



서봇

자율주행서빙로봇

척척박사

20141118 - 전수현

20151095 - 김은영



CONTENTS

진 행 상 황

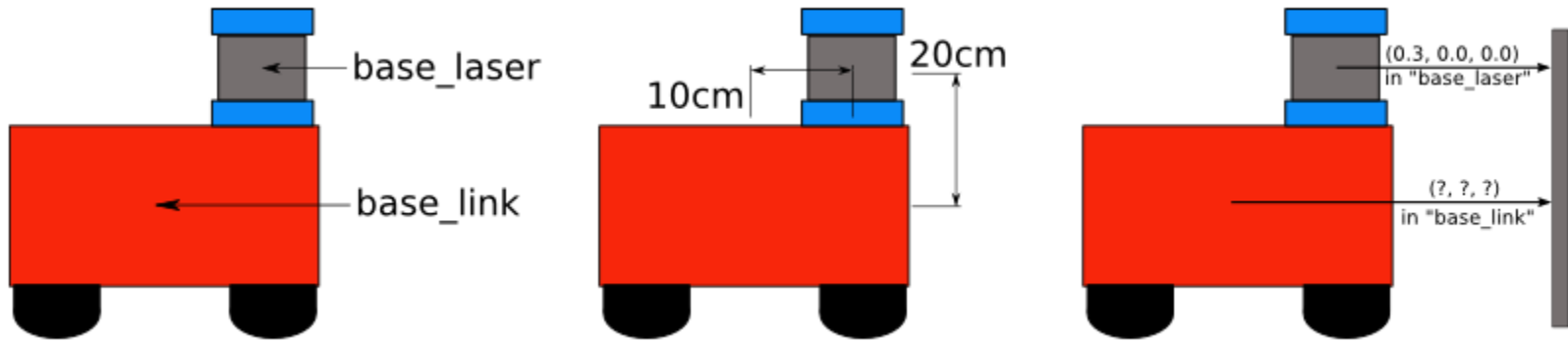
T F

현 지 화

c o s t m a p

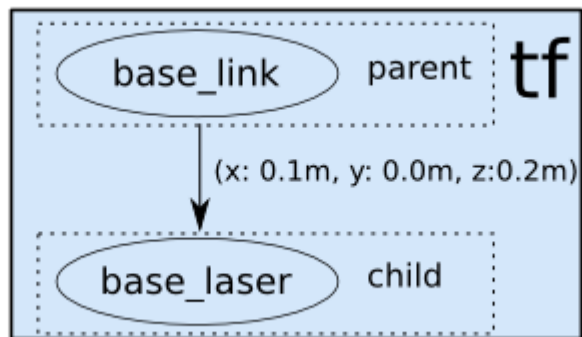
개 발 일 정

진행상황 - TF



Base_link \rightarrow base_laser ($x:0.1m, y:0.0m, z:0.2m$)

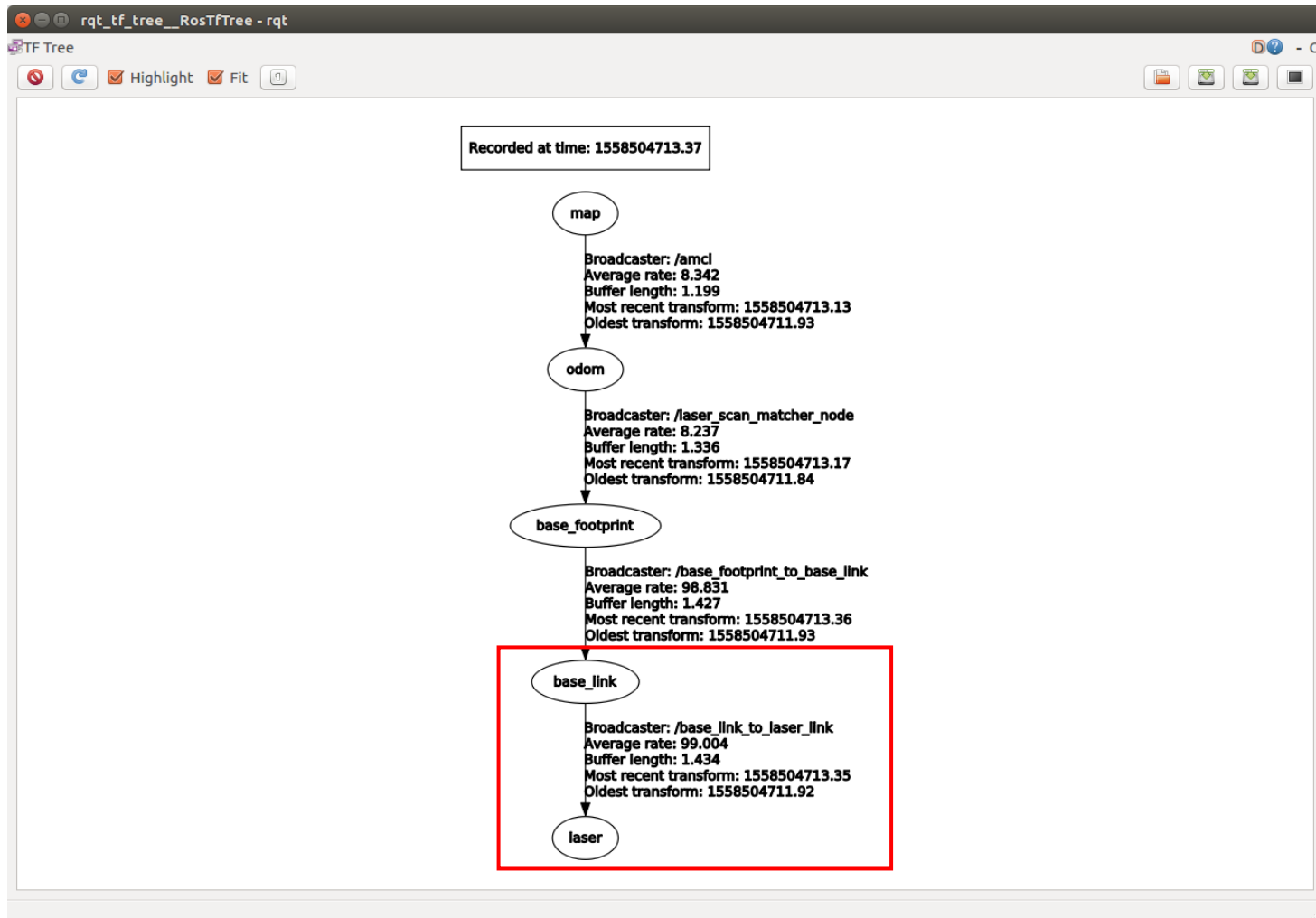
Base_laser \rightarrow base_link ($x:-0.1m, y:0.0m, z:-0.2m$)



TF

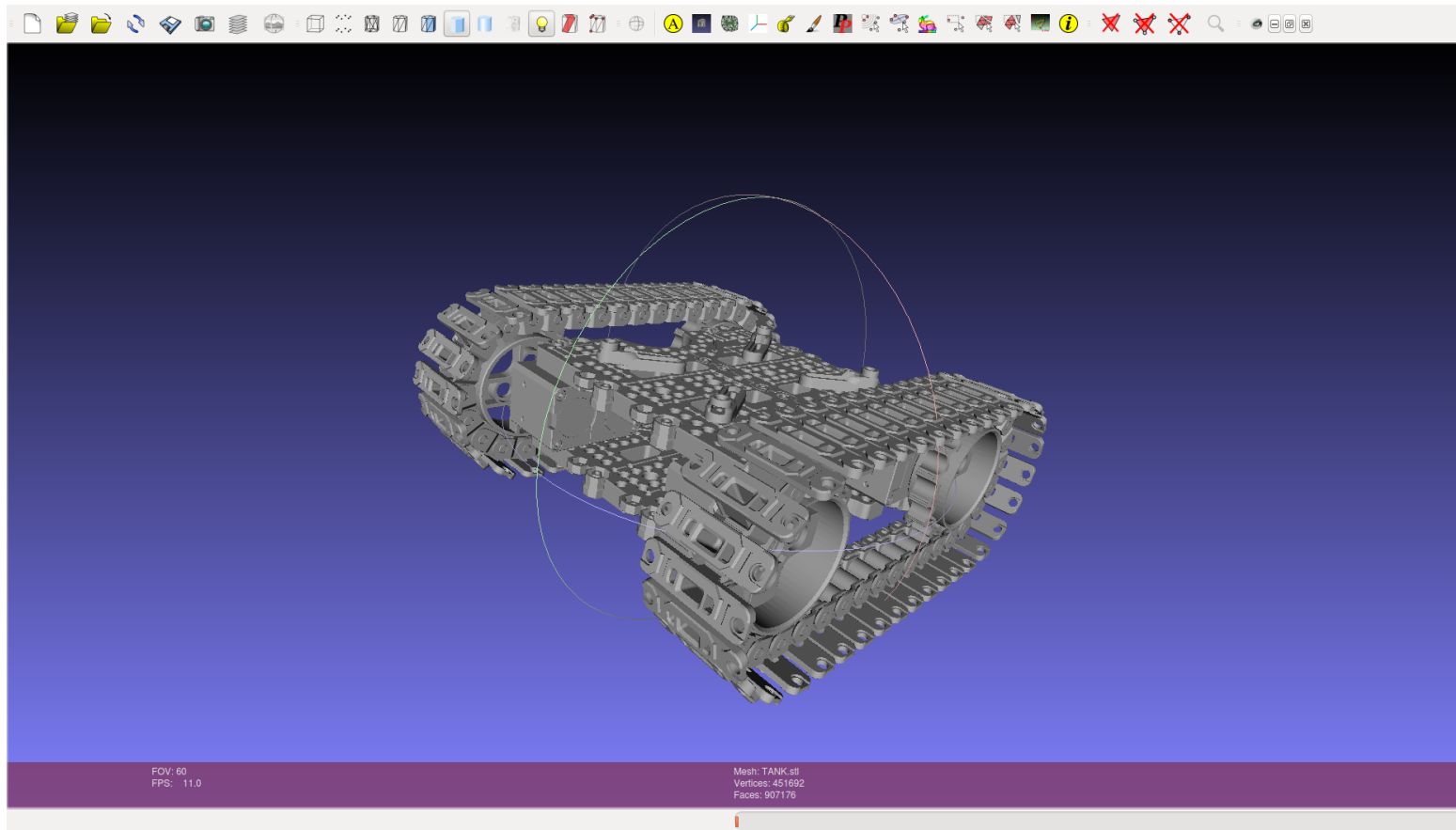
- 트리구조 (부모, 자식 노드)
- 단일탐색 (부모에서 자식 노드로 향함)

진행상황 - Navigation



TF TREE 구조

진행상황 - TF



Mesh File

진행상황 - TF



```
serbot.urdf (~/.catkin_ws/src/serbot_ws/serbot_description/urdf) - gedit
Open [icon] Save

<?xml version="1.0"?>
<robot name="serbot">
  <link name="base_footprint"/>

  <joint name="base_joint" type="fixed">
    <parent link="base_footprint"/>
    <child link="base_link" />
    <origin xyz="0 0 0" rpy="0 0 0"/>
  </joint>

  <link name="base_link">
    <visual>
      <origin xyz="0 0 0" rpy="0 0 0"/>
      <geometry>
        <mesh filename="package://serbot_description/meshes/whole/TANK.stl" scale="0.1 0.1 0.1"/>
      </geometry>
      <material name="light_black"/>
    </visual>
  </link>

  <joint name="wheel_left_joint" type="continuous">
    <parent link="base_link"/>
    <child link="wheel_left_link"/>
    <origin xyz="0.0 0.3 0.05" rpy="-1.57 0 0"/>
    <axis xyz="0 0 1"/>
  </joint>
  <link name="wheel_left_link">
    <origin xyz="0 0 0" rpy="1.57 0 0"/>
  </link>

  <joint name="wheel_right_joint" type="continuous">
    <parent link="base_link"/>
    <child link="wheel_right_link"/>
    <origin xyz="0.0 -0.3 0.05" rpy="-1.57 0 0"/>
    <axis xyz="0 0 1"/>
  </joint>
  <link name="wheel_right_link">
    <origin xyz="0 0 0" rpy="1.57 0 0"/>
  </link>

  <joint name="scan_joint" type="fixed">
    <parent link="base_link"/>
    <child link="base_scan"/>
    <origin xyz="0 0 0.15" rpy="0 0 0"/>
  </joint>

  <link name="base_scan">
    <origin xyz="0 0 0" rpy="0 0 0"/>
  </link>
</robot>
```

XML Tab Width: 8 Ln 26, Col 11 INS

진행상황 - TF



vokoscreen

Interact Move Camera Select Focus Camera Measure 2D Pose Estimate 2D Nav Goal Publish Point

Displays

- Global Options
 - Fixed Frame: base_link
 - Background Color: 48; 48; 48
 - Frame Rate: 30
 - Default Light: ☒
 - Global Status: ☒ OK
 - Fixed Frame: ☒ OK
 - Grid: ☒
 - RobotModel
 - Status: ☒ OK
 - Visual Enabled: ☒
 - Collision Enabled: ☐
 - Update Interval: 0
 - Alpha: 0.5
 - Robot Description: robot_description
 - TF Prefix: ☒
 - Links
 - TF
 - Status: ☒ OK
 - Show Names: ☒
 - Show Axes: ☒
 - Show Arrows: ☒
 - Marker Scale: 0.5
 - Update Interval: 0
 - Frame Timeout: 15
 - Frames
 - Tree

Add Duplicate Remove Rename

Time

ROS Time: 1558502747.09 ROS Elapsed: 12.11 Wall Time: 1558502747.12 Wall Elapsed: 12.05

Reset Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click/Mouse Wheel: Zoom. Shift: More options. 31 fps

vokoscreen 2.4.0

Fullscreen ☒ Window ☐ Area ☐ Display 1: 1920 x 1080 Magnification ☐ Showkey ☐ Countdown: 0

Start Stop Pause Play Send

00:00:00 0 0 F libx264 mkv Pulse 25

joint_state_publisher

wheel_left_joint 0.00

wheel_right_joint 0.00

Randomize Center

2

Save Remove Rename

Experimental ☐

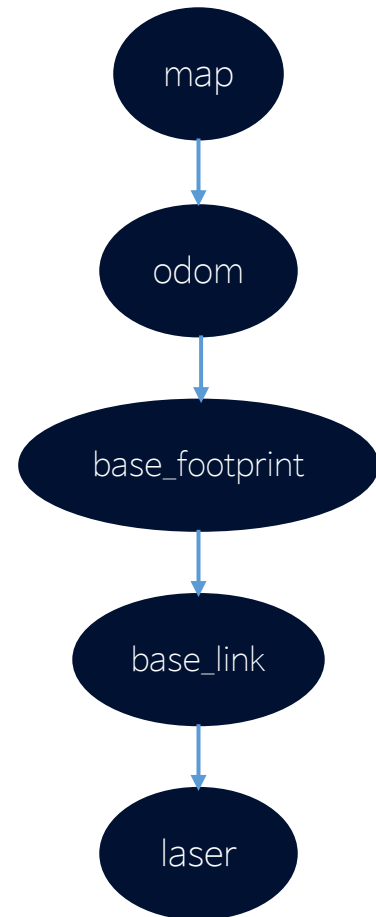
진행상황 - 현지화



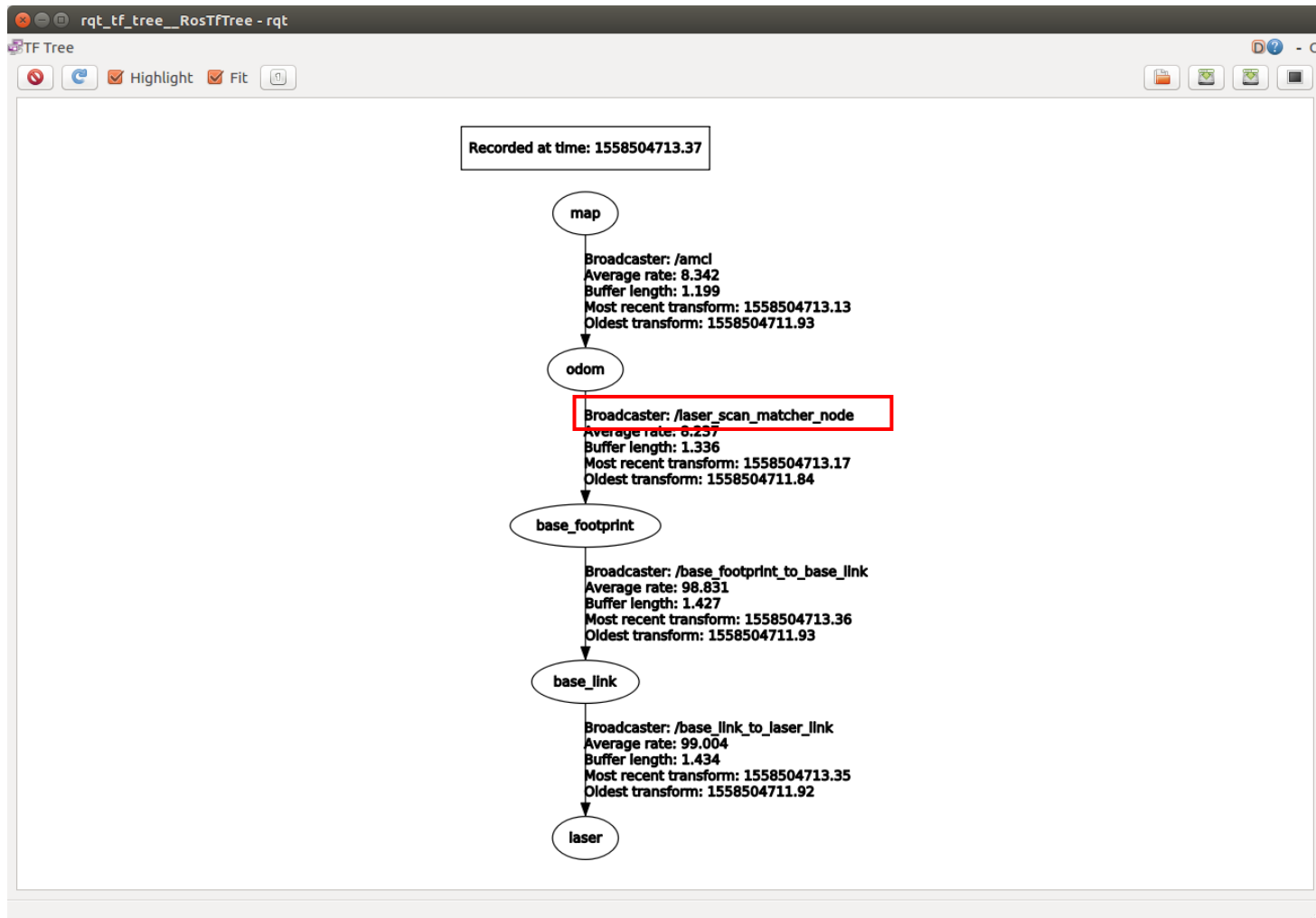
odom : 주행기록계로 사물의 위치를 추정하는 방법을 의미

base_footprint : 로봇의 발자국을 의미하며, 로봇이 장애물을 피할 수 있게 해 줌

➔ **Localization** 가능 : 로봇이 맵에 어디에 위치해 있는지 알 수 있음



진행상황 - 현지화



TF TREE 구조

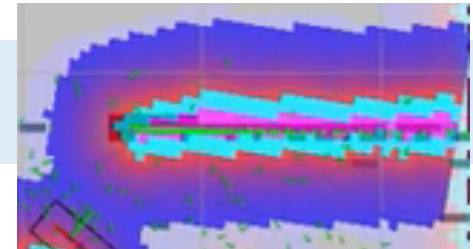
진행상황 - costmap



Global costmap : 전체 환경에 대한 장애물 정보



Local costmap : 근접한 환경에 대한 장애물 정보



진행상황 - costmap



vokoscreen

Move Camera Interact Select 2D Pose Estimate 2D Nav Goal Measure

Displays

- Global Options
- Global Status: Ok
- Grid
- TF
- LaserScan
- Image
- Map
- Planner Plan
- Global Map
- Local Map
- Polygon
 - Status: Ok
 - Topic: /move_base/local_cost...
 - Unreliable: ☐
 - Color: 0; 0; 0
 - Alpha: 1
 - Costmap
 - Status: Warn
 - Topic: /move_base/local_cost...
 - Alpha: 0.7
 - Color Scheme: costmap
 - Draw Behind: ☐
 - Resolution: 0
 - Width: 0
 - Height: 0
 - Position: 0; 0; 0
 - Orientation: 0; 0; 1
 - Unreliable: ☐
 - Use Timestamp: ☐
 - Planner
 - Status: Ok
 - Topic: /move_base/DWAPlan...
 - Unreliable: ☐
 - Line Style: Lines
 - Color: 255; 255; 0
 - Alpha: 1
 - Buffer Length: 1
 - Offset: 0; 0; 0
 - Pose Style: None
 - Amcl Particles
 - Goal

RViz

Add Duplicate Remove Rename

Reset Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click: Zoom. Shift: More options.

vokoscreen 2.4.0

Fullscreen Window Area

Display 1: 1920 x 1080

Magnification Showkey

Countdown 0

Start Stop Pause Play Send

00:00:00 0 0 F:1918x1078 libx264 mkv Pulse 25

31 fps



6월 & 방학

1. 모터 제어
2. 자율주행
3. 사물인식



감사합니다