lab2 part2

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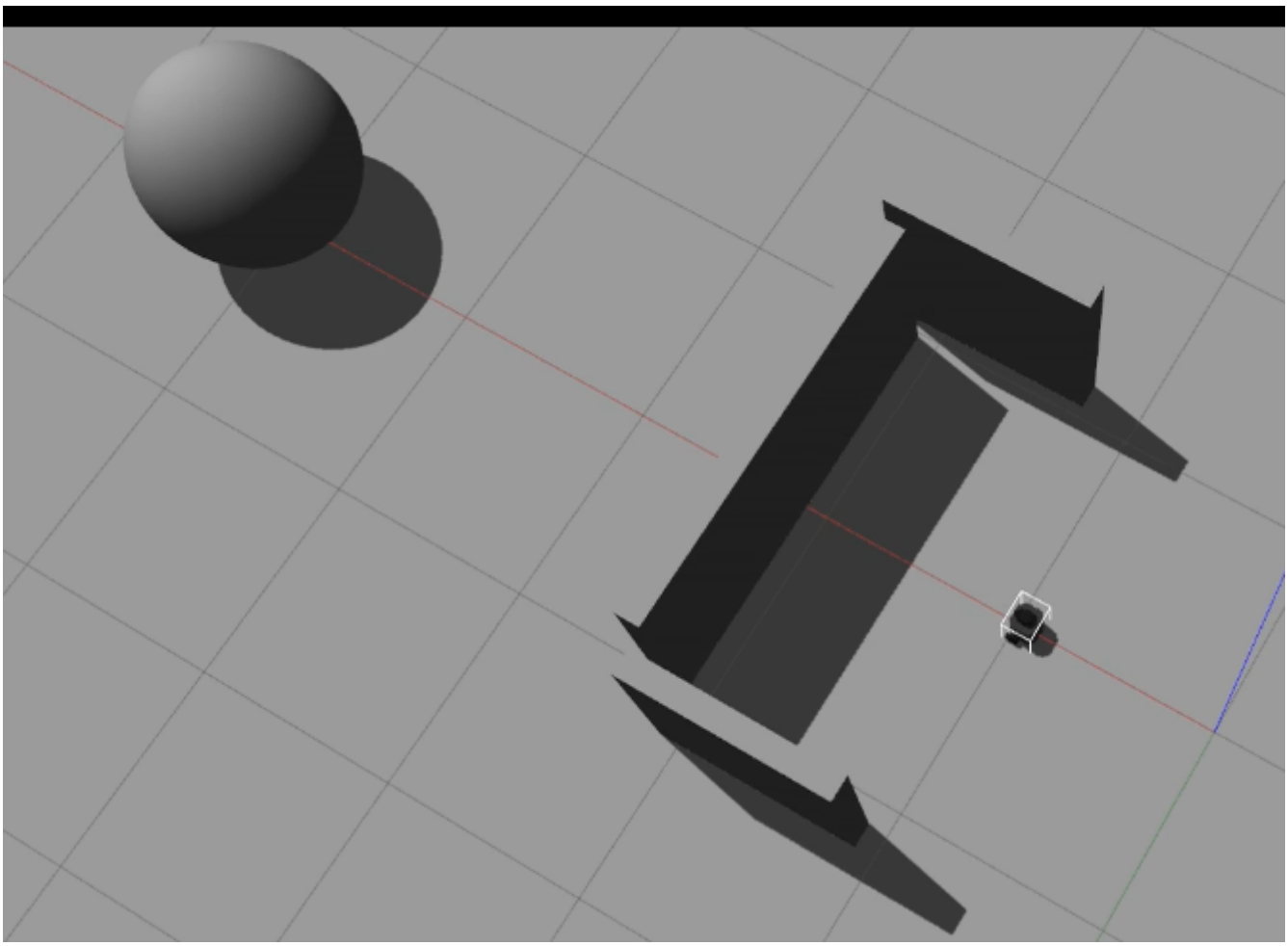
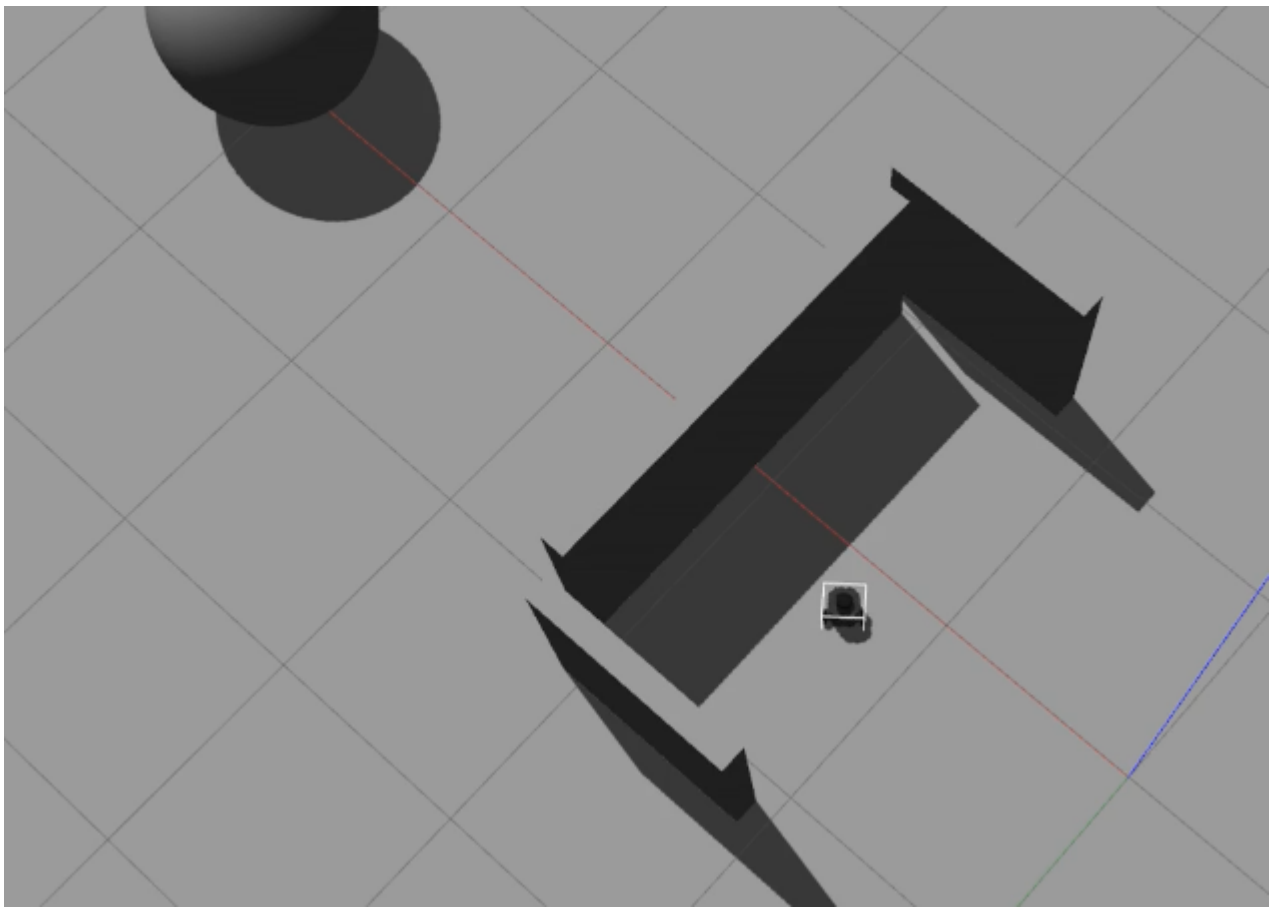
Simulation

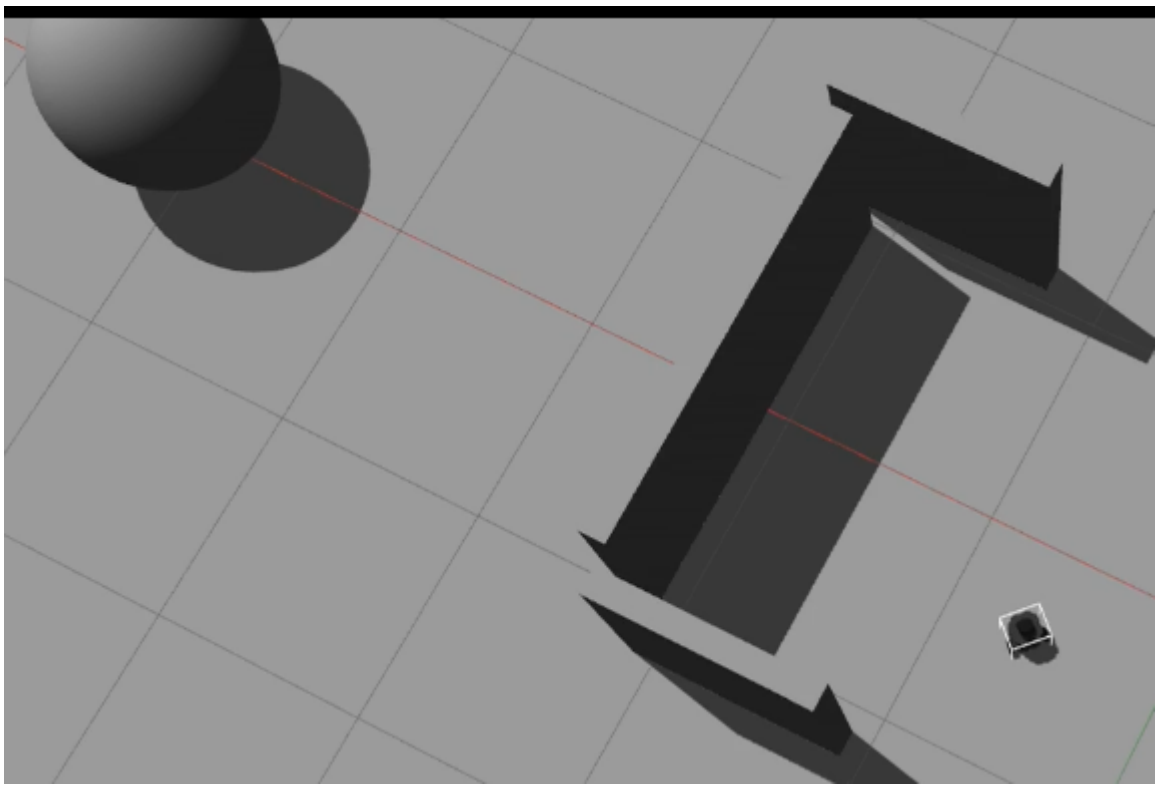
The simulation video is "demo.mp4".

Start

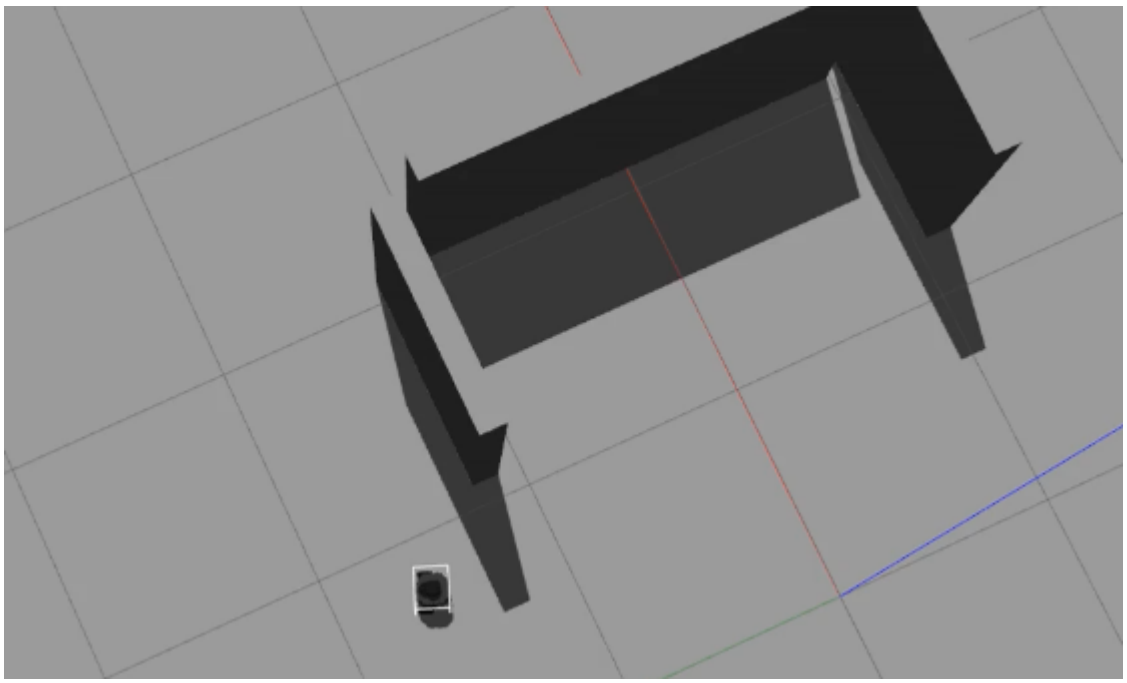


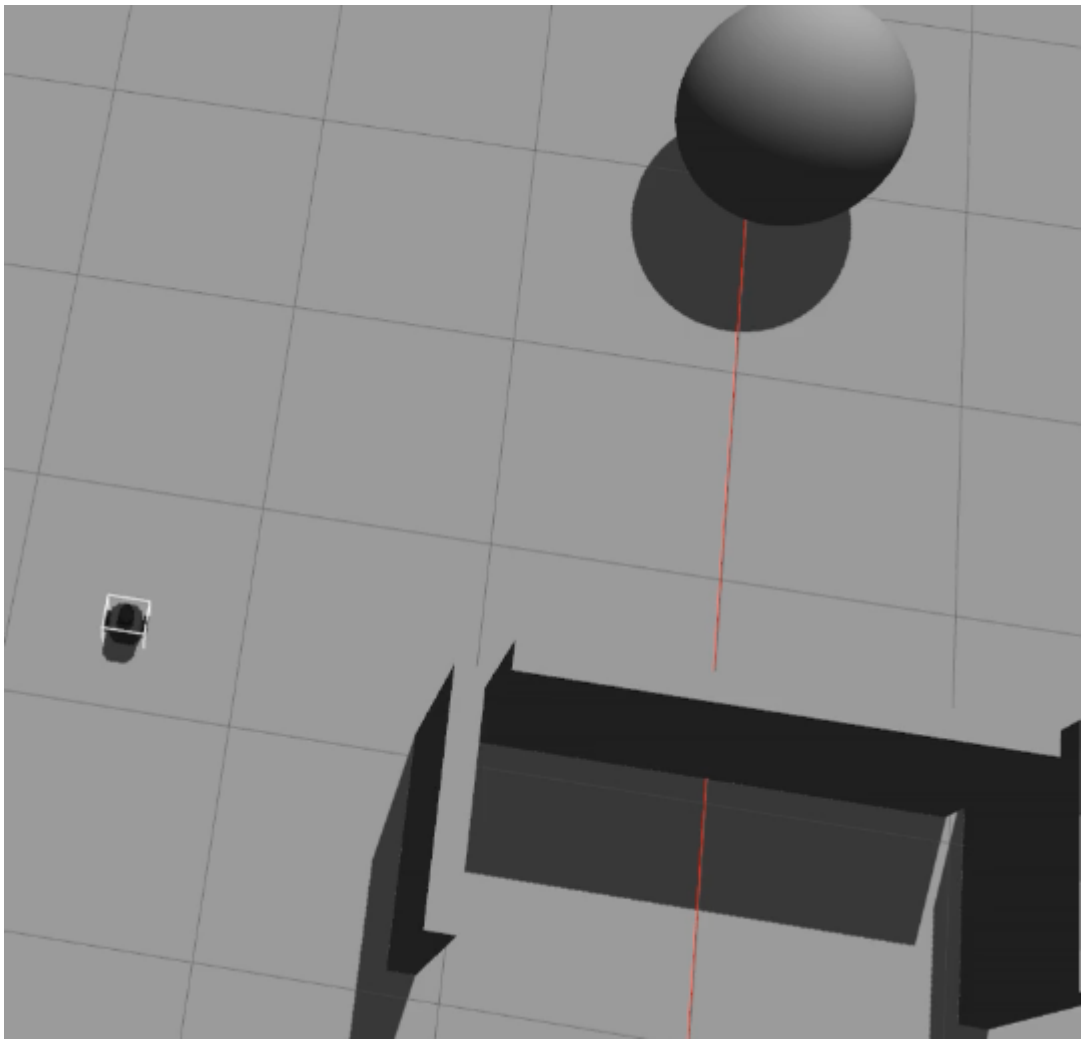
run back

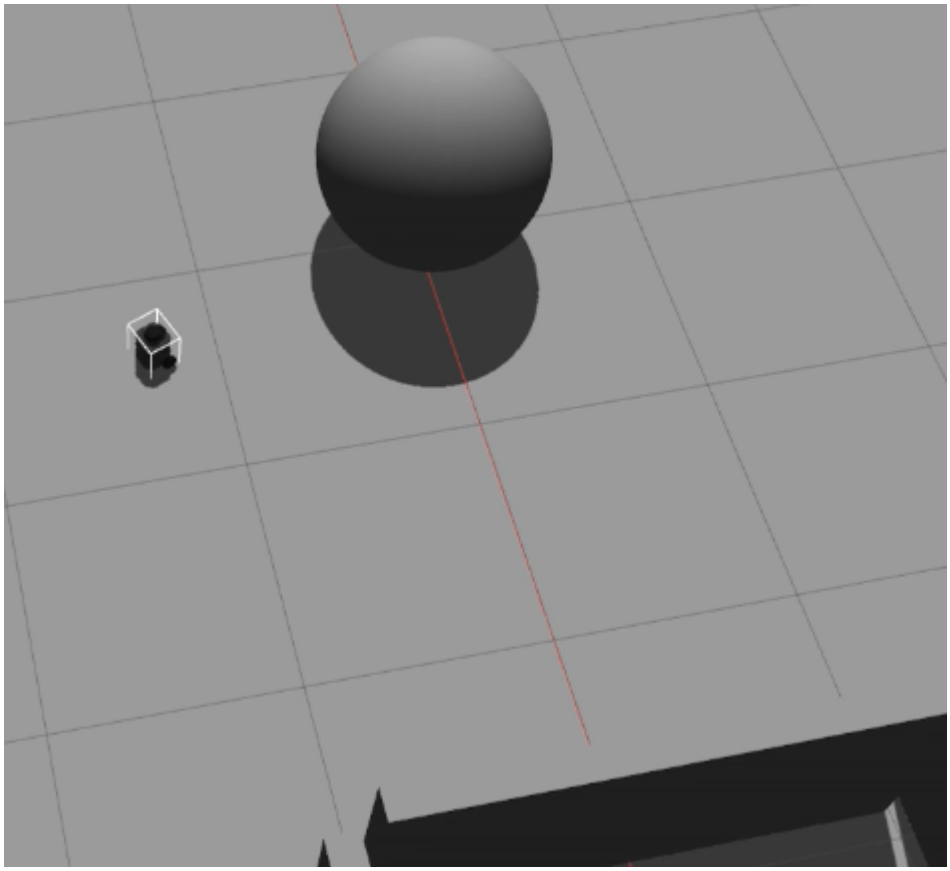




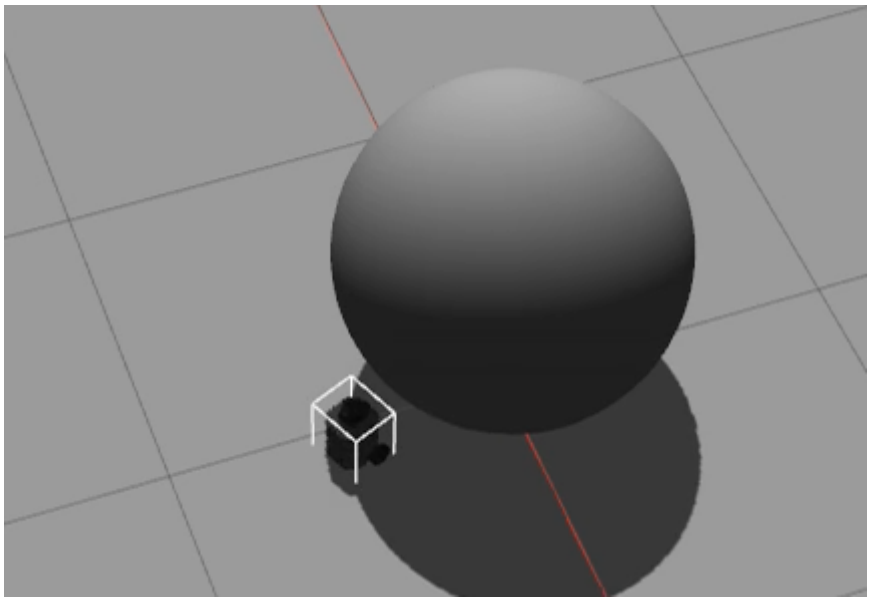
Run out of the barrier







Reach the target



Code

I set some fixed points and let the robot move along the set path.

The navigation algorithm is look ahead algorithm, I explained it thoroughly in report of **lab2_part1**.

Procedure:

- Subscribe to topic **"/tf"** to get the robot's position

```
posedata = receive(posesub);
robot_pos = posedata.Transforms.Transform.Translation;
```

- Subscribe to topic **"/gazebo/link_states"** to get robot's orientation

```
stateData = receive(linkStates);
orientation = stateData.Pose(2,1).Orientation.Z * pi;
```

- Use the look-ahead track algorithm to get the linear speed and angular speed.

```
% robotCurrentPose = [robot_pos.X robot_pos.Y orientation]
[lookahead_x,lookahead_y] = getLookaheadPoint(robotCurrentPose(1:2));
w = getW(robotCurrentPose)
```

- Set the speed data and publish to **"/cmd_vel"**.

```
velmsg.Linear.X = v;
velmsg.Angular.Z = w;
send(velpub,velmsg);
```

- Repeat the process until the robot reaches the target point (the ball).