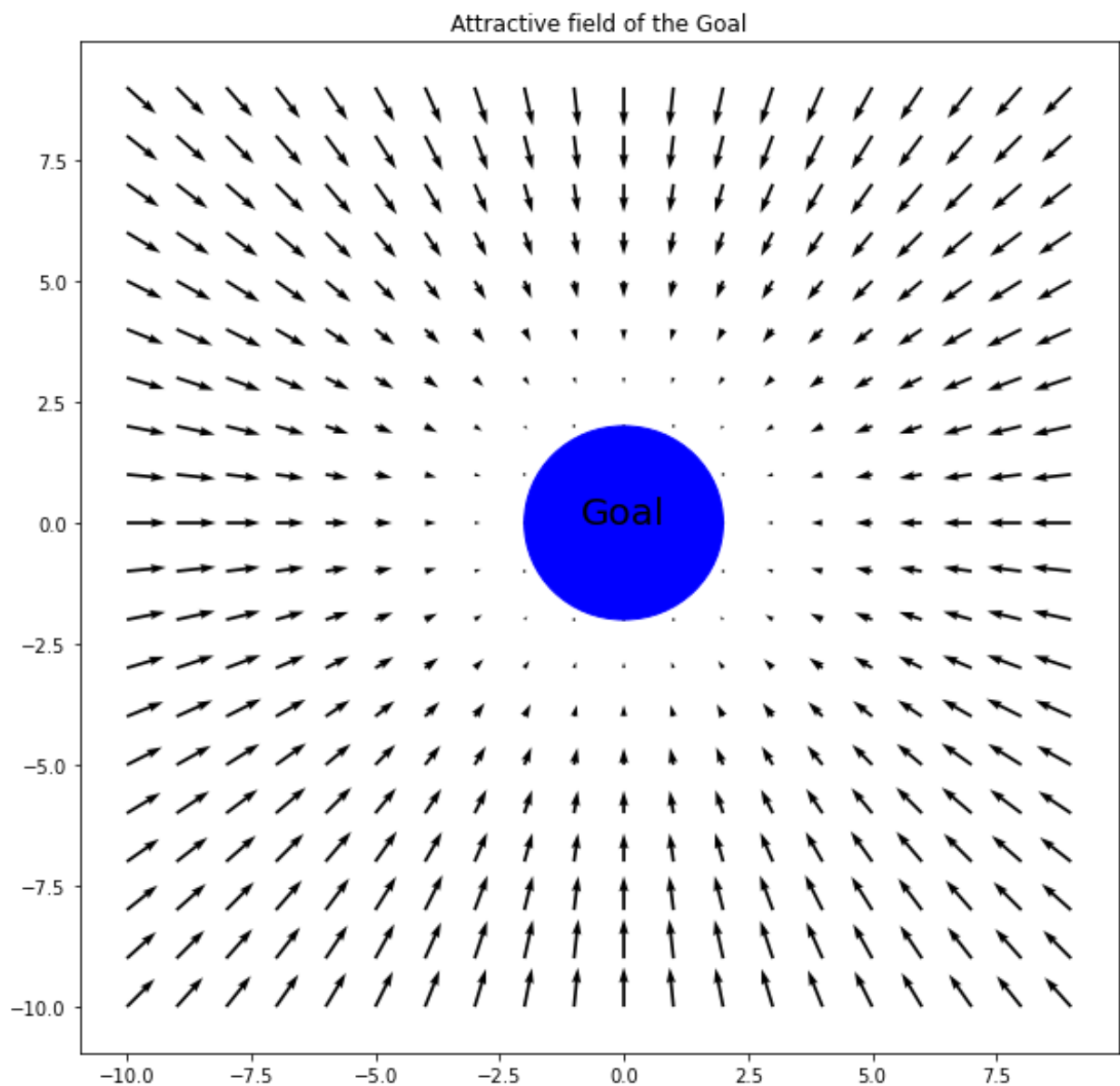
Report

Devbrat Anuragi

17078

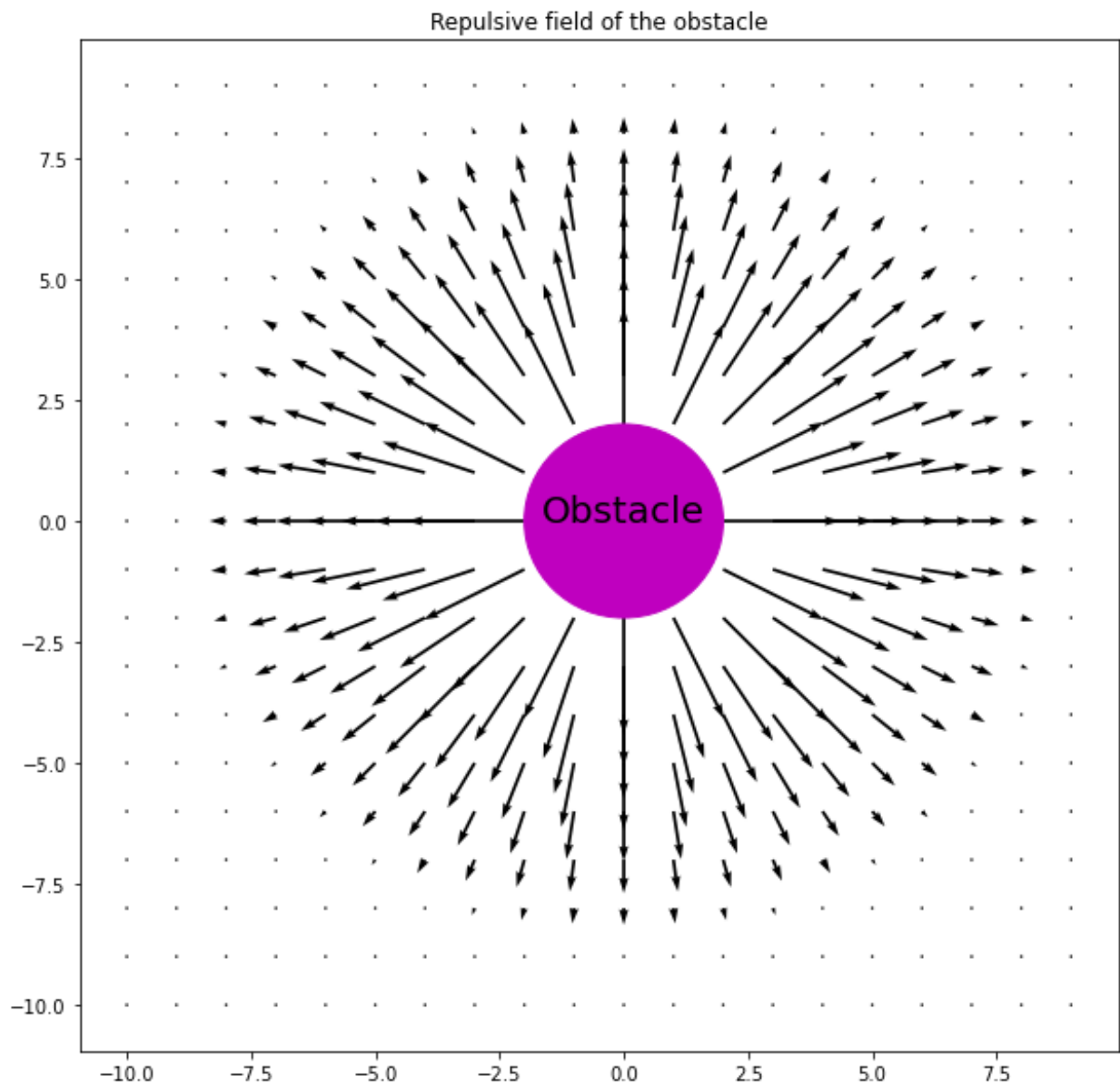
Q1. Following is the Attractive Potential field of the Goal

$$\alpha = 50, r = 2, s = 7$$



Q2. Following is the Repulsive field of the Obstacle

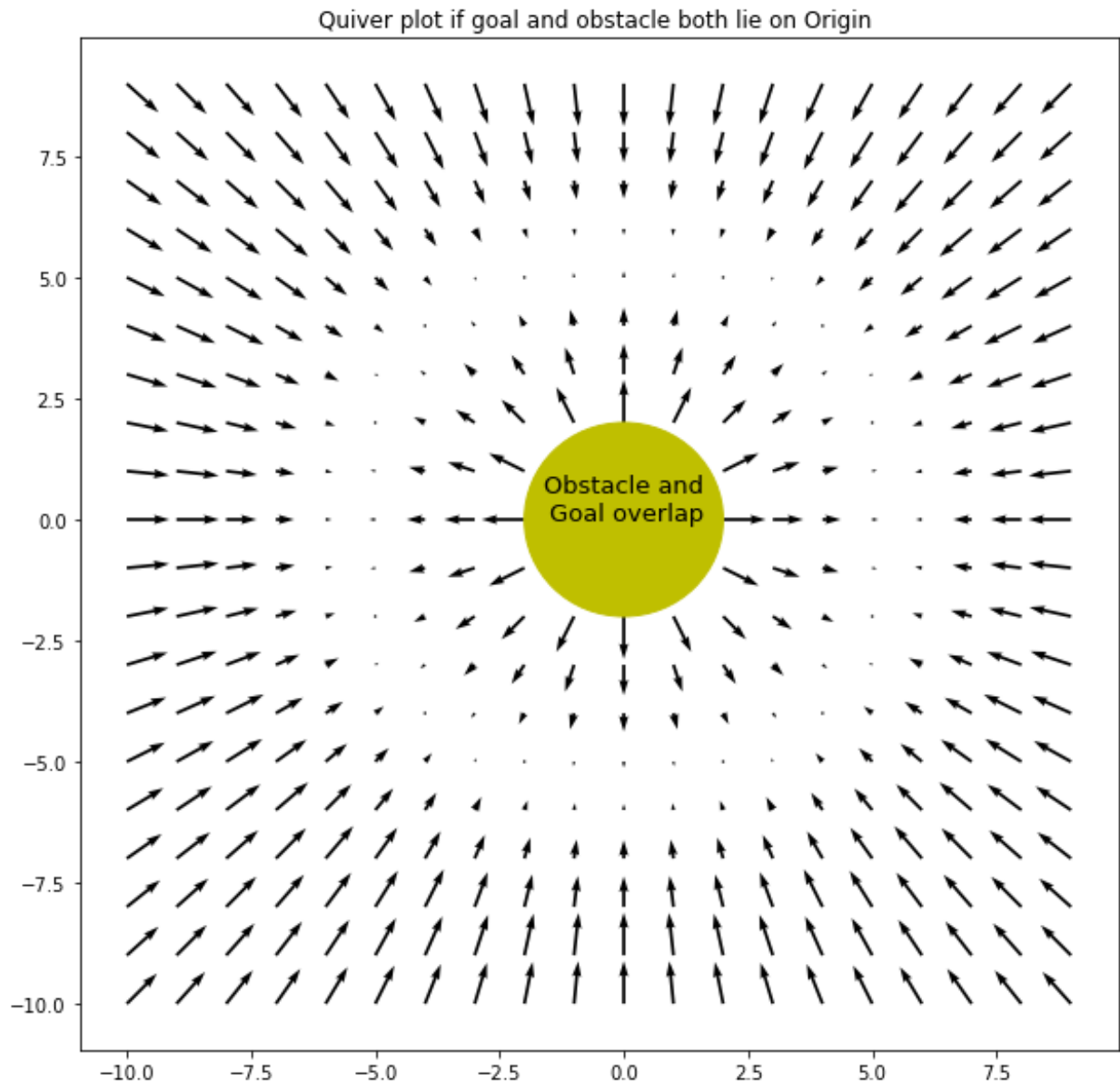
$$\beta = 50, r = 2, s = 7$$



The field is stronger near the obstacle and then it decreases as we move outward until it becomes dim.

Q 3 Combined field when both Goal and Obstacle lie on the origin

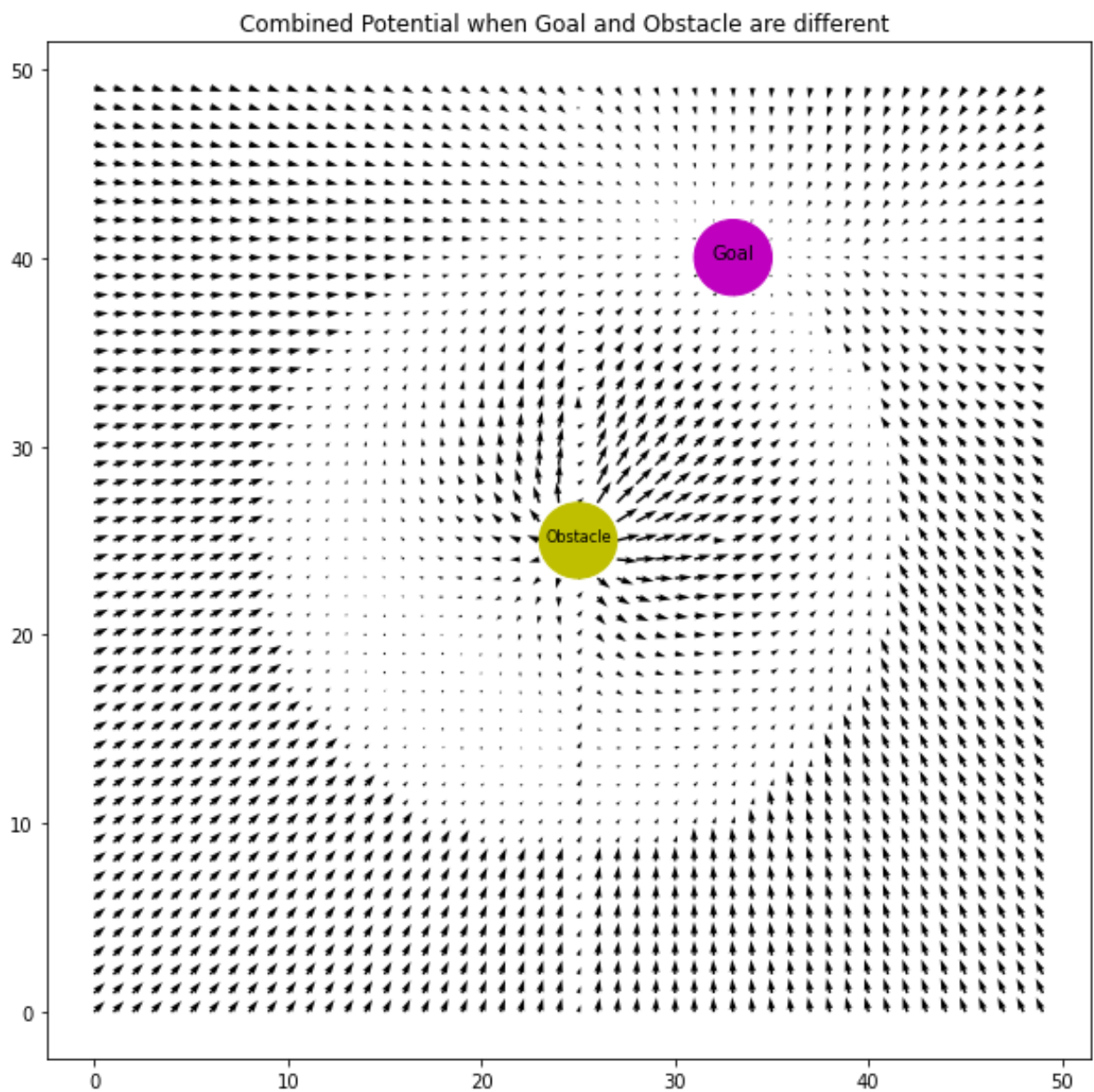
$$\alpha = 50, \beta = 50, r = 2, s = 7$$



Here we can observe that the field range of the obstacle is decreased because the field of the goals are cancelling it.

Combined effect of the field when object and the goal are not overlapping

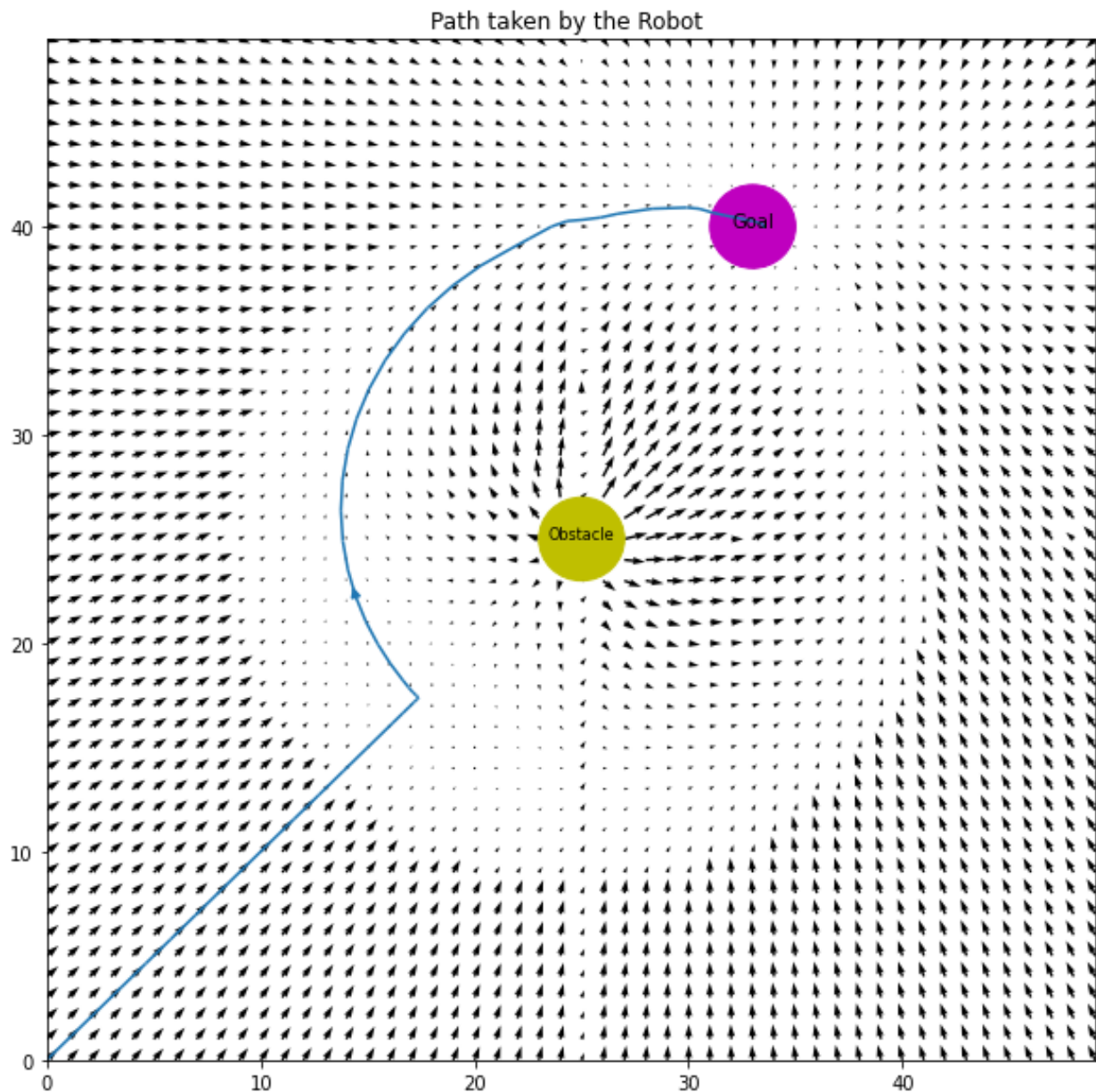
$$\alpha = 50, \beta = 50, r = 2, s = 7$$



In this, the obstacle fields which are toward the direction of the goal is amplified whereas others were cancelled out.

Q4 Path taken by the robot in the above scenario.

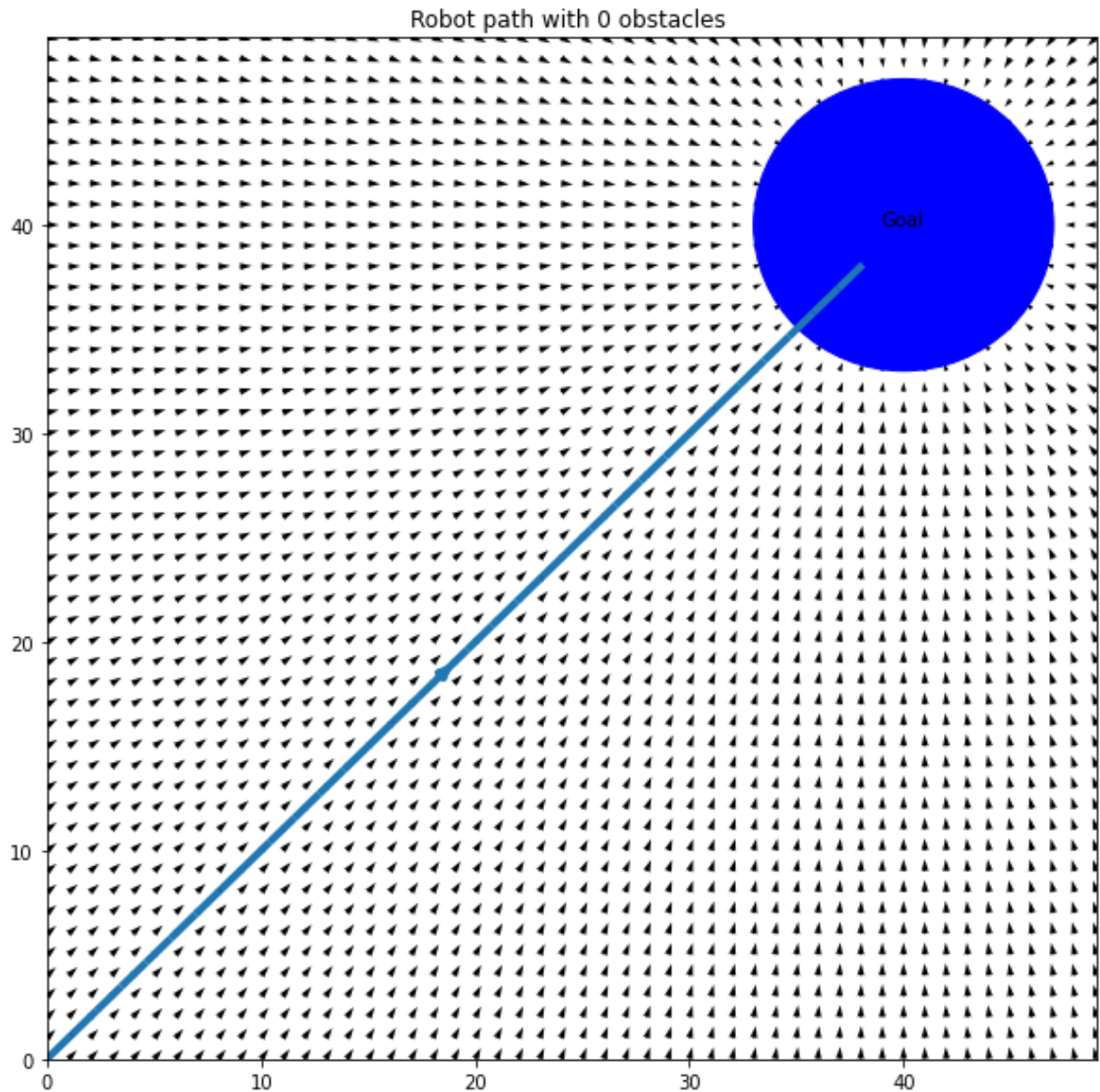
$$\alpha = 50, \beta = 50, r = 2, s = 7$$



The robot starts from the (0,0) and very avoids the obstacle beautifully.

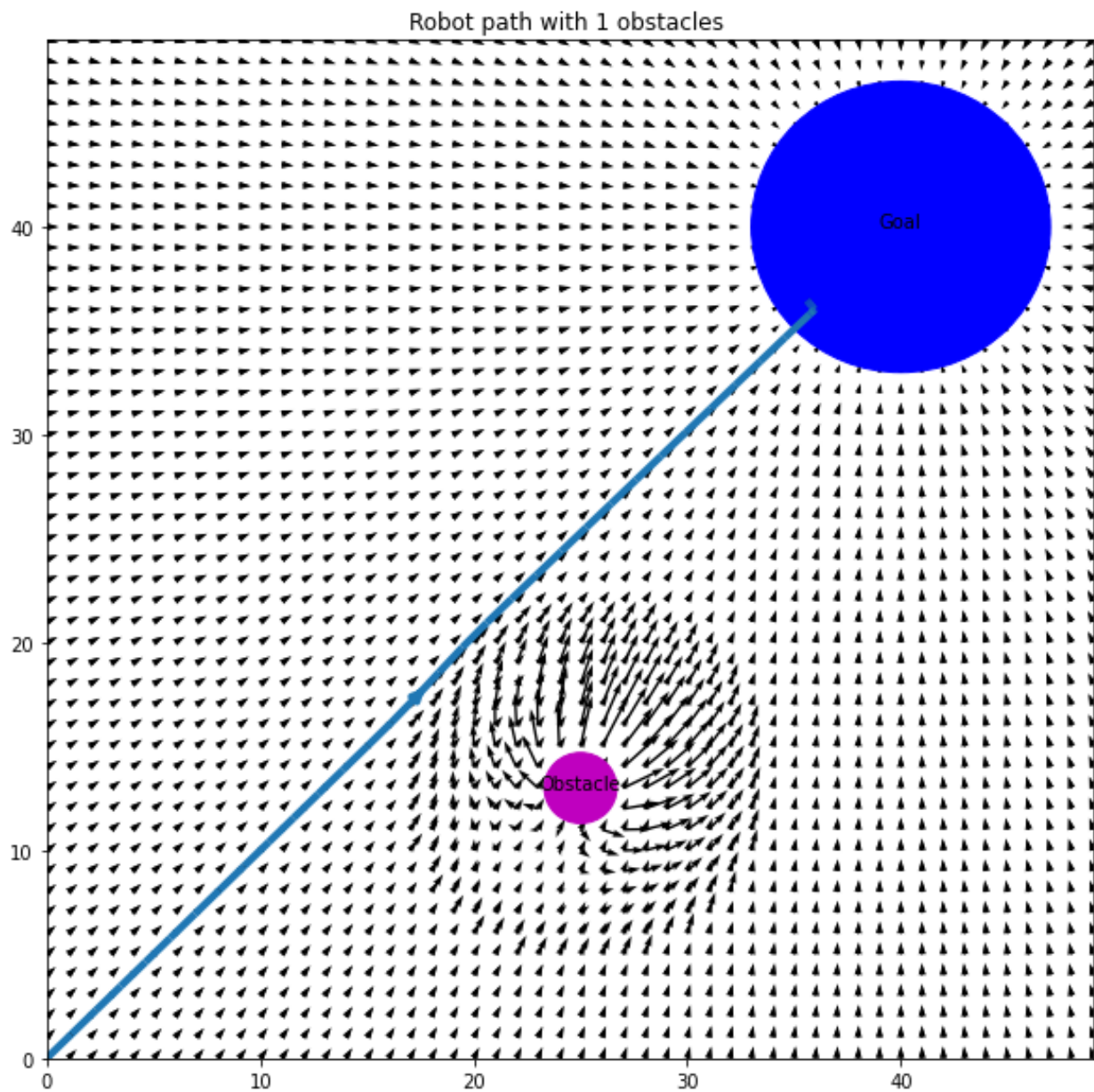
Q5. In this part the size and location of the obstacle is selected at random. But the Goal location and size is fixed. Also s for the obstacle is reduced to 7. $\alpha = 50$, $\beta = 120$

Path Taken by the robot when there is 0 Obstacle



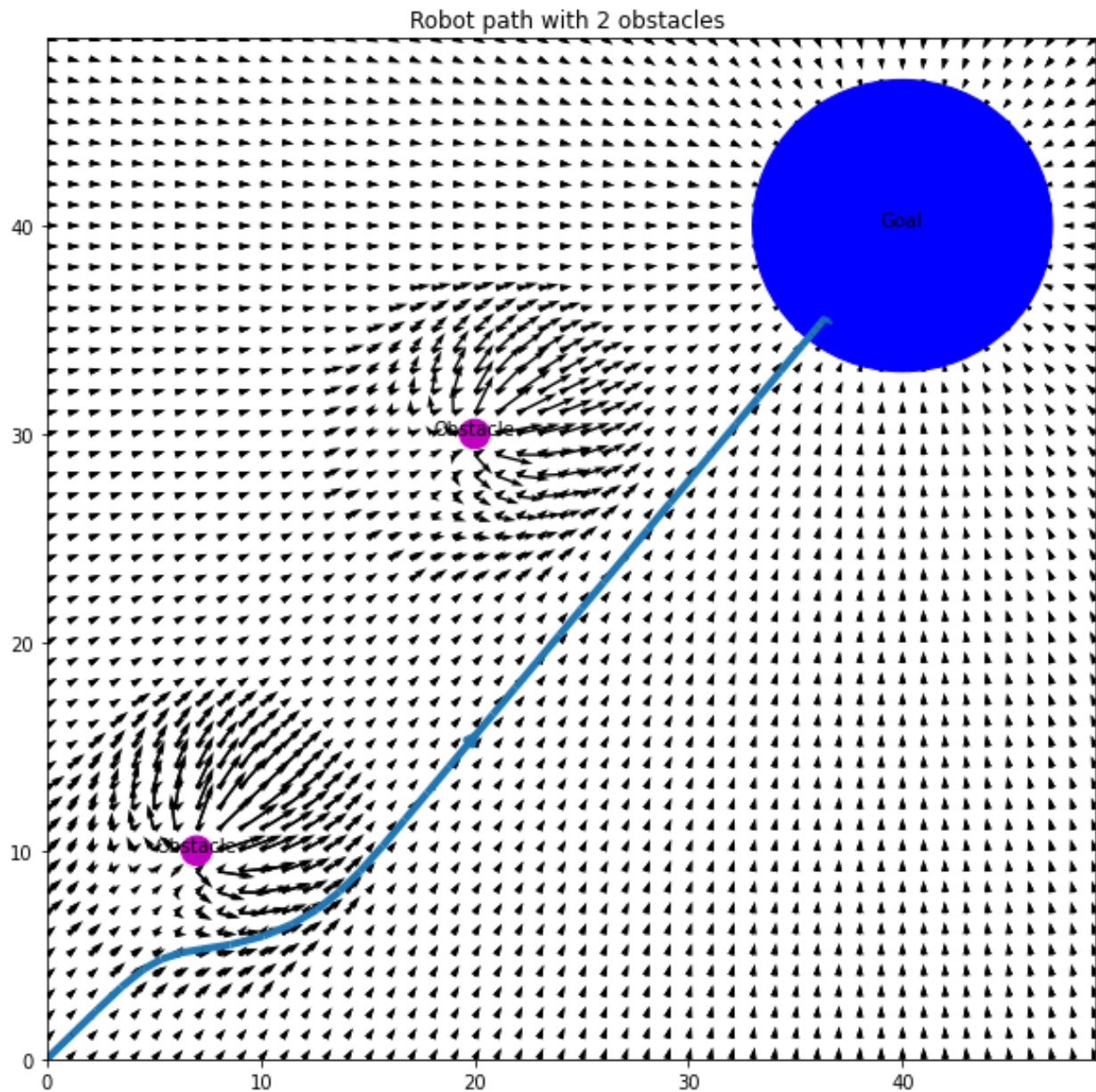
Since no obstacle Robot takes straight path.

Path Taken by the robot when there is 1 Obstacle



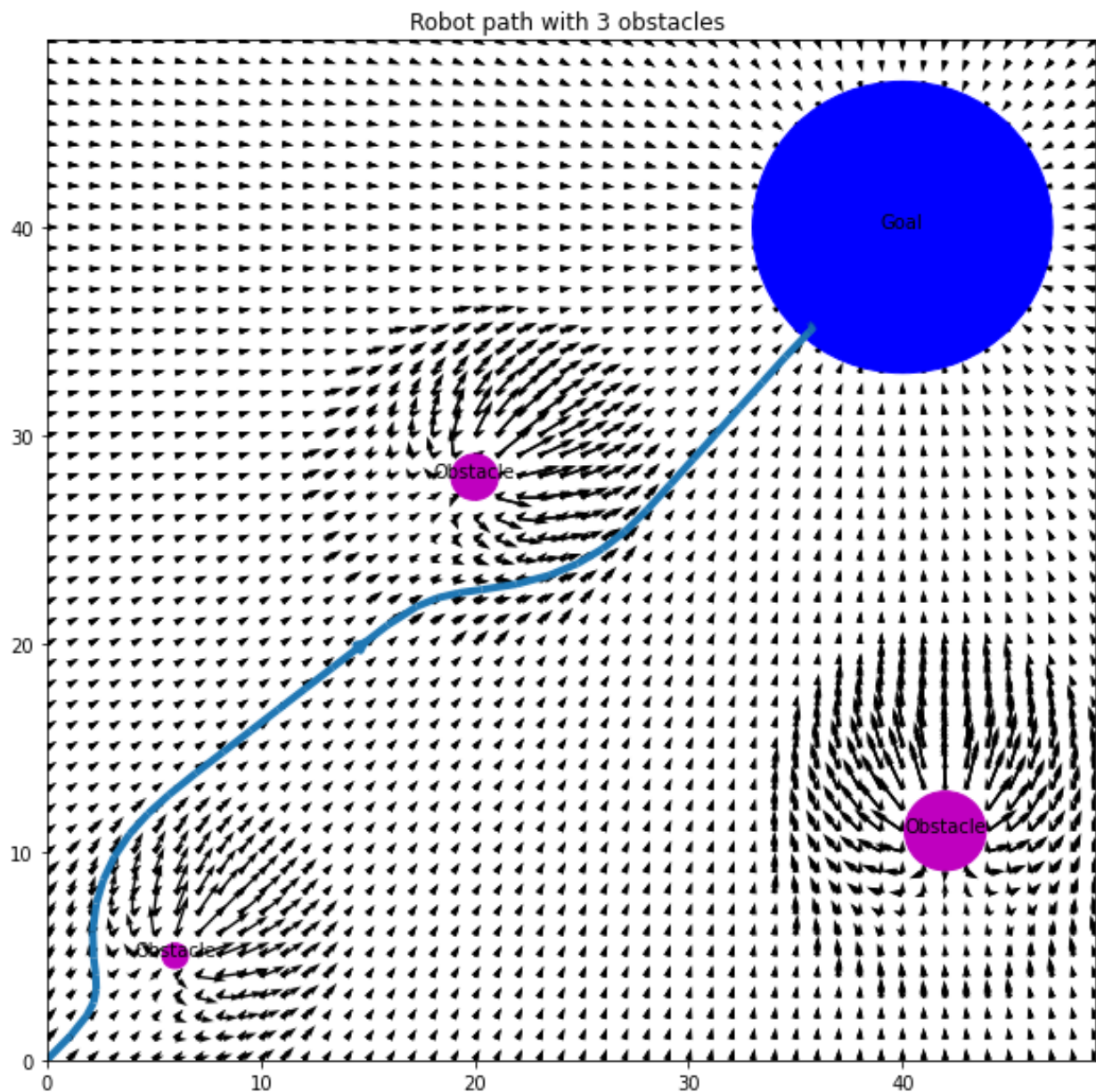
Here also robot takes the straight path because the field does not have any effect straight path taken by the robot.

Path Taken by the robot when there is 2 Obstacle



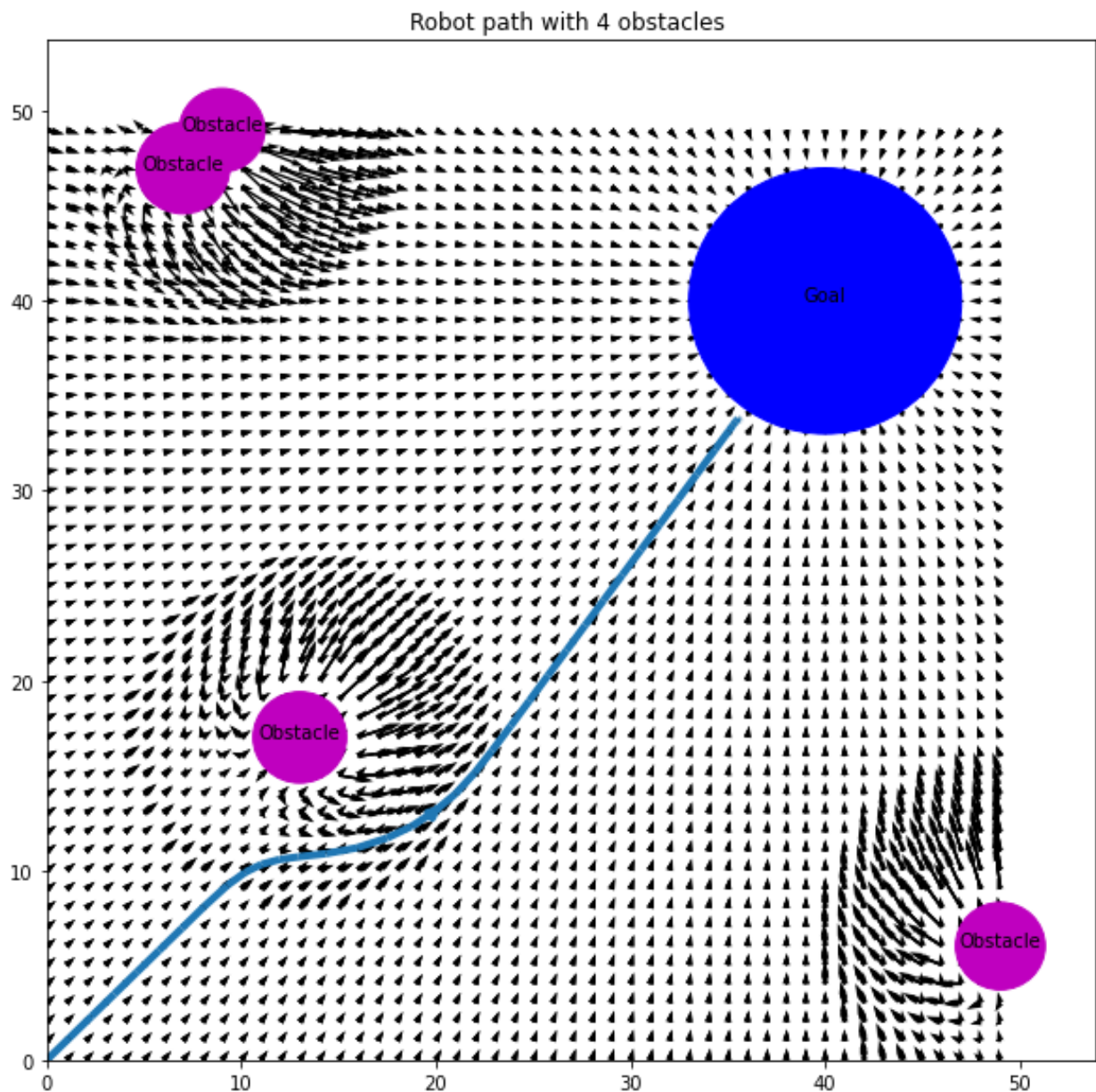
Here when the field of obstacle is in the path of the robot, therefore robot takes a curved path

Path Taken by the robot when there is 3 Obstacle



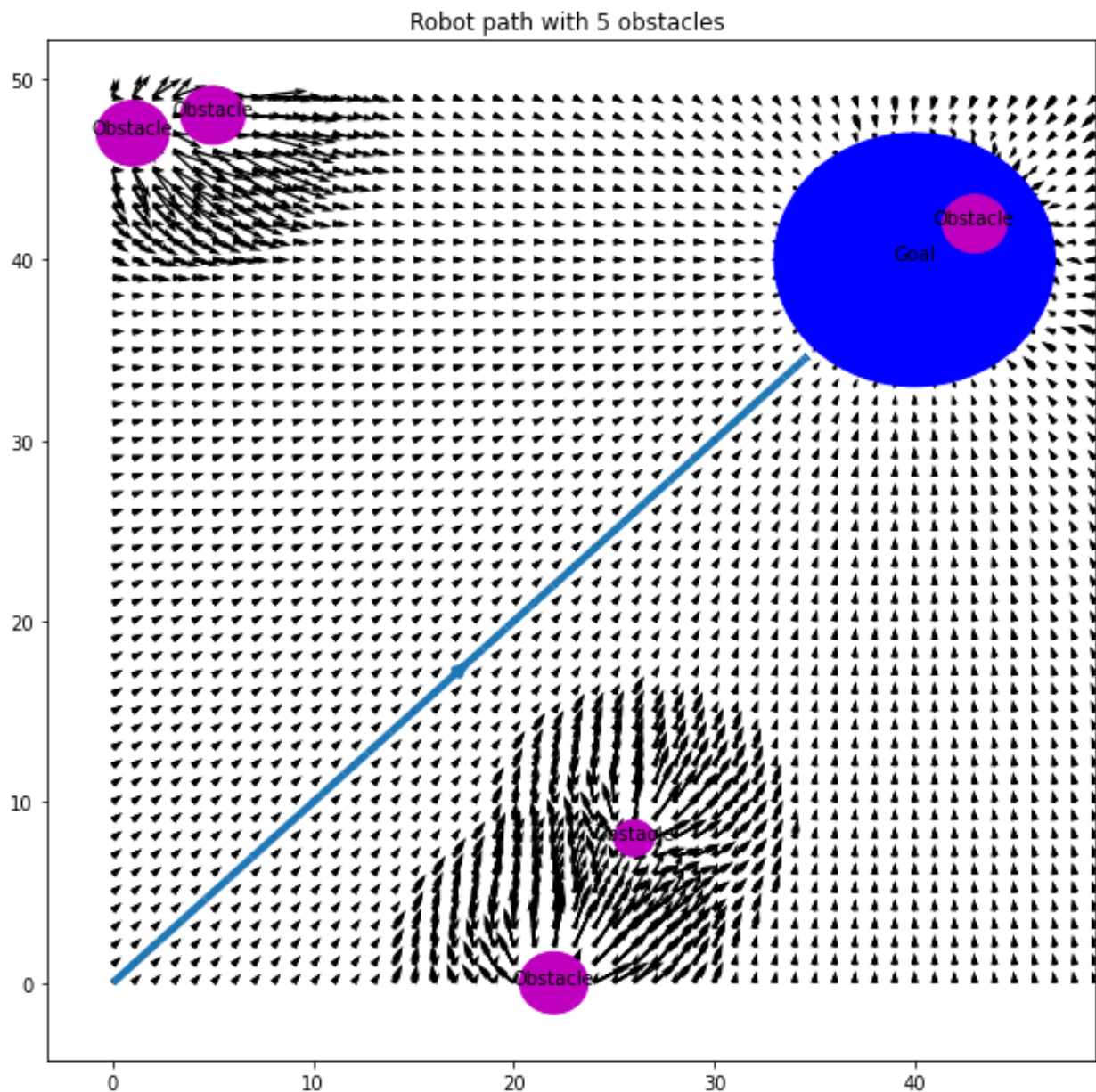
Here also when the field of the obstacle is in the path of the robot, therefore robot takes a curved path

Path Taken by the robot when there is Obstacle



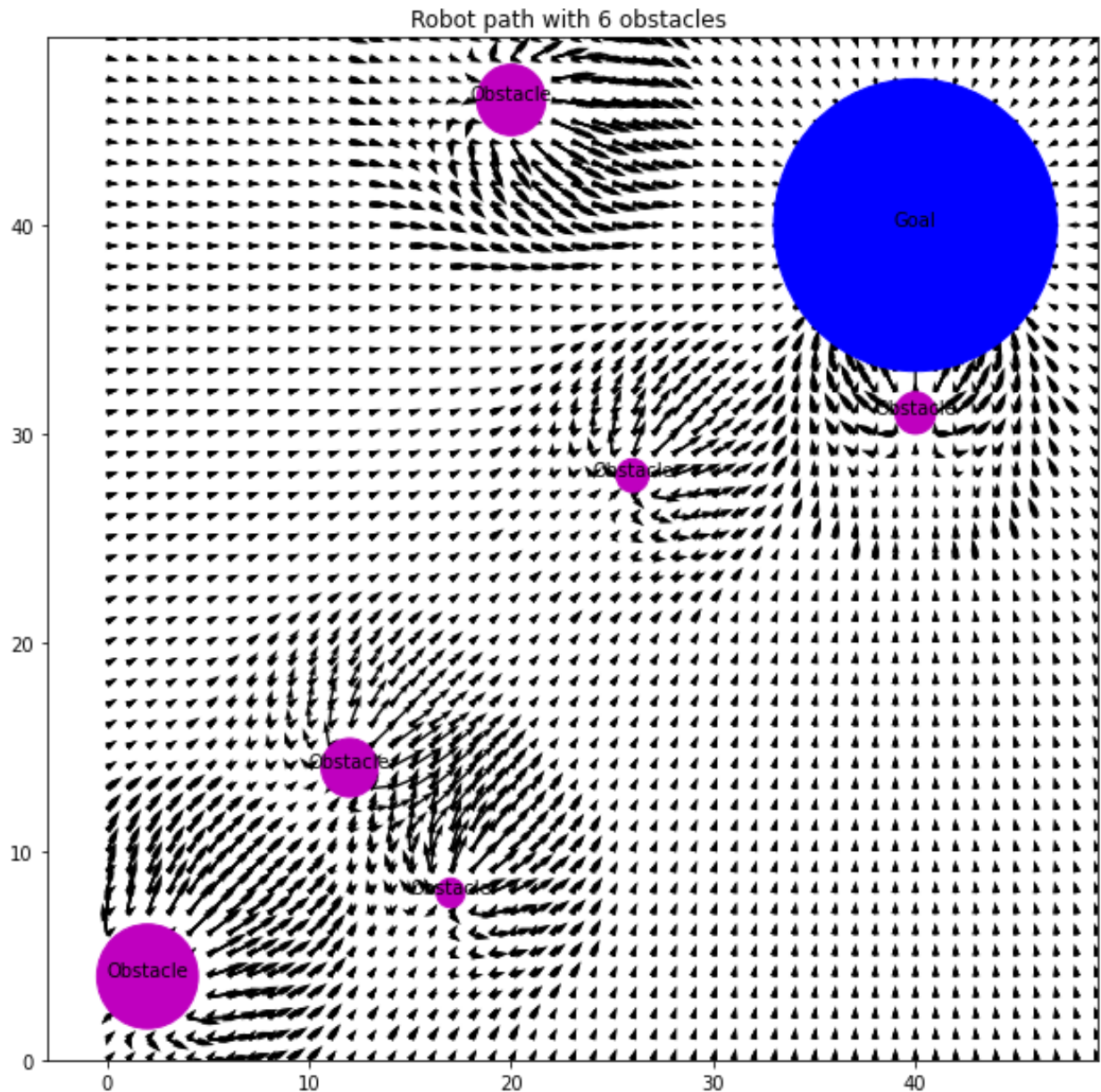
Here also when the field of the obstacle is in the path of the robot, robot takes a curved path

Path Taken by the robot when there is 5 Obstacle



Here robot takes the straight path because none of the obstacle's field has any effect on straight path taken by the robot.

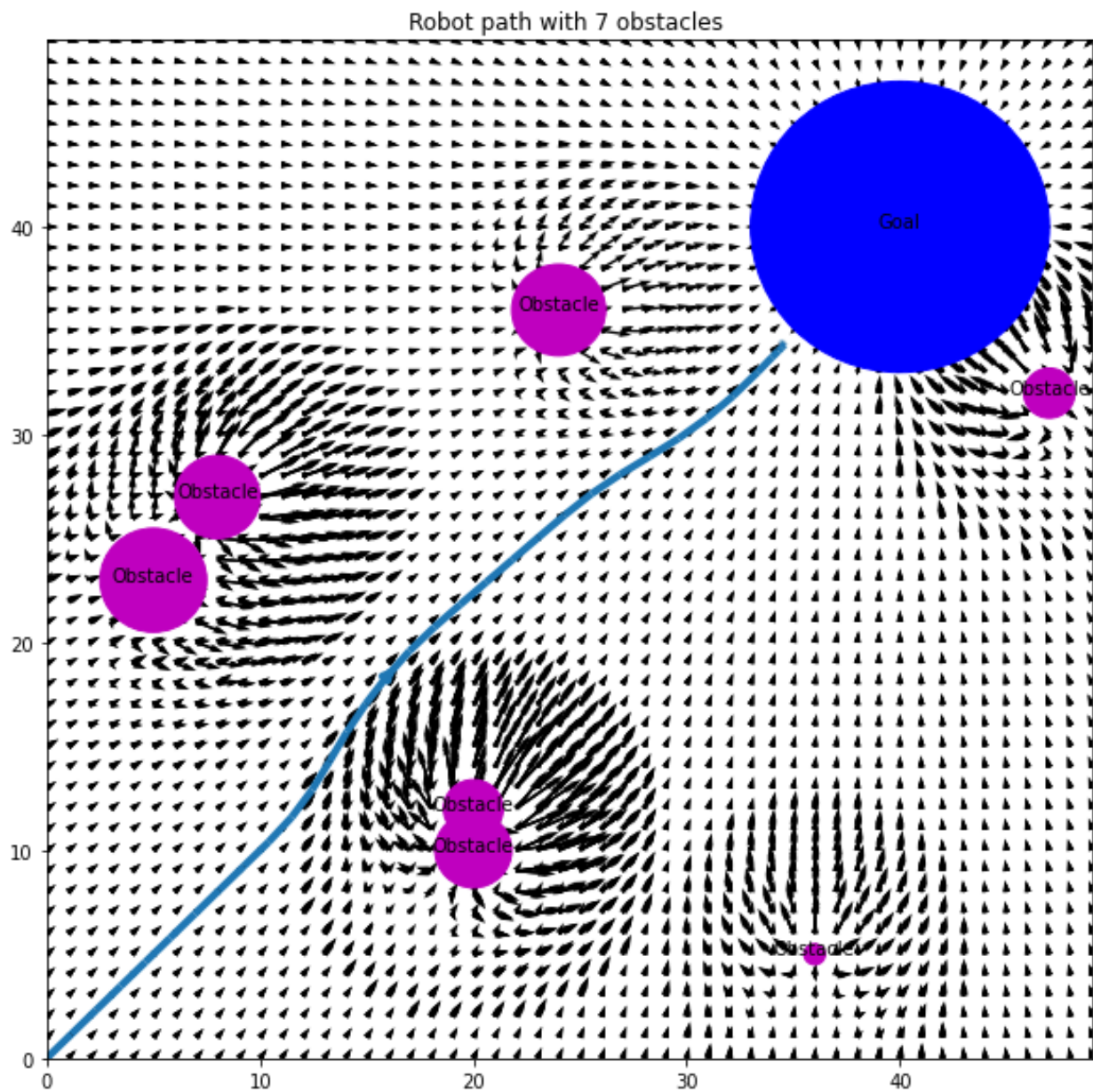
Path Taken by the robot when there is 6 Obstacle



This is a special case.

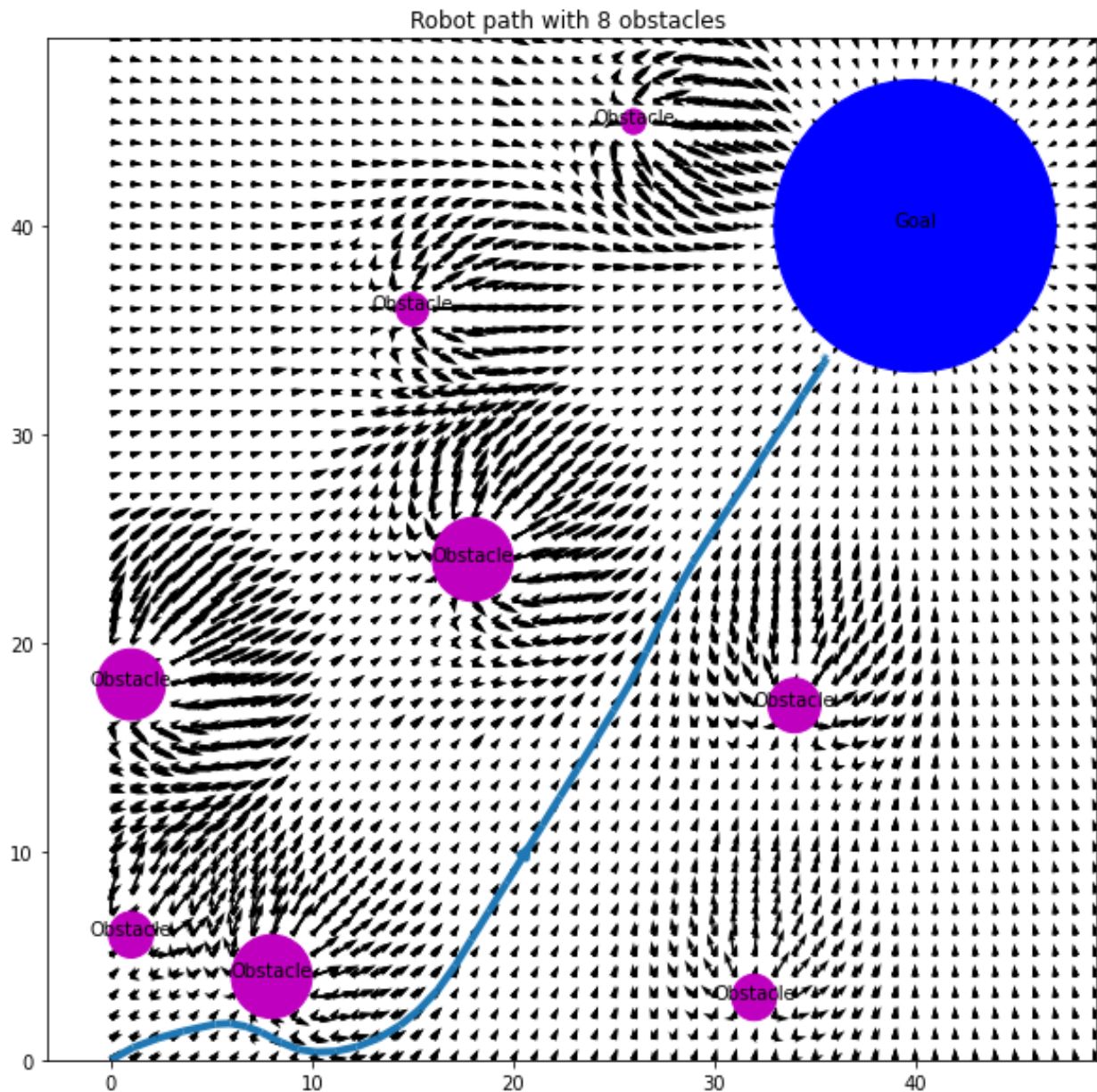
Here the obstacle's fields are very strong at the origin and Goal attractive fields are not strong enough to cancel out its effect, Therefore robot don't even leaves the origin. it is stuck at the origin

Path Taken by the robot when there is 7 Obstacle



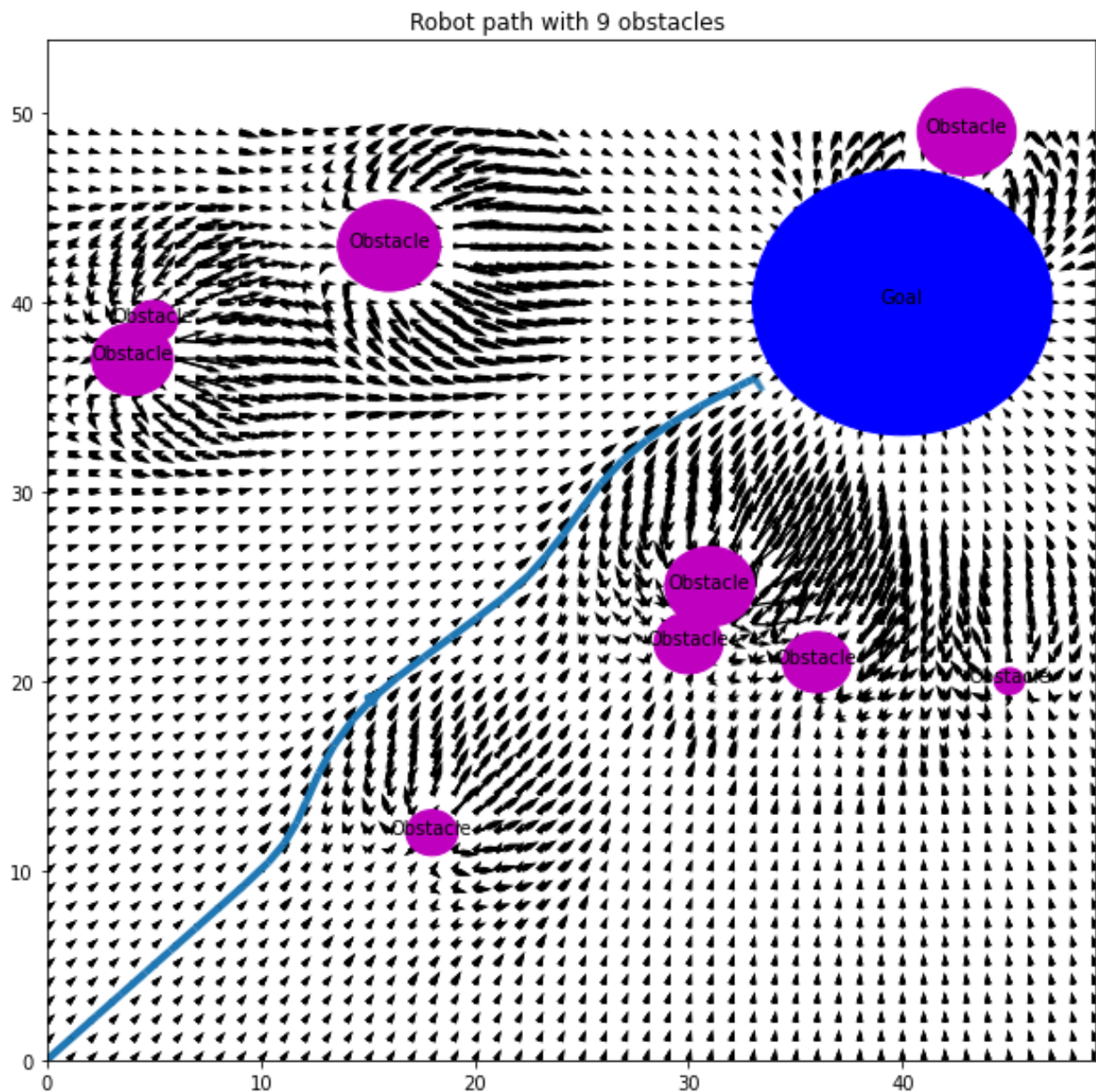
Here also when the field of the obstacle is in the path of the robot, robot takes a curved path

Path Taken by the robot when there is 8 Obstacle



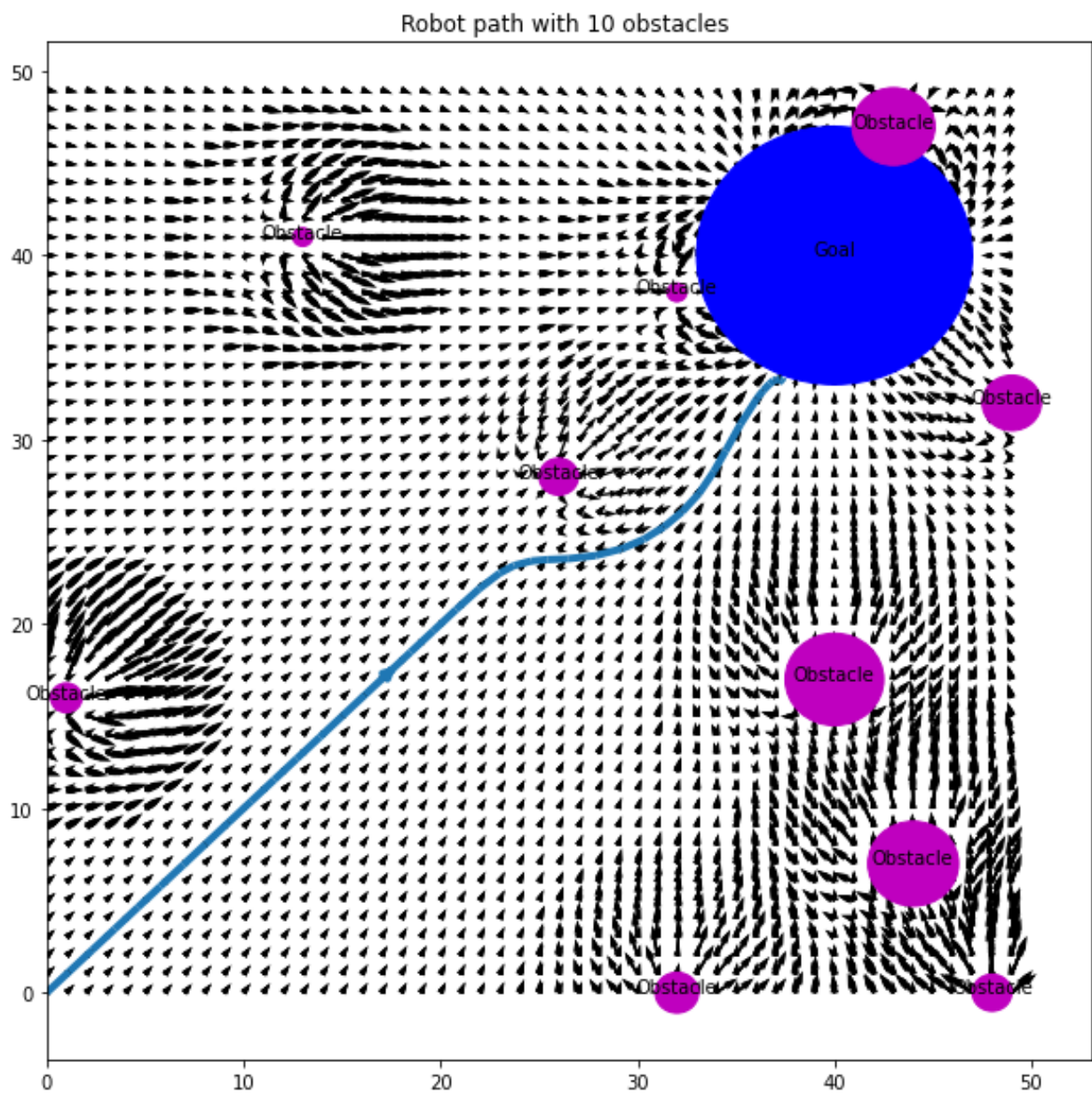
Here also when the field of the obstacle is in the path of the robot, robot takes a curved path

Path Taken by the robot when there is 9 Obstacle



Here also when the field of the obstacle is in the path of the robot, robot takes a curved path

Path Taken by the robot when there is 10 Obstacle



Here also when the field of the obstacle is in the path of the robot, the robot takes a curved path

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