



서봇

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데스크탑과 라즈베리파이를 같은망으로 구성



진행상황 – 통신

<http://wiki.ros.org/ROS/Tutorials/WritingPublisherSubscriber%28python%29>



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ROS/ Tutorials/ WritingPublisherSubscriber(python)

Note: This tutorial assumes that you have completed the previous tutorials: creating a ROS msg and srv.

💡 Please ask about problems and questions regarding this tutorial on [answers.ros.org](#). Don't forget to include in your question the link to this page, the versions of your OS & ROS, and also add appropriate tags.

Writing a Simple Publisher and Subscriber (Python)

Description: This tutorial covers how to write a publisher and subscriber node in python.

Tutorial Level: BEGINNER

Next Tutorial: Examining the simple publisher and subscriber

catkin rosbuild

자례

- 1. Writing the Publisher Node
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- 2. Writing the Subscriber Node
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위키

Distributions
ROS/Installation
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문서

• 고지는 문서
정보
첨부
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사용자

로그인

1. Writing the Publisher Node

"Node" is the ROS term for an executable that is connected to the ROS network. Here we'll create the publisher ("talker") node which will continually broadcast a message.

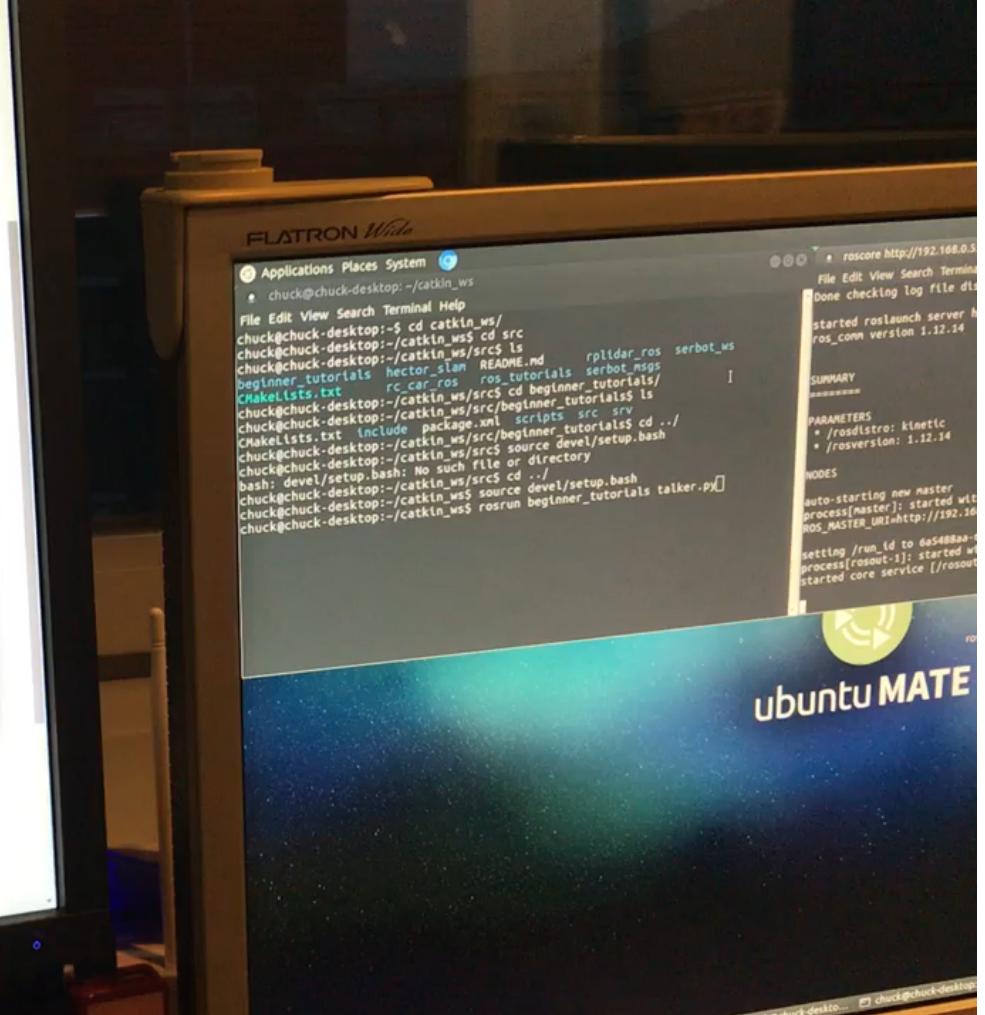
Change directory into the beginner_tutorials package, you created in the earlier tutorial, [creating a package](#):

```
$ roscd beginner_tutorials
```



진행상황 – 통신

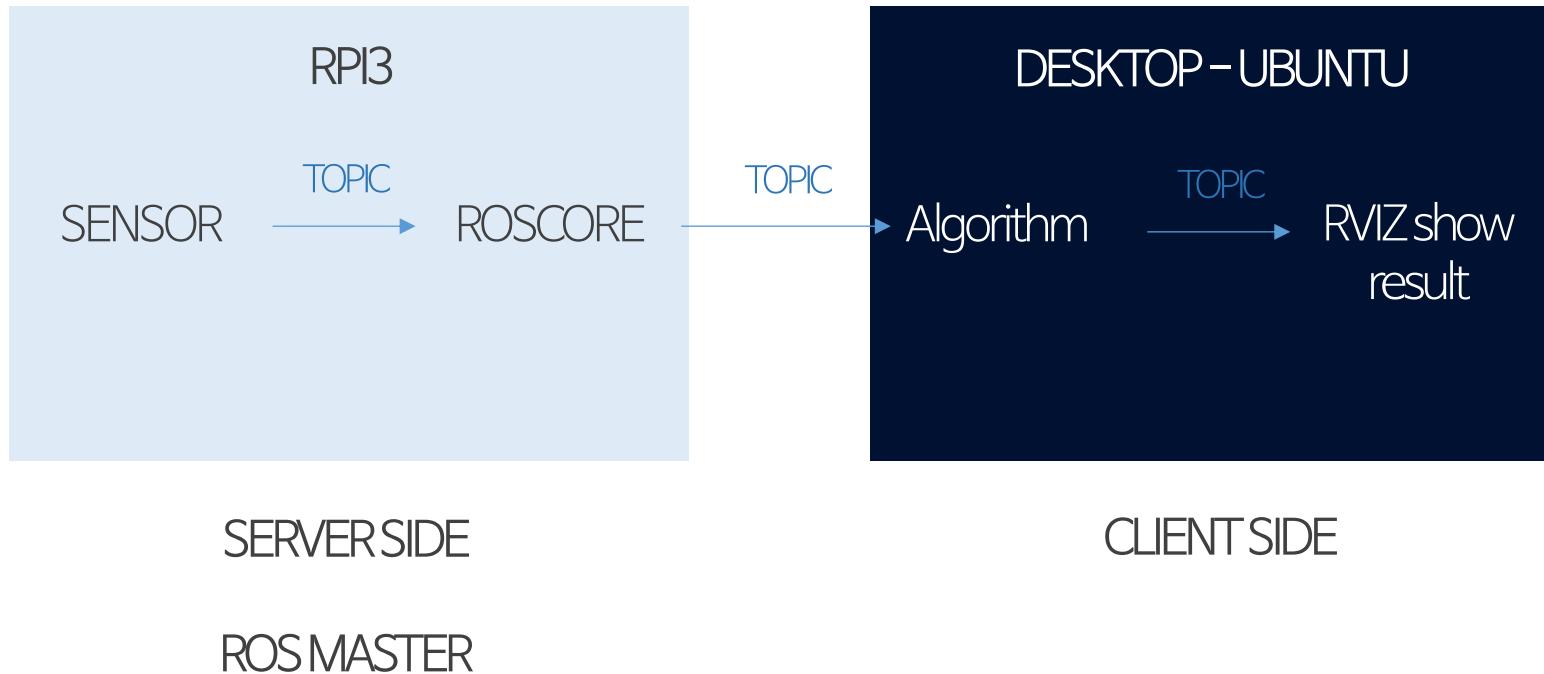
```
[INFO] [1556101834.447934]: 
[INFO] [1556101835.314127]: s
[INFO] [1556101839.753456]: 
[INFO] [1556101840.709474]: w
[INFO] [1556101845.112890]: 
[serbot_teleop_keyboard-1] process has finished cleanly
log file: /home/chuck/.ros/log/6a5488aa-6667-11e9-bcc6-b827eb74fa8f/serbot_teleop_keyboard-1.log
all processes on machine have died, roslaunch will exit
shutting down processing monitor...
... shutting down processing monitor complete
done
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws$ cd src
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src$ ls
beginner_tutorials  laser_values  ros_tutorials  serbot_msgs
CMakeLists.txt      README.md    rplidar_ros   serbot_ws
gazebo_ros_pkgs    robot_setup_tf  rplidar_ros_slam.zip
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/ros_tutorials$ ls
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/roslaunch$ ls
empty_ros_pkg      README.md    ros_tutorials_service
LICENSE            ros_tutorials_action  ros_tutorials_topic
my_first_ros_pkg   ros_tutorials_parameter  testbot_description
pts                cd beginner_tutorials
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/roslaunch$ cd ..
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials$ ls
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials$ 
CMakeLists.txt      include msg package.xml scripts src srv
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials$ cd src
pts
bash: cd: srscripts: No such file or directory
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials$ cd scripts
pts/
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials/scripts$ ls
add_two_ints_client.py  listener.py  talker2.py  test3.py
add_two_ints_server.py  talker1.py   talker.py
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials/scripts$ 
vt talker1.ipynb
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials/scripts$ 
vt talker.ipynb
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws/src/beginner_tutorials/scripts$ 
cd ~/catkin_ws
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws$ source devel/setup.bash
chuck@chuck-PNVKBOA0-Samsung-DeskTop:~/catkin_ws$ rosrund beginner_tutorials talker.py
I heard hello world 13149
I heard hello world 13149
I heard hello world 13149
```



```
Applications Places System
chuck@chuck-desktop:~/catkin_ws/
File Edit View Search Terminal Help
chuck@chuck-desktop:~$ cd catkin_ws/
chuck@chuck-desktop:~/catkin_ws$ cd src
chuck@chuck-desktop:~/catkin_ws/src$ ls
beginner_tutorials  hector_slam  README.md  rplidar_ros  serbot_msgs  serbot_ws
CMakeLists.txt      rc_car_ros  ros_tutorials  serbot_ws
chuck@chuck-desktop:~/catkin_ws/src$ cd beginner_tutorials/
chuck@chuck-desktop:~/catkin_ws/src/beginner_tutorials$ ls
include package.xml  scripts  src  srv
chuck@chuck-desktop:~/catkin_ws/src/beginner_tutorials$ 
chuck@chuck-desktop:~/catkin_ws/src$ source devel/setup.bash
chuck@chuck-desktop:~/catkin_ws/src$ cd ..
chuck@chuck-desktop:~/catkin_ws$ source devel/setup.bash
chuck@chuck-desktop:~/catkin_ws$ rosrund beginner_tutorials talker.py
NODES
auto-starting new master
process[master]: started with
ROS_MASTER_URI=http://192.168.0.5
setting /run_id to da5488aa-6667-11e9-bcc6-b827eb74fa8f
process[rosout-1]: started with
started core service [/rosout]
ubuntu MATE
```

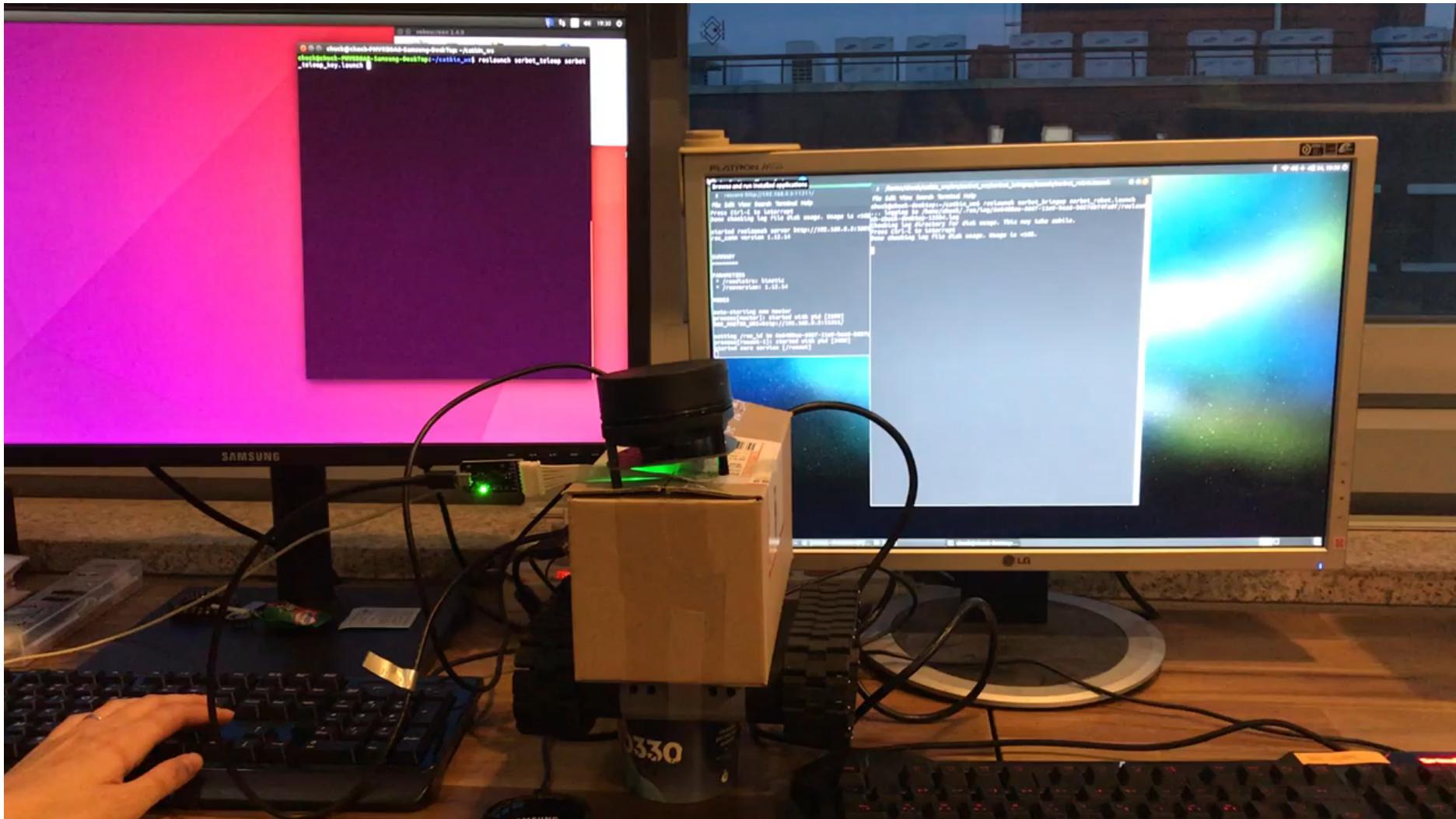


| 진행상황 – 통신





| 진행상황 – 통신





진행상황 – 통신

```
./home/chuck/catkin_ws/src/serbot_ws/serbot_teleop/launch/serbot_teleop_key.launch
chuck@chuck-PNVKB0A0-Samsung-DeskTop:~/catkin_ws$ rosrun serbot teleop serbot
... logging to /home/chuck/.ros/log/6a5488aa-6667-11e9-bcc6-b827eb74fa8f/roslaun
ch-chuck-PNVKB0A0-Samsung-DeskTop-18850.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started rosrun server http://192.168.0.17:45499/

SUMMARY
=====
PARAMETERS
* /rosdistro: kinetic
* /rosversion: 1.12.14

NODES
/
  serbot_teleop_keyboard (serbot_teleop/serbot_teleop_key.py)

ROS_MASTER_URI=http://192.168.0.5:11311

process[serbot_teleop_keyboard-1]: started with pid [18859]
[INFO] [1556101822.803164]: w
[INFO] [1556101825.922892]: 
[INFO] [1556101826.611798]: a
[INFO] [1556101830.320687]: 
[INFO] [1556101831.518307]: d
[INFO] [1556101834.447934]: 
[INFO] [1556101835.314127]: s
[INFO] [1556101839.753456]: 
[INFO] [1556101840.709474]: w
[INFO] [1556101845.112890]: 
```

```
./home/chuck/catkin_ws/src/serbot_ws/serbot_bringup/launch/serbot_robot.launch http://192.168.0.5:34027
File Edit View Search Terminal Help
chuck@chuck-desktop:~/catkin_ws$ rosrun serbot_bringup serbot_robot.launch
... logging to /home/chuck/.ros/log/6a5488aa-6667-11e9-bcc6-b827eb74fa8f/roslaun
ch-chuck-desktop-13354.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started rosrun server http://192.168.0.5:34027/

SUMMARY
=====
PARAMETERS
* /rosdistro: kinetic
* /rosversion: 1.12.14
* /rplidarNode/angle_compensate: True
* /rplidarNode/frame_id: laser
* /rplidarNode/inverted: False
* /rplidarNode/serial_baudrate: 115200
* /rplidarNode/serial_port: /dev/ttyUSB0

NODES
/
  rplidarNode (rplidar_ros/rplidarNode)
  serbot_diagnostics (serbot_bringup/serbot_diagnostics)
  serbot_teleop_client (serbot_bringup/serbot_teleop_client.py)

ROS_MASTER_URI=http://192.168.0.5:11311

process[rplidarNode-1]: started with pid [13371]
process[serbot_teleop_client-2]: started with pid [13372]
process[serbot_diagnostics-3]: started with pid [13378]
RPLIDAR running on ROS package rplidar_ros
SDK Version: 1.5.7
RPLIDAR S/N: ABD39AF2C1EA9FC0BEE89CF324003200
Firmware Ver: 1.25
Hardware Rev: 5
RPLidar health status : 0
Moving forwards
Stopping
Turning left
Stopping
Turning right
Stopping
Moving backwards
Stopping
Moving forwards
Stopping
```



진행상황 - 패키지 커스터마이징

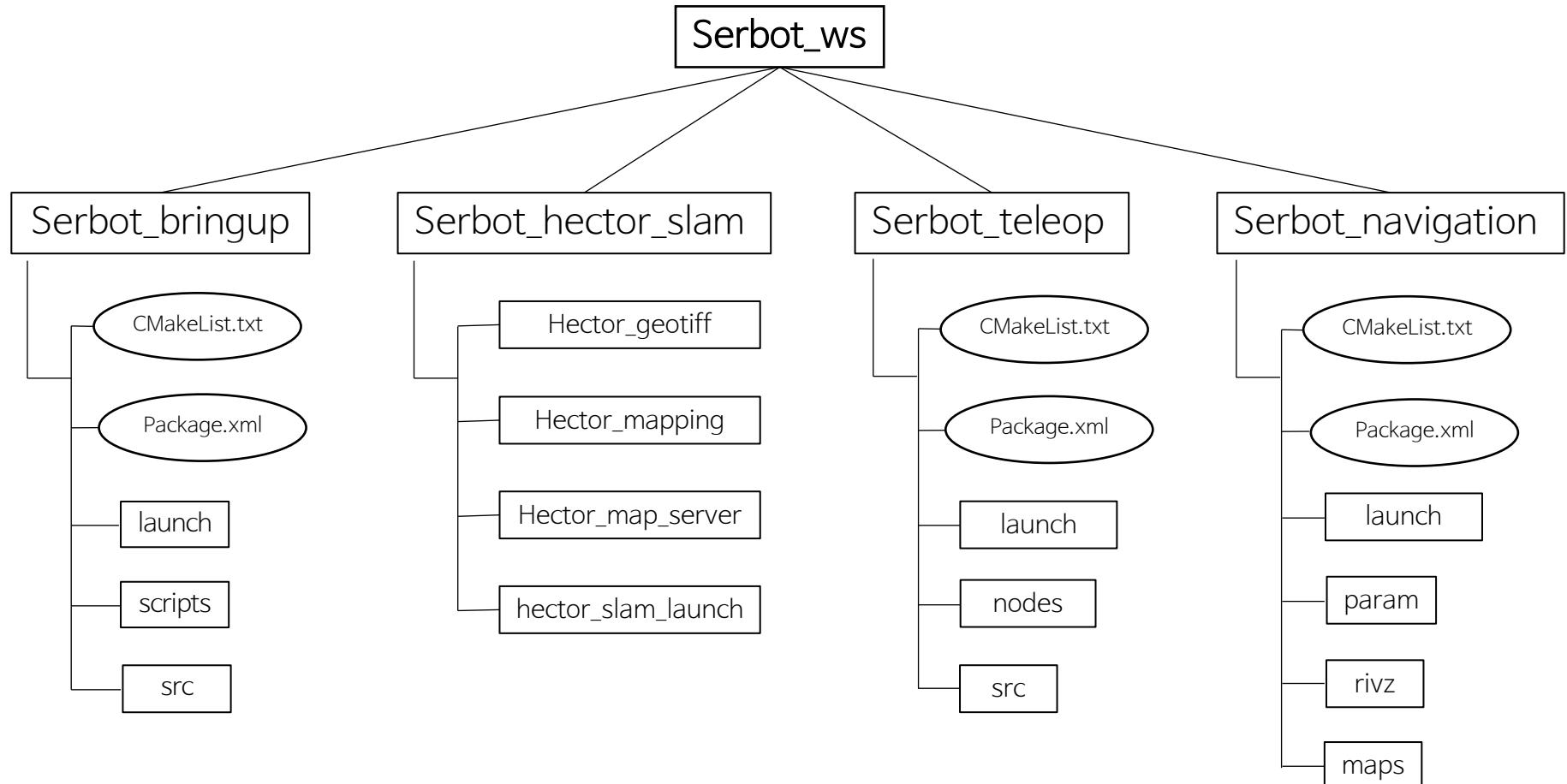
vokoscreen

chuck@chuck-PNVKB0AO-Samsung-DeskTop:~/catkin_ws/src\$ tree -f serbot_ws | more

The screenshot shows a dark-themed desktop environment. A terminal window at the top left displays the command 'tree -f serbot_ws | more' with its output. To the left of the terminal is a vertical dock containing icons for various applications like a web browser, file manager, and system settings. In the top right corner, there's a system tray with icons for battery, signal, and volume. A large white window titled 'vokoscreen 2.4.0' is open in the center-right, showing a camera icon and controls for 'Fullscreen', 'Window', and 'Area' capture modes. It also displays a 'Display 1: 1920x1080' resolution, a 'Countdown' timer, and a progress bar indicating a recording session.

패키지 구성요소 TREE로 확인

| 진행상황 - 패키지 커스터마이징



트리

진행상황 - 맵 생성



Terminal

```
chuck@chuck-PNVKB0A0-Samsung-DeskTop: ~/catkin_ws
[INFO] [1556088573.737290483]: HectorSM p_update_factor_occupied_: 0.900000
[INFO] [1556088573.737325403]: HectorSM p_map_update_distance_threshold_: 0.400
[INFO] [1556088573.737359795]: HectorSM p_map_update_angle_threshold_: 0.000000
[INFO] [1556088573.737395754]: HectorSM p_laser_z_min_value_: -1.000000
[INFO] [1556088573.737434595]: HectorSM p_laser_z_max_value_: 1.000000
[INFO] [1556088573.127653555]: Finished waiting for tf, waited 4.001142 seconds
[rviz-1] process has finished cleanly
log file: /home/chuck/.ros/log/7cbbc55a-665b-11e9-a4fe-b827eb74fa8f/rviz-1.log
^C[hector_trajectory_server-4] killing on exit
[hector_geotiff_node-5] killing on exit
[base_to_laser_broadcaster-3] killing on exit
[hector_mapping-2] killing on exit
Warning: class_loader.ClassLoader: SEVERE WARNING!!! Attempting to unload library while objects created by this loader exist in the heap! You should delete your objects before attempting to unload the library or destroying the ClassLoader. The library will NOT be unloaded.
        at line 108 in /tmp/binarydeb/ros-kinetic-class-loader-0.3.9/src/class_
loader.cpp
shutting down processing monitor...
... shutting down processing monitor complete
done
chuck@chuck-PNVKB0A0-Samsung-DeskTop:~/catkin_ws$ roslaunch hector_slam_launch tutorial.launch
```

```
chuck@chuck-PNVKB0A0-Samsung-DeskTop: ~/catkin_ws
[INFO] [1556088057.170631]: s
[INFO] [1556088057.201243]: s
[INFO] [1556088057.239938]: s
[INFO] [1556088057.268942]: s
[INFO] [1556088057.654465]: s
[INFO] [1556088056.268293]: d
[INFO] [1556088059.019661]: 
[INFO] [1556088059.680614]: w
[INFO] [1556088060.180450]: w
[INFO] [1556088060.214049]: w
[INFO] [1556088060.251253]: w
[INFO] [1556088060.294706]: w
[INFO] [1556088060.328587]: w
[INFO] [1556088060.363679]: w
[INFO] [1556088065.294941]: 
[INFO] [1556088077.931931]: 
[serbot_teleop_keyboard-1] process has finished cleanly
log file: /home/chuck/.ros/log/7cbbc55a-665b-11e9-a4fe-b827eb74fa8f/serbot_teleop_keyboard-1.log
all processes on machine have died, roslaunch will exit
shutting down processing monitor...
... shutting down processing monitor complete
done
chuck@chuck-PNVKB0A0-Samsung-DeskTop:~/catkin_ws$ 
```

```
roscore http://192.168.0.5:11311/
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.
started roslaunch server http://192.168.0.5:41417/
ros_comm version 1.12.14

SUMMARY
=====
PARAMETERS
  * /rosdistro: kinetic
  * /rosversion: 1.12.14

NODES
auto-starting new master
process[master]: started with pid [2151]
ROS_MASTER_URI=http://192.168.0.5:11311/

setting /run_id to 7cbbc55a-665b-11e9-a4fe-b827eb74fa8f
process[rosout-1]: started with pid [2]
chuck@chuck-desktop: ~/catkin_ws/src
  * Management: https://landscape.canonical.com
  * Support: https://ubuntu.com/advantage

/home/chuck/catkin_ws/src/serbot_
  * /rplidarNode/angle_compensat
  * /rplidarNode/frame_id: laser
  * /rplidarNode/invertId: False
  * /rplidarNode/serial_baudrate
  * /rplidarNode/serial_port: /dev/gedit:10137: G
  op.DBus.Error.ServiceUnknown: The name org.gnome.SessionManager was not provided
  by any .service files
NODES
  /rplidarNode (rplidar_ros/rp** (gedit:10137)): WARNING **: Set document metadata failed: Setting attribute me
  serbot_diagnostics (serbot_tadada:gedit-spell-enabled not supported
  serbot_teleop_client (serbo
  ** (gedit:10137)): WARNING **: Set document metadata failed: Setting attribute me
  ROS_MASTER_URI=http://192.168.0.tadada:gedit-encoding not supported

process[rplidarNode-1]: started** (gedit:10137): WARNING **: Set document metadata failed: Setting attribute me
process[serbot_teleop_client-2]:tadada:gedit-spell-enabled not supported
process[serbot_diagnostics-3]: 
RPLIDAR running on ROS package i** (gedit:10137): WARNING **: Set document metadata failed: Setting attribute me
SDK Version: 1.5.7 tadada:gedit-encoding not supported
RPLIDAR S/N: ABD39AF2C1EA9FC0BEI
Firmware Ver: 1.25 ** (gedit:10137): WARNING **: Set document metadata failed: Setting attribute me
Hardware Rev: 5 tadada:gedit-position not supported
chuck@chuck-PNVKB0A0-Samsung-DeskTop:~/catkin_ws/src/serbot_ws/serbot_hector_sla
n/hector_mapping/launch$ cd ~/catkin_ws/
chuck@chuck-PNVKB0A0-Samsung-DeskTop:~/catkin_ws$ source devel/setup.bash
chuck@chuck-PNVKB0A0-Samsung-DeskTop:~/catkin_ws$ 
```

vokoscreen 2.4.0

Fullscreen Window Area

Display 1: 1920x1080

Magnification Showkey

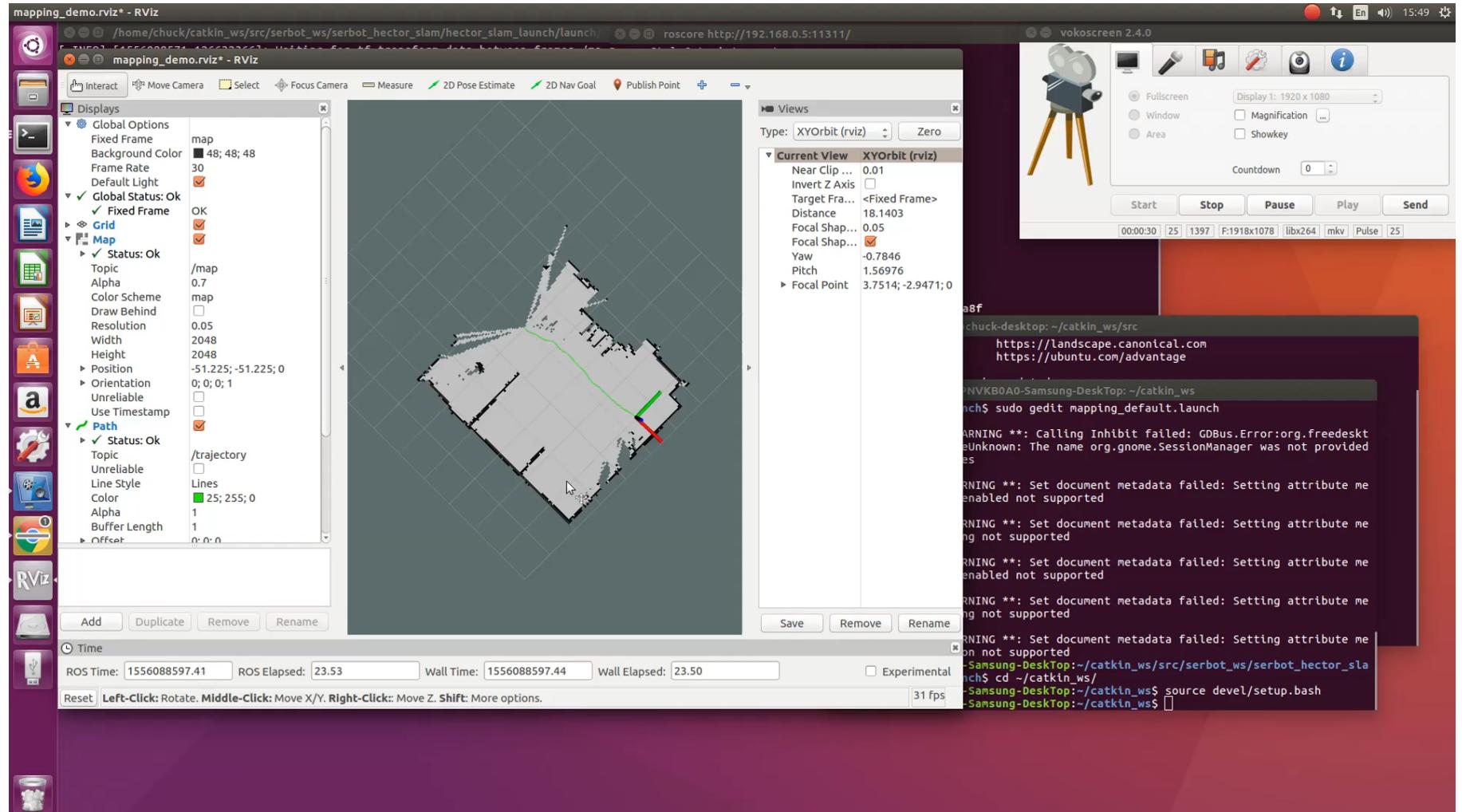
Countdown 0

Start Stop Pause Play Send

00:00:06 25 296 F:1918x1078 libx264 mkv Pulse 25

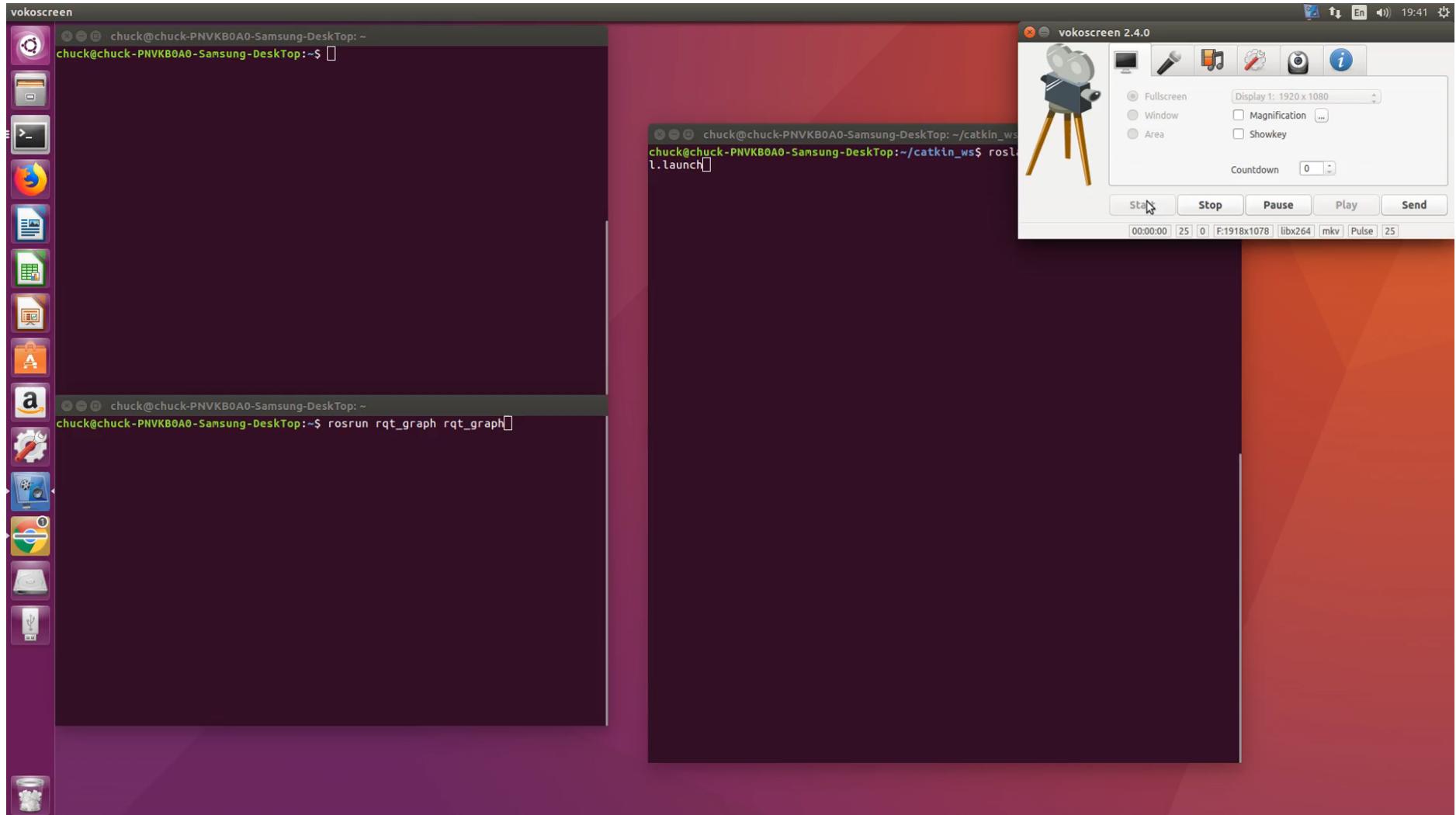


진행상황 - 맵 생성





| 진행상황 - 토픽 & 노드 도식화



| 진행상황 – GITHUB



serbot-chuck - Chromium
serbot-chuck +
GitHub, Inc. [US] | https://github.com/serbot-chuck

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serbot-chuck

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ros serbot using raspberry pi3
Python Updated 7 days ago

serbot_pc
ros serbot pc side
Python Apache-2.0 Updated 7 days ago

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turtlebot3-m....zip Show all X

<https://github.com/serbot-chuck>



5월

1. 맵 생성 보완
2. 네비게이션 - 경로 탐색 및 이동



감사합니다