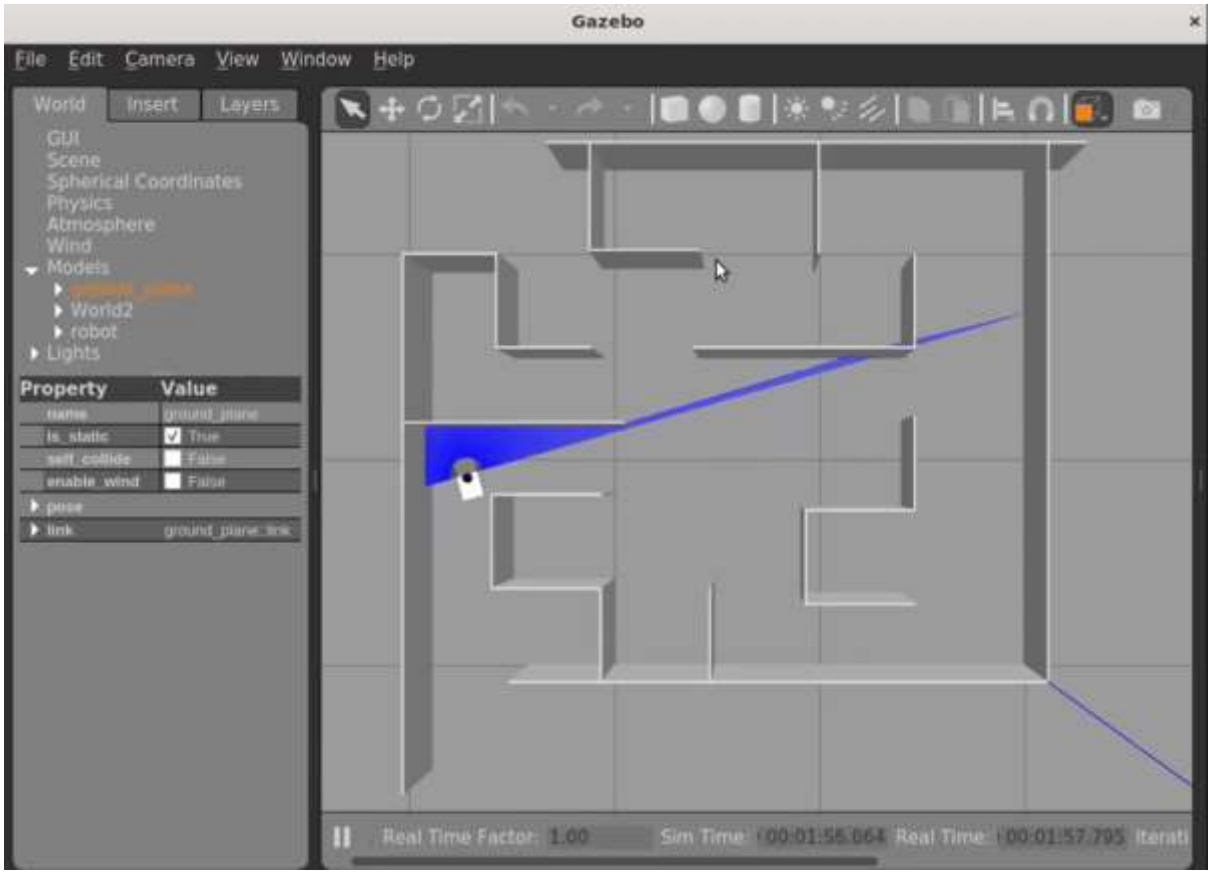
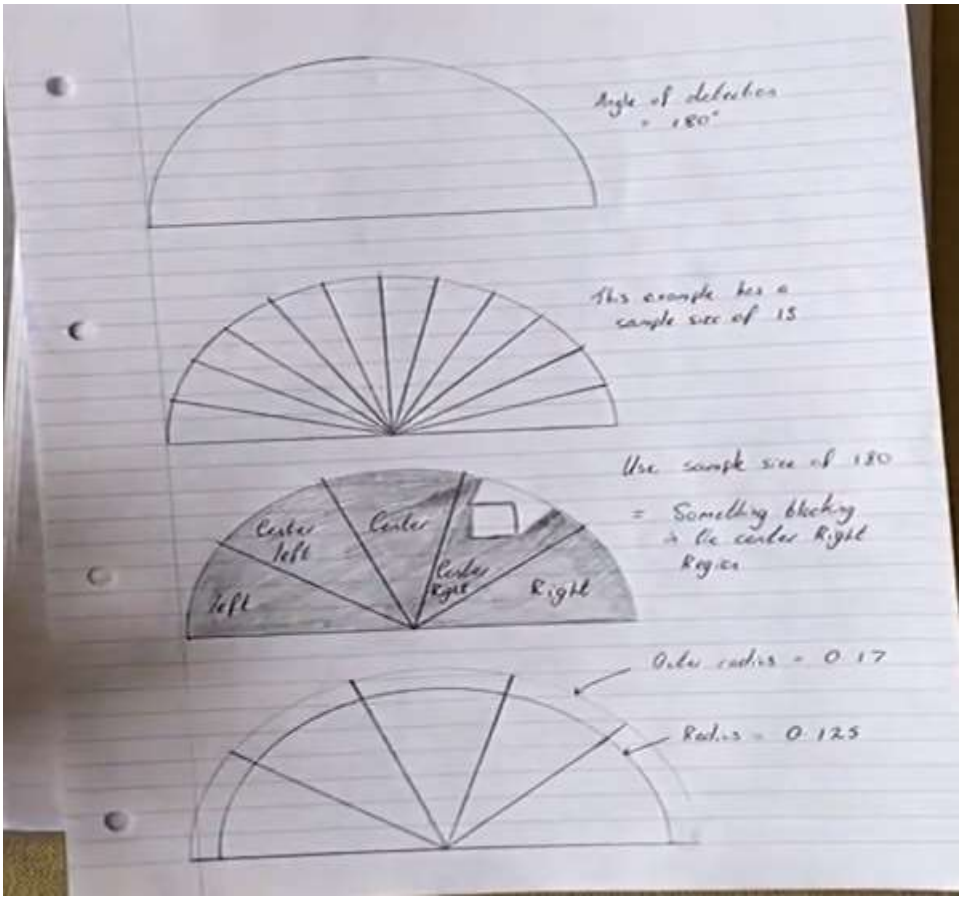
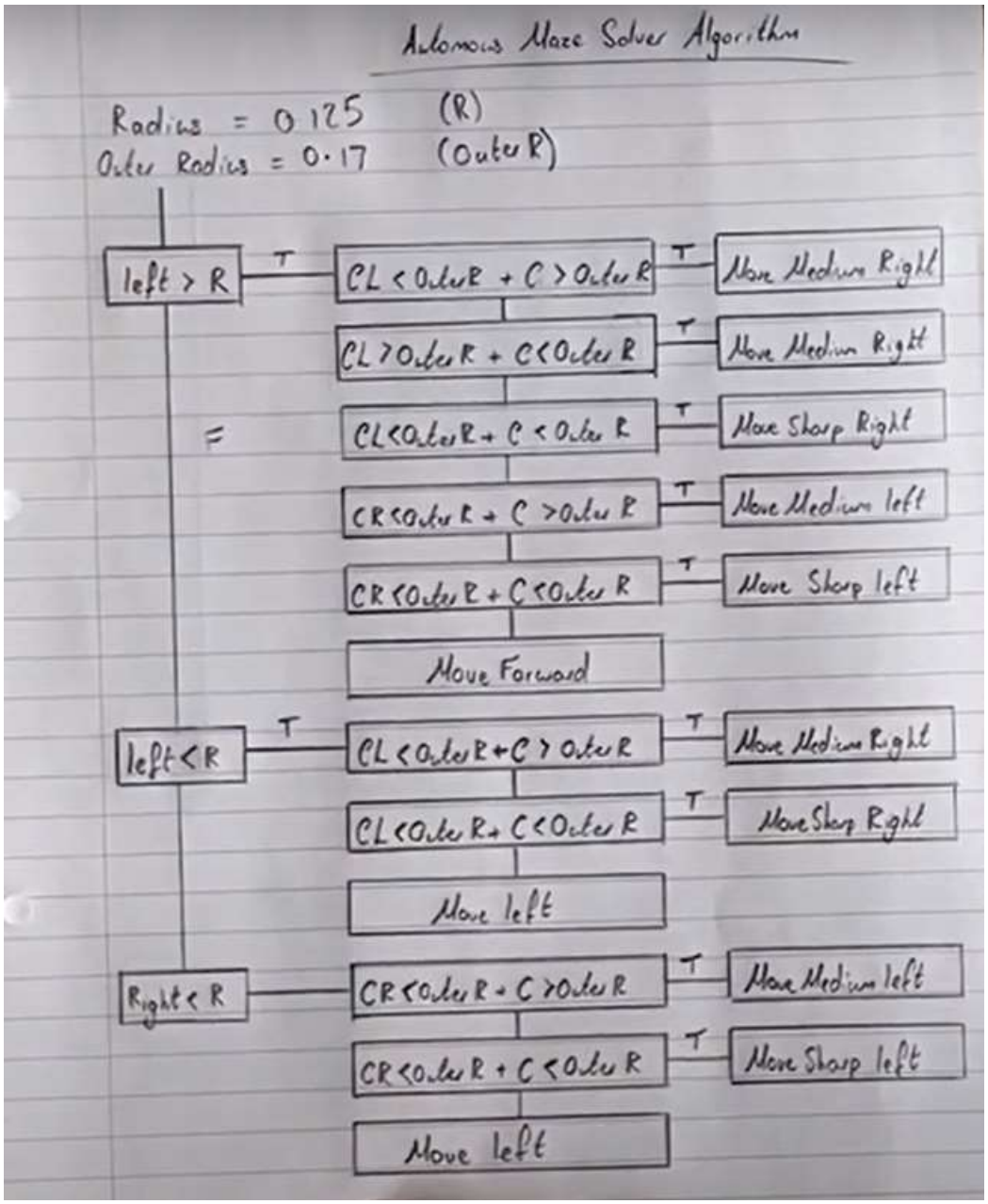
CODE:

```
        import rospy
from sensor_msgs.msg import LaserScan
from geometry_msgs.msg import Twist

class MazeRover:
    def __init__(self):
        rospy.init_node('maze_rover')
        rospy.Subscriber('/scan', LaserScan, self.scan_callback)
        self.cmd_vel_pub = rospy.Publisher('/cmd_vel', Twist,
queue_size=10)
        self.twist = Twist()
        self.rate = rospy.Rate(10)

    def scan_callback(self, data):

        desired_range = 0.5

        stop_threshold = 0.2

        range_index = len(data.ranges) / 2
        average_range = sum(data.ranges[range_index-10:range_index+10]) /
20


        if average_range > desired_range:
            self.twist.linear.x = 0.2
            self.twist.angular.z = 0.0

        else:
            left_range = sum(data.ranges[range_index+10:range_index+20]) /
10
            right_range = sum(data.ranges[range_index-20:range_index-10]) /
10
            if left_range > right_range:
                self.twist.angular.z = 0.2
            else:
                self.twist.angular.z = -0.2
            self.twist.linear.x = 0.0


        if min(data.ranges) < stop_threshold:
            self.twist.linear.x = 0.0

        self.cmd_vel_pub.publish(self.twist)

if __name__ == '__main__':
    rover = MazeRover()
    rospy.spin()
```

OUTPUT


Gazebo
File Edit Camera View Window Help
World Insert Layers
GUI
Scene
Spherical Coordinates
Physics
Atmosphere
Wind
Models
World2
robot
Lights
Property Value
name ground_plane
is_static True
self_collide False
enable_wind False
pose
link ground_plane_link
Real Time Factor: 1.00
Sim Time
Real Time
Iterati


This example has a sample size of 15
Use sample size of 180
= Something blocking in the center Right Region
Center left
Center
Center Right
Left
Right
Radius = 0.125


Autonomous Maze Solver Algorithm
Radius = 0.125 (R)
Outer Radius = 0.17 (OuterR)
left > R
T
CL < OuterR + C > OuterR
T
Move Medium Right
CL > OuterR + C < OuterR
T
Move Medium Right
=
CL < OuterR + C < OuterR
T
Move Sharp Right
CR < OuterR + C > OuterR
T
Move Medium left
CR < OuterR + C < OuterR
T
Move Sharp left
Move Forward
left < R
T
CL < OuterR + C > OuterR
T
Move Medium Right
CL < OuterR + C < OuterR
T
Move Sharp Right
Move left
Right < R
CR < OuterR + C > OuterR
T
Move Medium left
CR < OuterR + C < OuterR
T
Move Sharp left
Move left