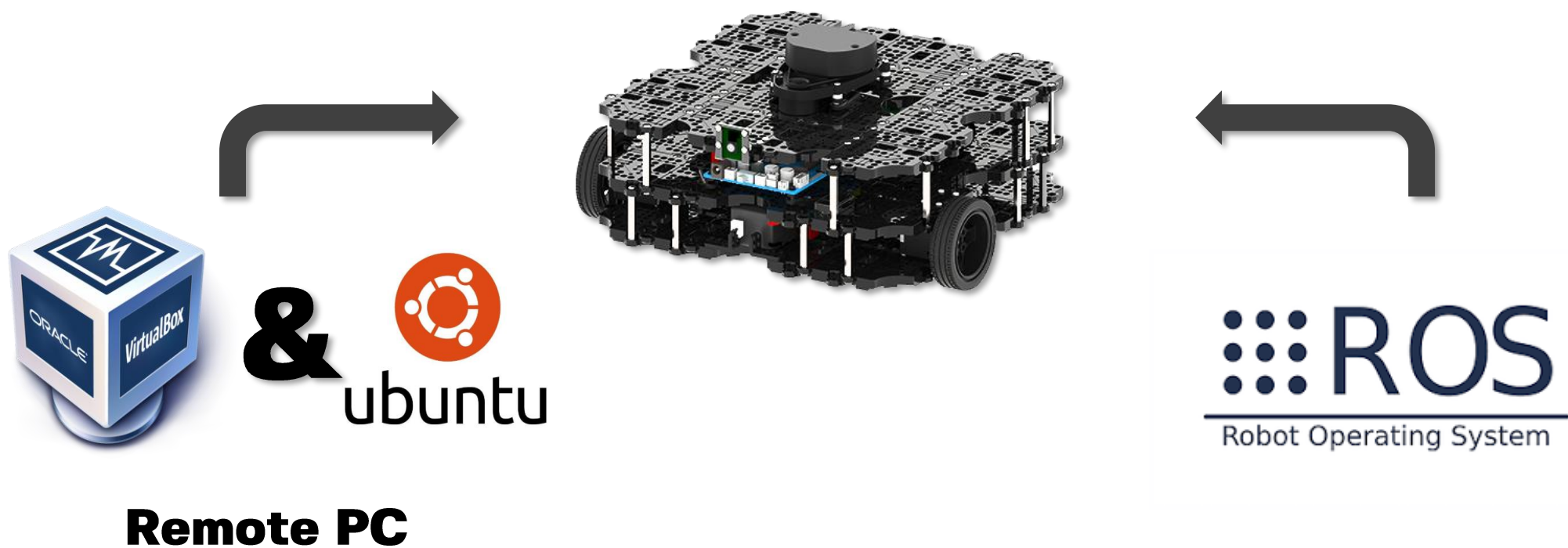




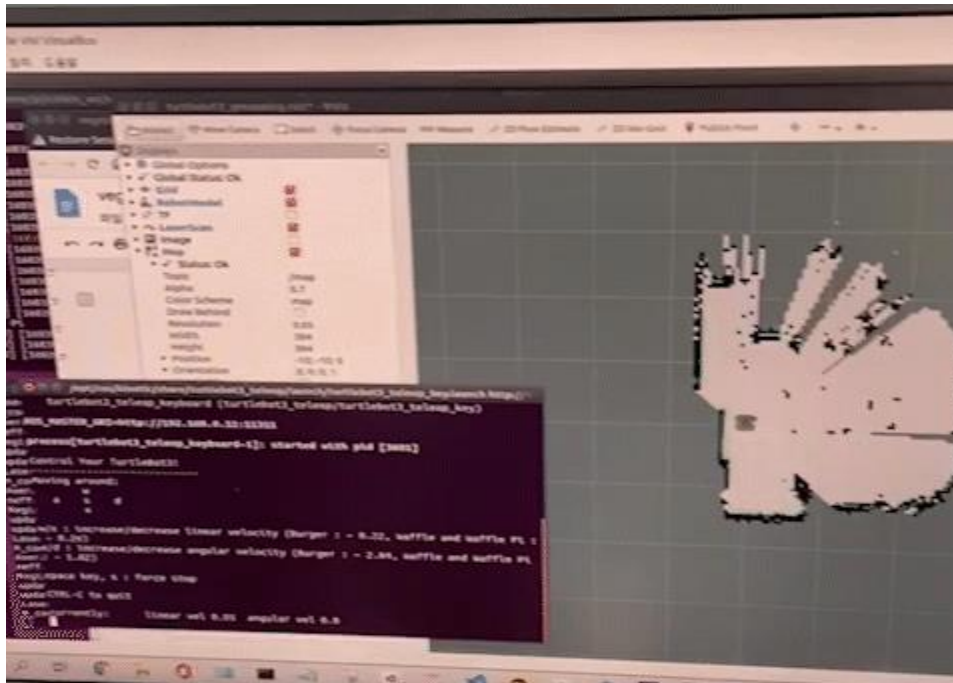
# 진행상황



# TELEOP

```
# roslaunch
# turtlebot pc
$ roslaunch turtlebot3_bringup turtlebot3_robot.launch

# remote pc TELEOP
$ export TURTLEBOT3_MODEL=waffle_pi
$ roslaunch turtlebot3_teleop turtlebot3_teleop_key.launch
```



<Remote PC>

# SLAM

```
# remote pc TELEOP
export TURTLEBOT3_MODEL=waffle_pi
roslaunch turtlebot3_slam turtlebot3_slam.launch
slam_methods:=gmapping

# save map
roslaunch map_server map_saver -f ~/map
```



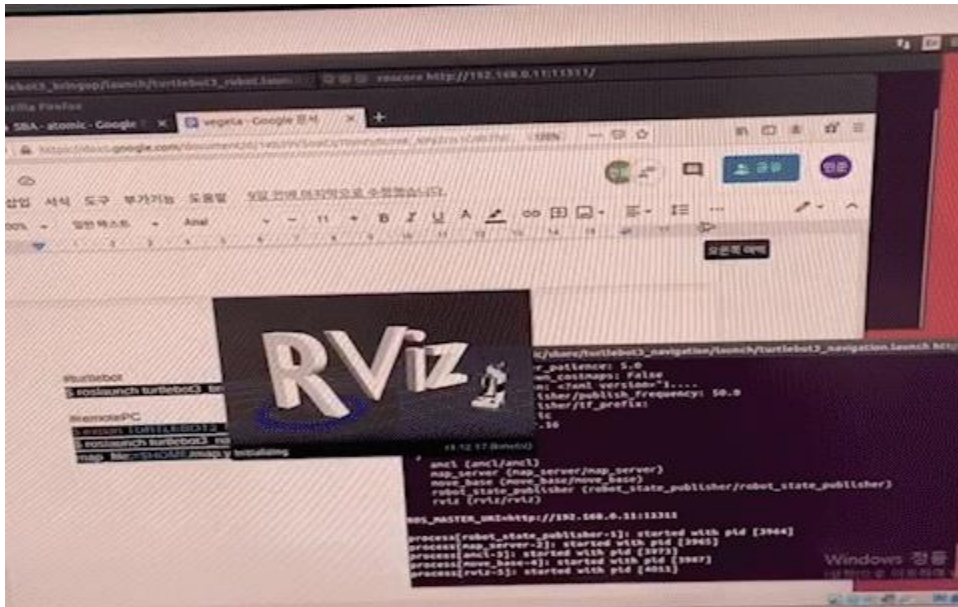
<Turtlebot>

# NAVIGATION

```
#remotePC  
$ rescore
```

```
#turtlebot  
$ roslaunch turtlebot3_bringup turtlebot3_robot.launch
```

```
#remotePC  
$ export TURTLEBOT3_MODEL=waffle_pi  
$ roslaunch turtlebot3_navigation turtlebot3_navigation.launch  
map_file:=$HOME/map.yaml
```

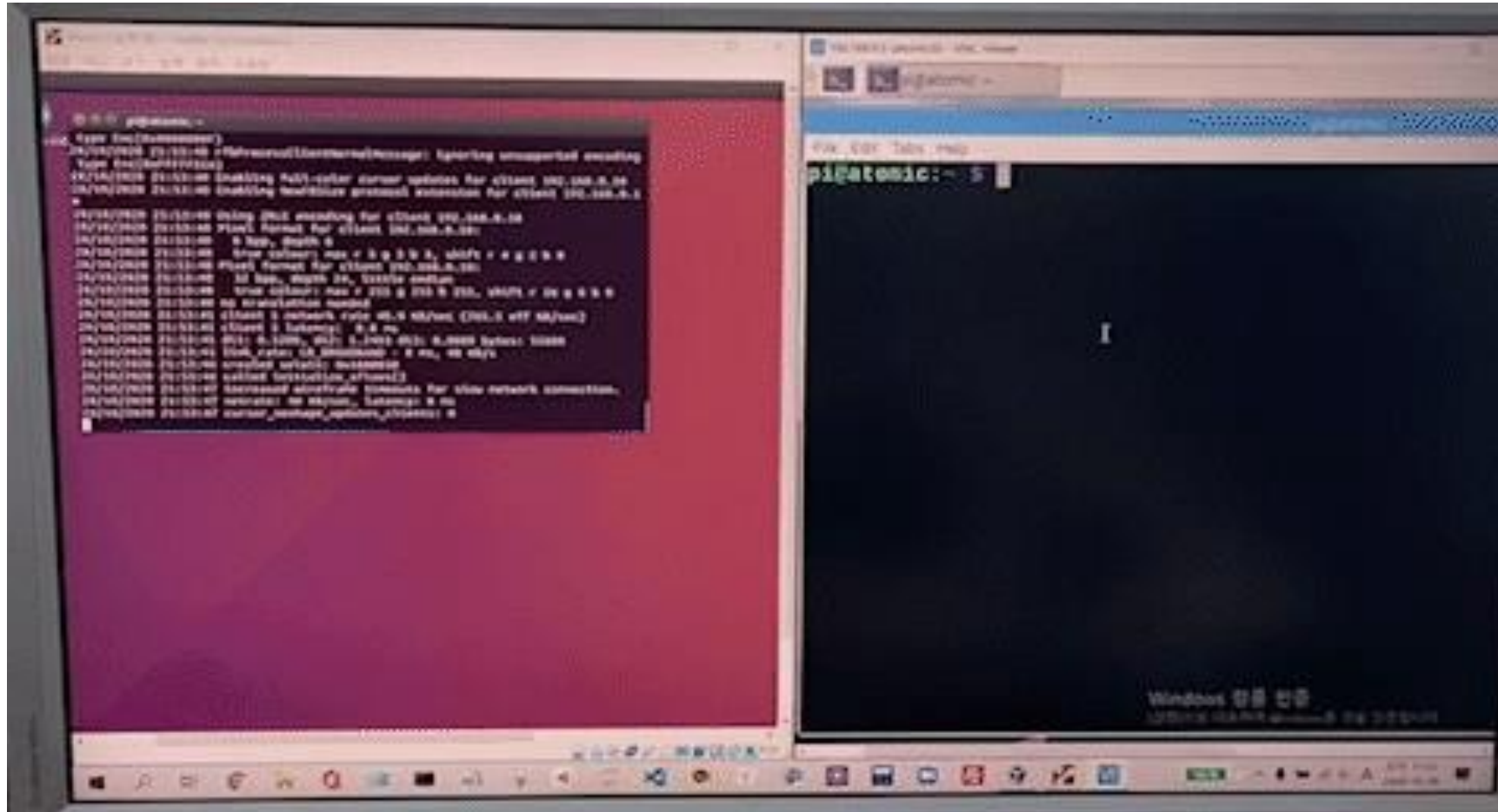


<Remote PC>



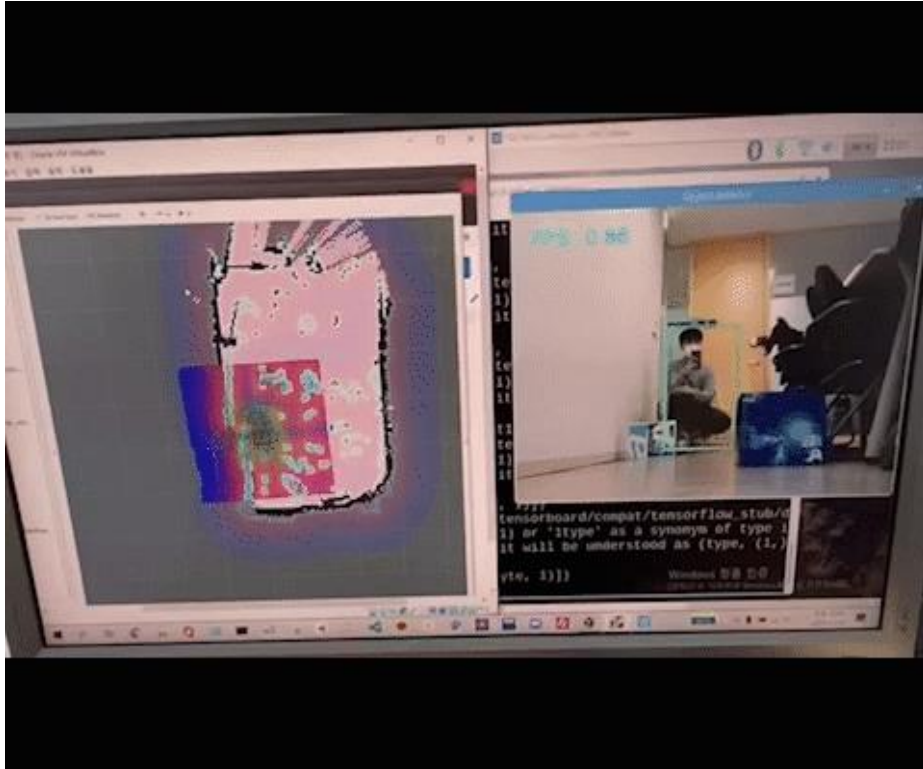
<Turtlebot>

# Object\_Detection





# COMPLETION



<Remote PC>



<Turtlebot>

# Error

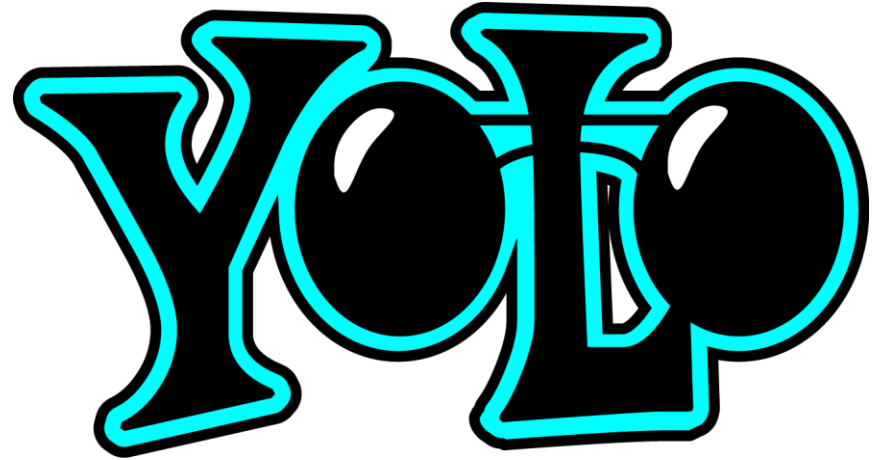
```
InternalSerialize
    field_descriptor._encoder(write_bytes, field_value,
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    encode_message(write, entry_msg, deterministic)
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    return value._InternalSerialize(write, deterministic)
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    rnalSerialize
    write_bytes, self.value, deterministic)
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    return value._InternalSerialize(write, deterministic)
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    rnalSerialize
    field_descriptor._encoder(write_bytes, field_value,
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    return value._InternalSerialize(write, deterministic)
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    rnalSerialize
    field_descriptor._encoder(write_bytes, field_value,
File "/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message
    return write(value)
MemoryError
/home/pi/.local/lib/python3.5/site-packages/google/protobuf/internal/encoder.py", line 100, in encode_message $
```

**Raspberry Pi 3+ RAM이 1G여서 원하는 모델을 구동시키기에는 부족함**

# Error



OpenPose

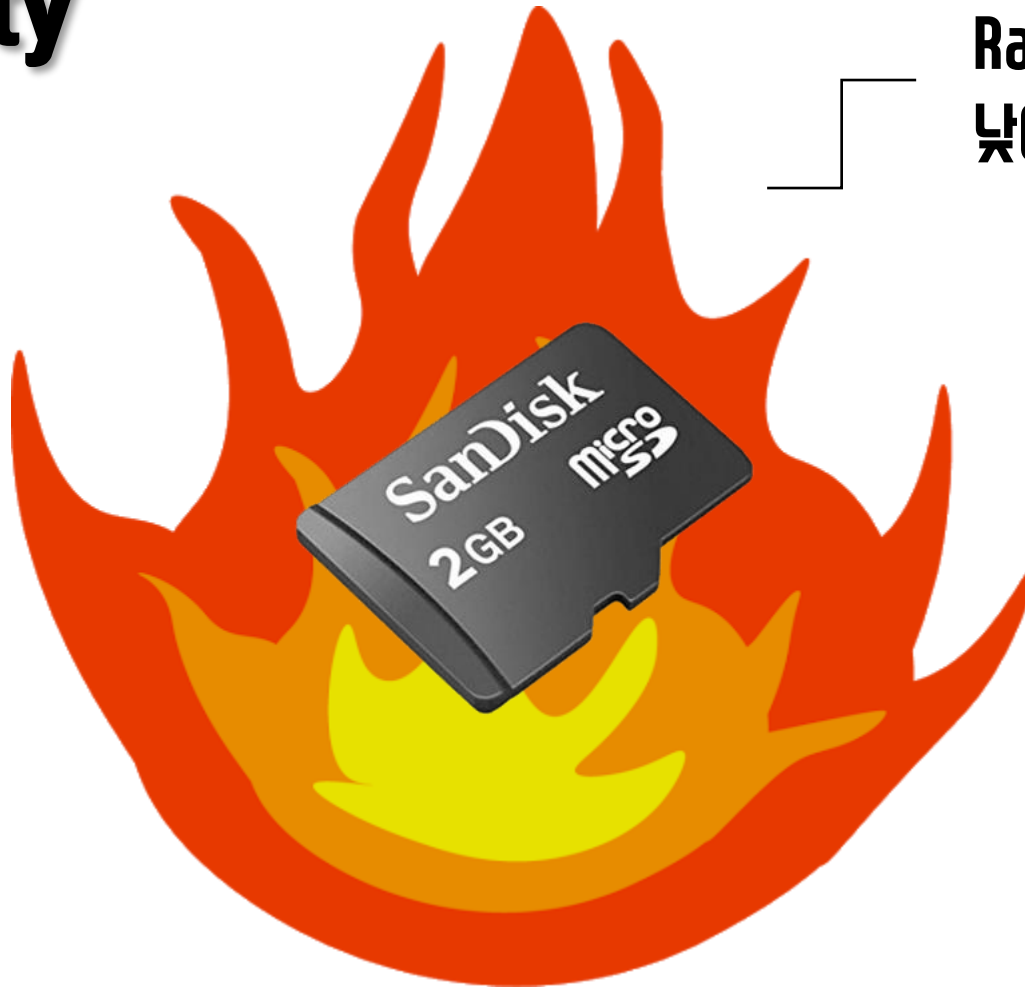


**다른 모델들은 Raspberry Pi 3+ 환경에서 작동되지 않거나 적절치 않아 사용 불가**

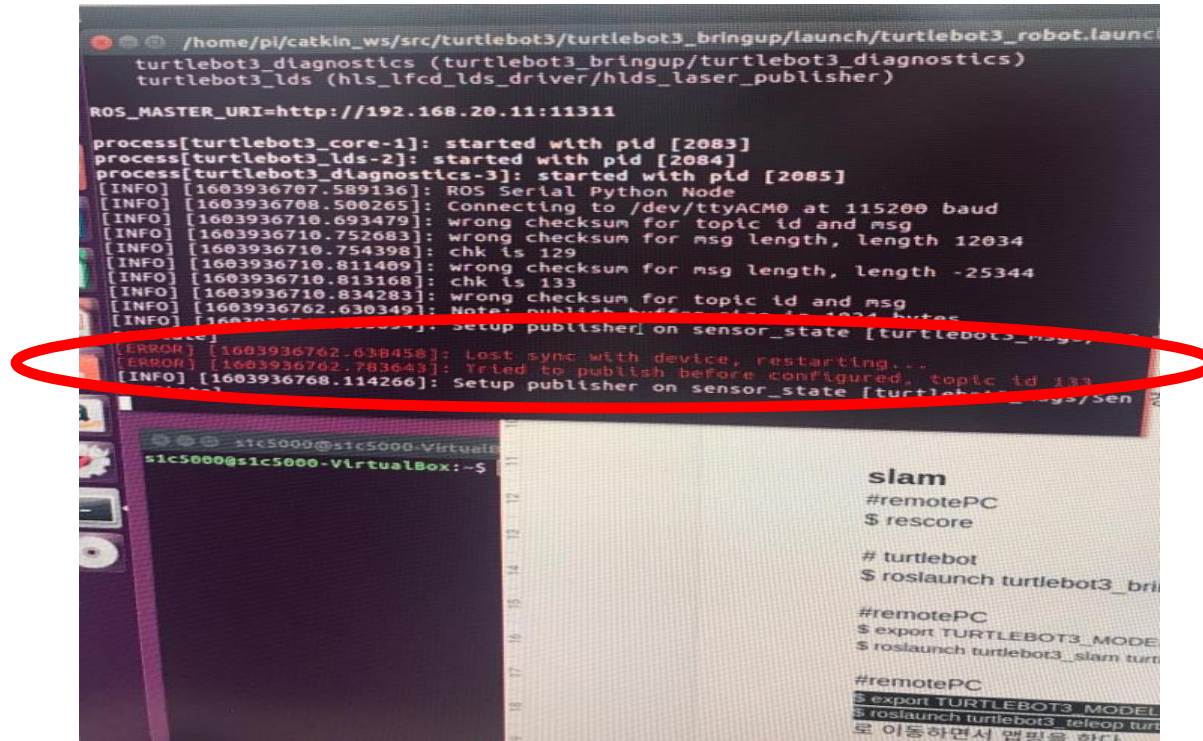


# Difficulty

Raspberry Pi 3+ 사양이  
낮아 SD카드가 고장남



# Difficulty



```
/home/pi/catkin_ws/src/turtlebot3/turtlebot3_bringup/launch/turtlebot3_robot.launch
turtlebot3_diagnostics (turtlebot3_bringup/turtlebot3_diagnostics)
turtlebot3_lds (hls_lfcd_lds_driver/hlds_laser_publisher)

ROS_MASTER_URI=http://192.168.20.11:11311

process[turtlebot3_core-1]: started with pid [2083]
process[turtlebot3_lds-2]: started with pid [2084]
process[turtlebot3_diagnostics-3]: started with pid [2085]
[INFO] [1603936707.589136]: ROS Serial Python Node
[INFO] [1603936708.500265]: Connecting to /dev/ttyACM0 at 115200 baud
[INFO] [1603936710.693479]: wrong checksum for topic id and msg
[INFO] [1603936710.752683]: wrong checksum for msg length, length 12034
[INFO] [1603936710.754398]: chk is 129
[INFO] [1603936710.811409]: wrong checksum for msg length, length -25344
[INFO] [1603936710.813168]: chk is 133
[INFO] [1603936710.834283]: wrong checksum for topic id and msg
[INFO] [1603936762.630349]: Note: publish buffer size is 1024 bytes
[INFO] [1603936762.630349]: Setup publisher on sensor_state [turtlebot3_msg]
[ERROR] [1603936762.638458]: Lost sync with device, restarting...
[ERROR] [1603936762.783643]: Tried to publish before configured, topic id 133
[INFO] [1603936768.114266]: Setup publisher on sensor_state [turtlebot3_msg]
```

인터넷 연결이 끊기거나 느려 구동에 큰 영향을 끼침

**감사합니다**