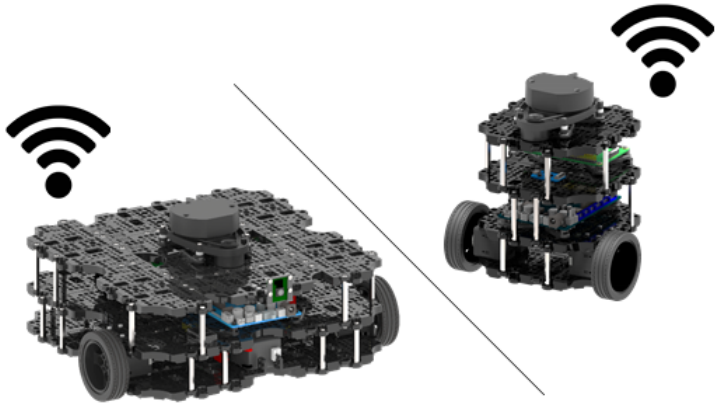
로봇 원격 접속

TurtleBot



ROS_MASTER_URI=http://<IP_of_robot>:11311

ROS_HOSTNAME=<IP_of_robot>

Remote PC

ROS_MASTER_URI=http://<IP_of_robot>:11311

ROS_HOSTNAME=<IP_of_remote_PC>

※ 로봇에서 ROS master를 동작시키는 것을 권장함

https://emanual.robotis.com/docs/en/platform/turtlebot3/quick-start/

로봇 원격 접속

- IP 주소 확인

```
$ sudo apt install net-tools
```

```
$ ifconfig
```

```
cmin@cmin:~$ ifconfig
lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 179034730  bytes 32018712839 (32.0 GB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 179034730  bytes 32018712839 (32.0 GB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlp59s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.77.151  netmask 255.255.255.0  broadcast 192.168.77.255
        inet6 fe80::67b7:bf02:25:7fe6  prefixlen 64  scopeid 0x20<link>
        ether c0:b8:83:38:27:ff  txqueuelen 1000  (Ethernet)
        RX packets 636122  bytes 258979338 (258.9 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1222680  bytes 1207868658 (1.2 GB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

로봇 원격 접속

- bashrc에 추가 (예시)

Robot bashrc

```
export ROS_MASTER_URI=http://192.168.77.100:11311
export ROS_HOSTNAME=192.168.77.100
```

Remote PC bashrc

```
export ROS_MASTER_URI=http://192.168.77.100:11311
export ROS_HOSTNAME=192.168.77.151
```

※ 본인의 IP에 맞게 수정

로봇 원격 접속

- 로봇의 토픽 확인

```
/joint_states
/map
/map_metadata
/map_updates
/move_base/DWAPlannerROS/cost_cloud
/move_base/DWAPlannerROS/global_plan
/move_base/DWAPlannerROS/local_plan
/move_base/DWAPlannerROS/parameter_descriptions
/move_base/DWAPlannerROS/parameter_updates
/move_base/DWAPlannerROS/trajectory_cloud
/move_base/NavfnROS/plan
/move_base/cancel
/move_base/current_goal
/move_base/feedback
/move_base/global_costmap/costmap
/move_base/global_costmap/costmap_updates
/move_base/global_costmap/footprint
/move_base/global_costmap/inflation_layer/parameter_descriptions
/move_base/global_costmap/inflation_layer/parameter_updates
/move_base/global_costmap/obstacle_layer/parameter_descriptions
/move_base/global_costmap/obstacle_layer/parameter_updates
/move_base/global_costmap/parameter_descriptions
/move_base/global_costmap/parameter_updates
/move_base/global_costmap/static_layer/parameter_descriptions
/move_base/global_costmap/static_layer/parameter_updates
/move_base/goal
/move_base/local_costmap/costmap
/move_base/local_costmap/costmap_updates
/move_base/local_costmap/footprint
/move_base/local_costmap/inflation_layer/parameter_descriptions
/move_base/local_costmap/inflation_layer/parameter_updates
/move_base/local_costmap/obstacle_layer/parameter_descriptions
/move_base/local_costmap/obstacle_layer/parameter_updates
/move_base/local_costmap/parameter_descriptions
/move_base/local_costmap/parameter_updates
/move_base/parameter_descriptions
/move_base/parameter_updates
/move_base/recovery_status
/move_base/result
/move_base/status
/move_base_simple/goal
/odom
/particlecloud
/raspicam_node/image/mouse_click
/rosout
/rosout_agg
/scan
```

로봇 원격 접속

- **로봇의 터미널에 직접 접속**

```
$ ssh <name_of_robot_pc>@<IP_of_robot>
```

※ ssh 방식을 통한 원격 접속을 위해서는 PC의 이름과 비밀번호가 필요함

※ ssh로 접속한 터미널에서 특정창을 여는 명령어(gedit, rviz, rqt, …)는 추가 옵션이 필요하니 권장하지 않음

※ 따라서 ssh를 사용할 때, 편집기는 터미널에서 바로 편집하는 편집기(vim, nano, …)를 사용하고, 토픽 데이터를 확인할 때는 IP 토픽 공유를 통한 remote PC에서 확인하는 것을 권장함