Report

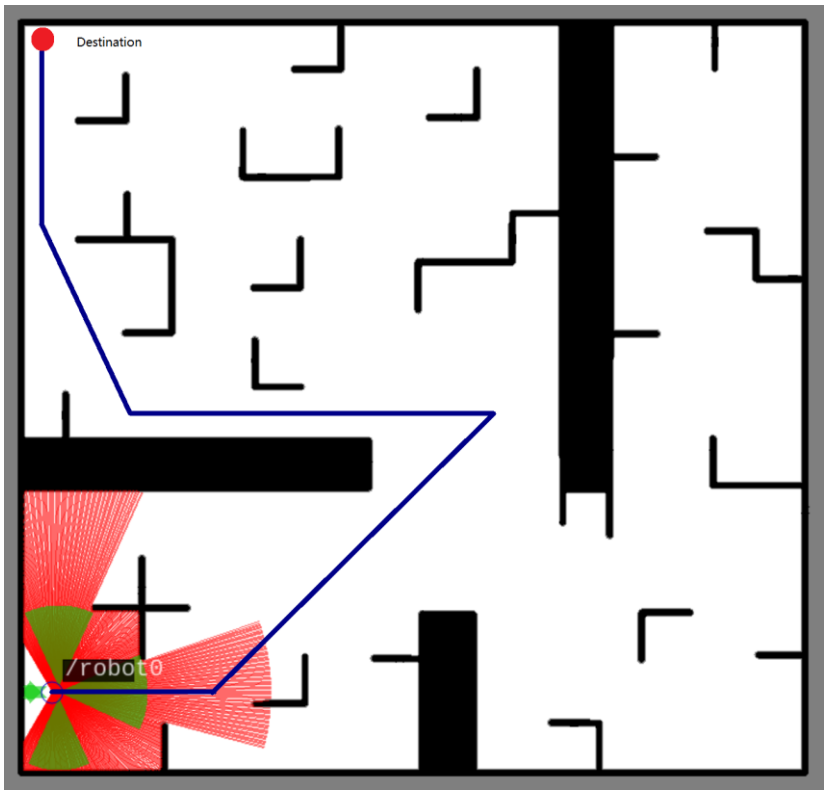
Code

```
//start new motion
	twist_cmd.angular.z=yaw_rate; //spinning to a horizontal way
	twist_cmd.linear.x=0.0; //
	timer=0.0; //reset the timer
	while(timer<1.59*time_3_sec) {
		twist_commander.publish(twist_cmd);
		timer+=sample_dt;
		loop_timer.sleep();
		}
	twist_cmd.angular.z=0.0;
	twist_cmd.linear.x=speed; // moving forward
	timer=0.0; //reset the timer
	while(timer<2.2*time_3_sec) {
		twist_commander.publish(twist_cmd);
		timer+=sample_dt;
		loop_timer.sleep();
		}
	twist_cmd.angular.z=-yaw_rate; //spinning around 60 degree
	twist_cmd.linear.x=0.0; //
	timer=0.0; //reset the timer
	while(timer<0.5*time_3_sec) {
		twist_commander.publish(twist_cmd);
		timer+=sample_dt;
		loop_timer.sleep();
		}
	twist_cmd.angular.z=0.0; //
	twist_cmd.linear.x=speed; //moving forward again
	timer=0.0; //reset the timer
	while(timer<0.8*time_3_sec) {
		twist_commander.publish(twist_cmd);
		timer+=sample_dt;
		loop_timer.sleep();
		}
	twist_cmd.angular.z=-yaw_rate; //spinning towards the destination
	twist_cmd.linear.x=0.0; //
	timer=0.0; //reset the timer
	while(timer<0.55*time_3_sec) {
```

```
        twist_commander.publish(twist_cmd);
        timer+=sample_dt;
        loop_timer.sleep();
        }
twist_cmd.angular.z=0.0; //
twist_cmd.linear.x=speed; //moving towards the destination
timer=0.0; //reset the timer
while(timer<2*time_3_sec) {
        twist_commander.publish(twist_cmd);
        timer+=sample_dt;
        loop_timer.sleep();
        }
```

Results

1. The created package is named as “rh_stdr_control”, which resides under ~/ros_ws/src/.
2. The modified files are mainly “rh_open_loop_commander.cpp” and CMakeLists.txt.
3. The routine for the 2-Dimensional robot is planned as follows:



4. When running “rh_open_loop_commander.cpp” multiple times, occasionally, there are accumulate errors (I guess) that will let the robot deviate from the planned way and sometimes hit the block, but most of the situations are accurate.