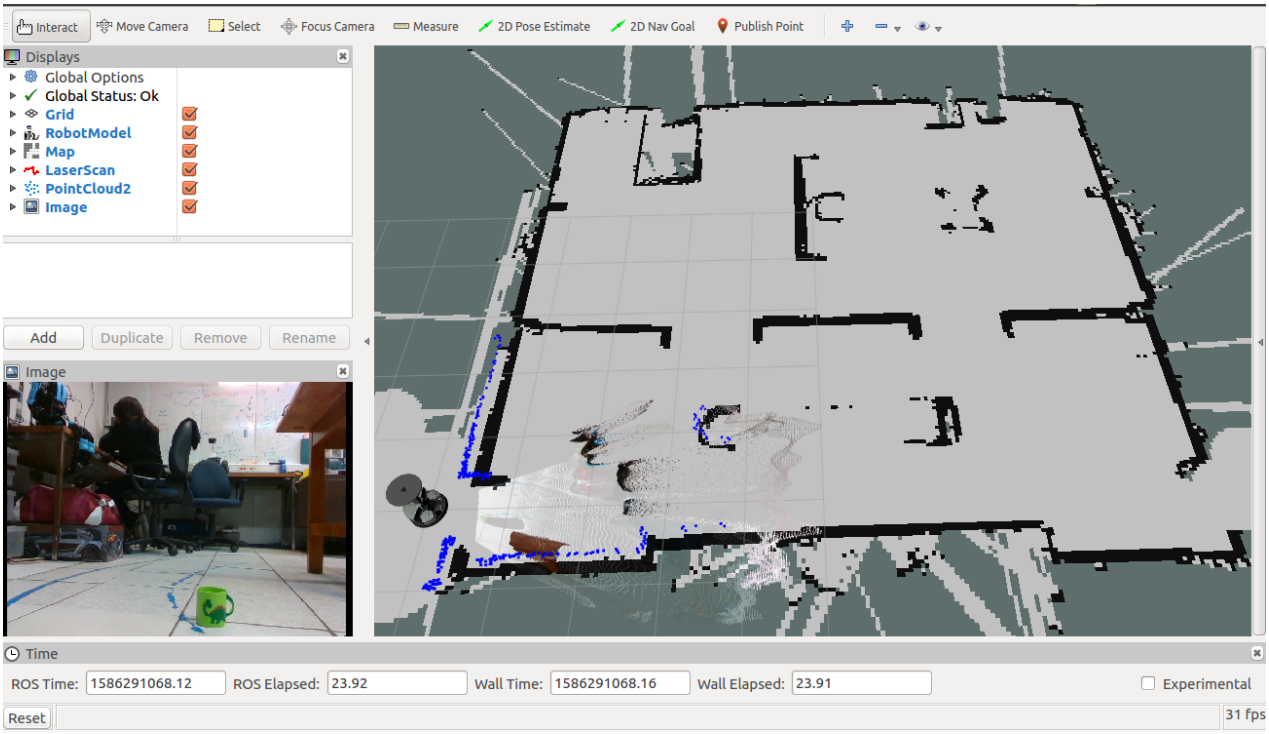
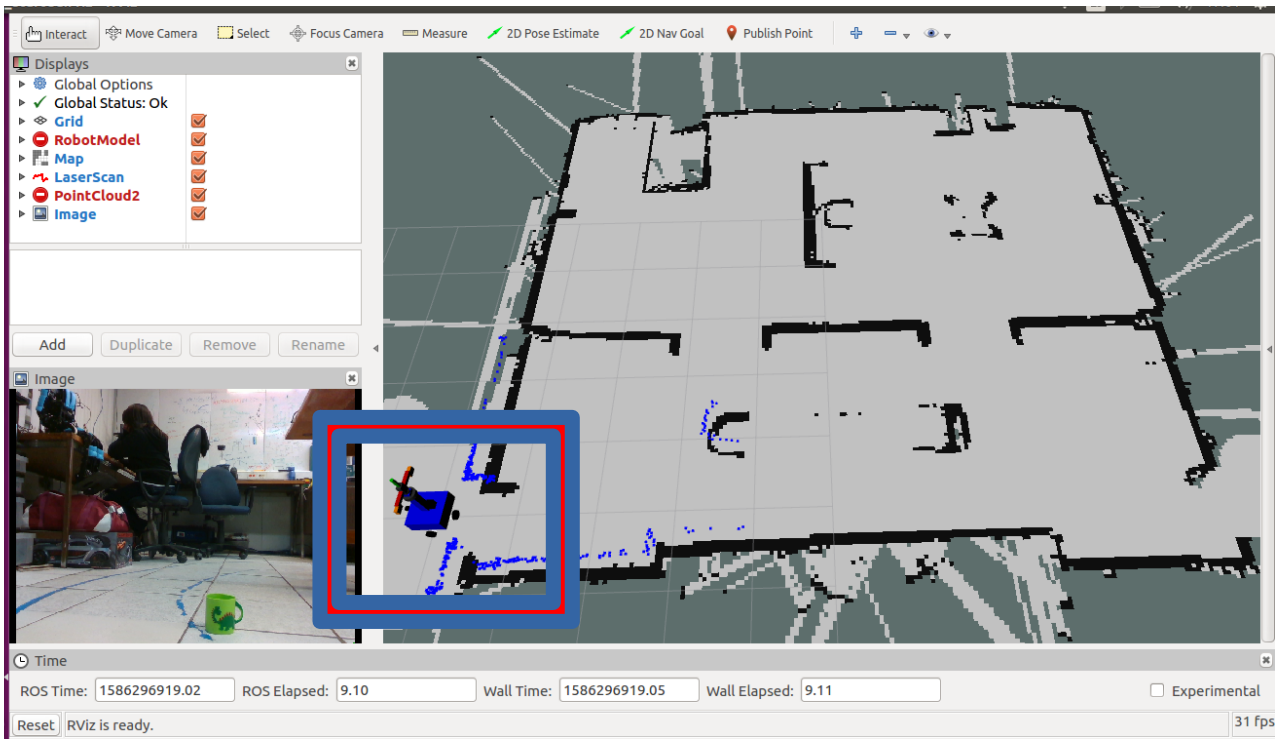
Calvillo Felipe Miguel Robots Móviles, 2020-2

Práctica 2: Uso de archivos urdf y árbol de transformaciones con el paquete tf.

-Captura de pantalla al inicio de la práctica.



- Captura de pantalla donde se observe que se cambió el urdf.



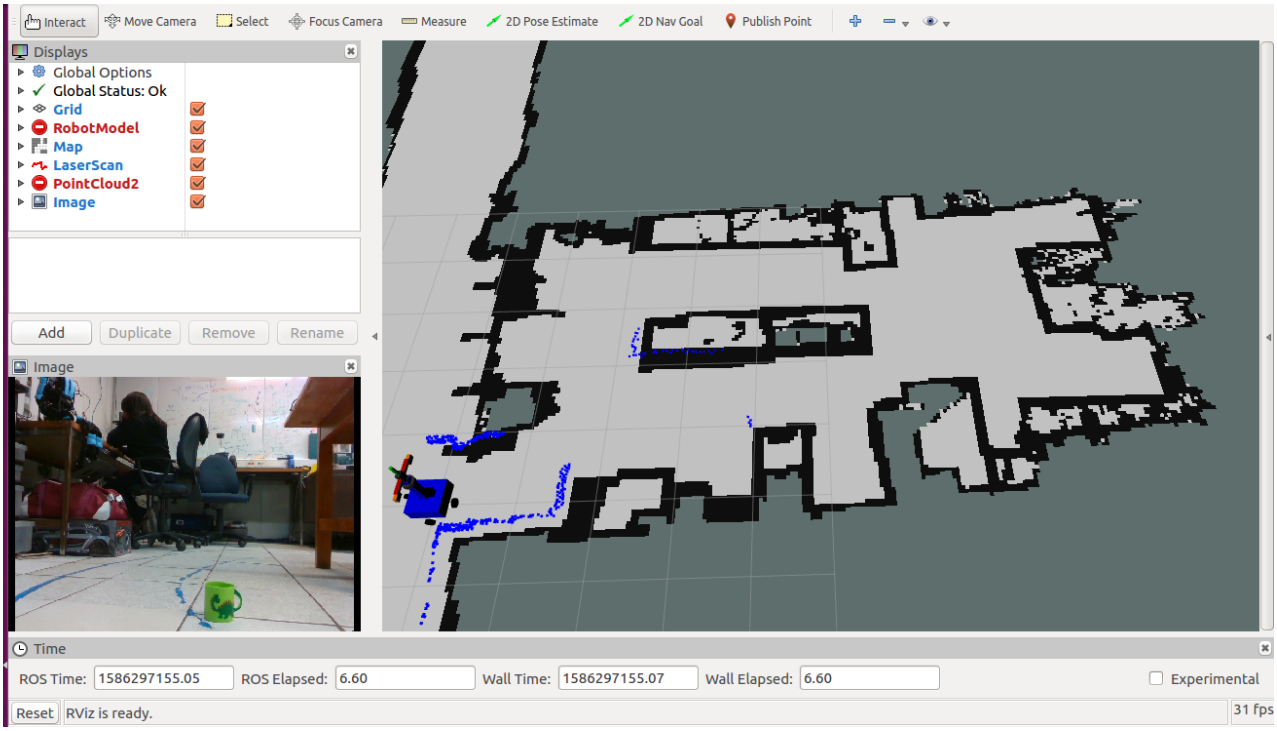
Al cambiar de ‘robotino.urdf’ a ‘justina_simple.urdf’ se puede observar un cambio en el robot al momento de ejecutar nuevamente la simulación, en este caso se cambio al robot de justina_simple.

-Captura de pantalla donde se observe que se cambió el mapa.

Abrir Guardar

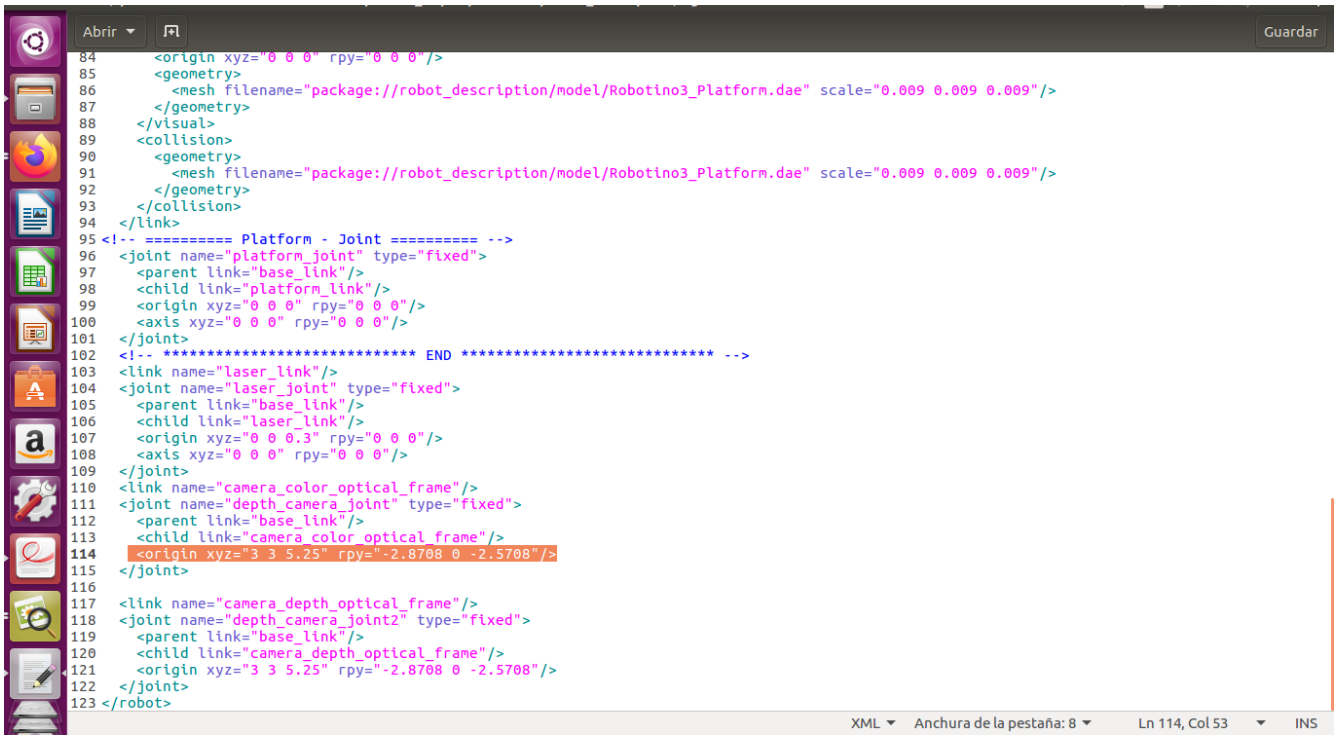
```
launch>
 <param name="robot_description" textfile="$(find robot_description)/justina_simple.urdf" />
 <node pkg="robot_state_publisher" type="robot_state_publisher" name="robot_state_publisher"/>

 <node name="rviz" pkg="rviz" type="rviz" args="-d $(find config_files)/rviz/getting_started.rviz"/>
 <node name="laser_simulator" pkg="laser_simulator" type="laser_simulator" output="screen">
   <param name="noise" value="0.05"/>
 </node>
 <node name="mobile_base" pkg="mobile_base_simulator" type="mobile_base_simulator.py" output="screen"/>
 <node name="rgbd_simul" pkg="rgbd_simul" type="rgbd_simul2.py" output="screen">
   <param name="bag_file" value="$(find vision)/bags/test.bag"/>
 </node>

 <node name="map_server" pkg="map_server" type="map_server" output="screen"
       args="$(find config_files)/occupancy_grids/biorobotica.yaml"/>
 <node name="loc_amcl" pkg="amcl" type="amcl" output="screen" args="scan:=/scan">
   <param name="odom_alpha1" value="0.6"/>
   <param name="odom_alpha2" value="0.6"/>
   <param name="odom_alpha3" value="0.6"/>
   <param name="odom_alpha4" value="0.6"/>
   <param name="odom_alpha5" value="0.6"/>
   <param name="recovery_alpha_slow" value="0.001"/>
   <param name="recovery_alpha_fast" value="0.1"/>
   <param name="initial_pose_x" value="0.0"/>
   <param name="initial_pose_y" value="0.0"/>
   <param name="initial_pose_a" value="0.0"/>
   <param name="update_min_a" value="0.3"/>
   <param name="laser_min_range" value="0.3"/>
   <param name="odom_model_type" value="omni"/>
 </node>
/launch>
```

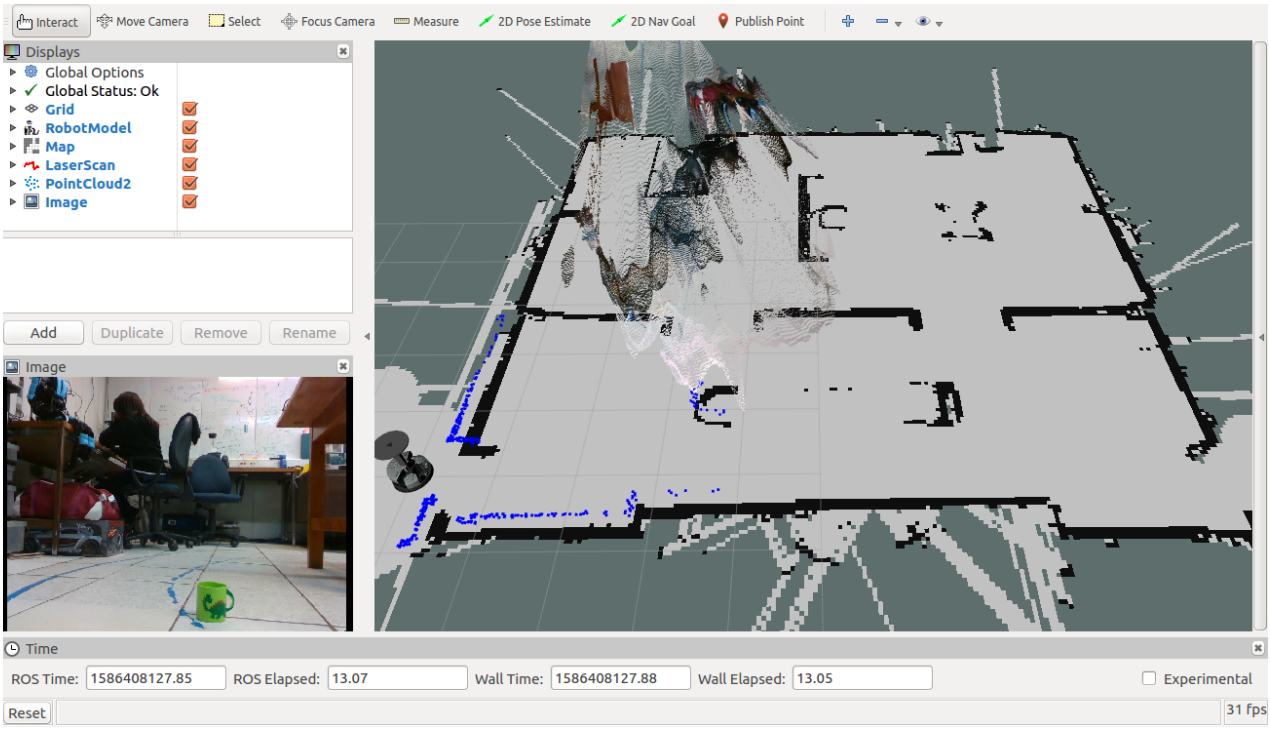
Texto plano Anchura de la pestaña: 8 Ln 15, Col 68 INS



Al cambiar 'Universum.yaml' por 'Biorobotica.yaml' se puede observar que después de ejecutar la simulación, aparece un nuevo diseño en el mapa.

-Captura de pantalla con la etiqueta 'origin' cambiada.





Al modificar los valores de ‘xyz’ y ‘rpy’ de la línea 114, se puede observar que al ejecutar la simulación, la imagen correspondiente a la cámara cambia tanto en posición como en orientación.

-Captura de pantalla con algunas de las etiquetas ‘joint’ eliminada.

Abrir Guardar

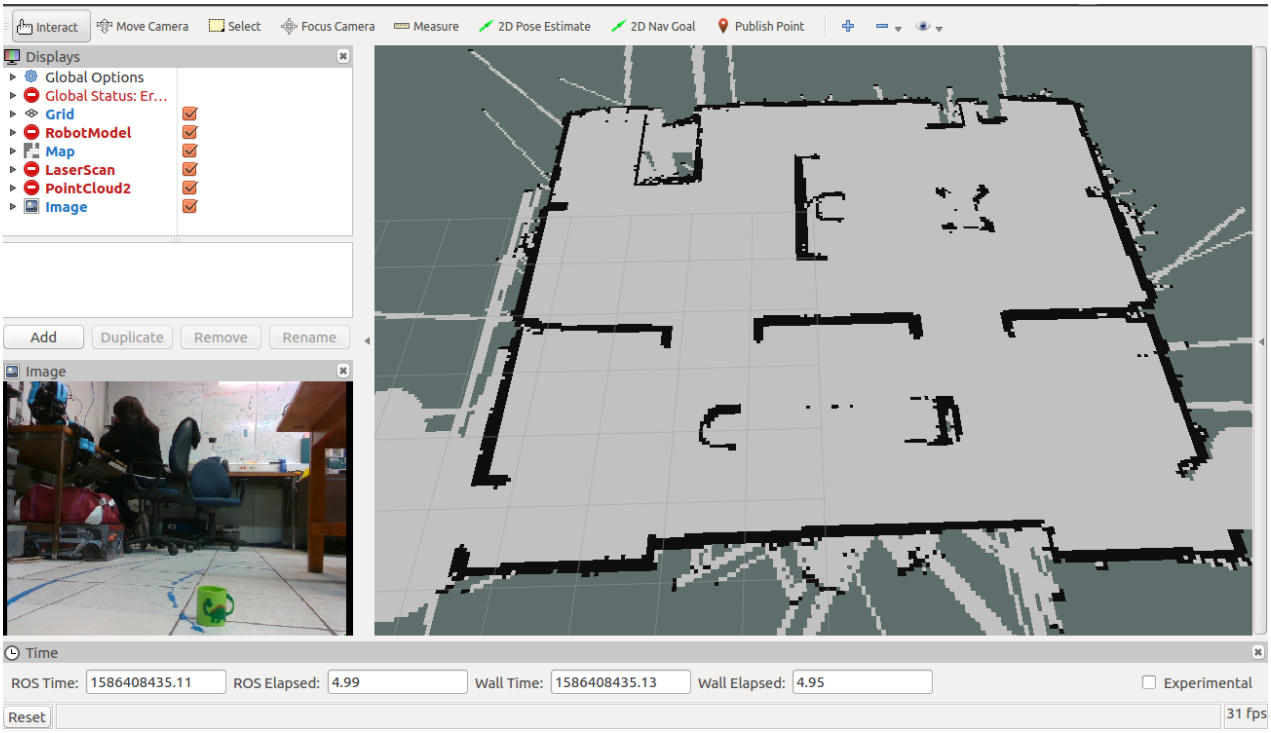
```
84      <origin xyz="0 0 0" rpy="0 0 0"/>
85      <geometry>
86        <mesh filename="package://robot_description/model/Robotino3_Platform.dae" scale="0.009 0.009 0.009"/>
87      </geometry>
88    </visual>
89    <collision>
90      <geometry>
91        <mesh filename="package://robot_description/model/Robotino3_Platform.dae" scale="0.009 0.009 0.009"/>
92      </geometry>
93    </collision>
94  </link>
95 <!-- ========== Platform - Joint ========== -->
96   <joint name="platform_joint" type="fixed">
97     <parent link="base_link"/>
98     <child link="platform_link"/>
99     <origin xyz="0 0 0" rpy="0 0 0"/>
100    <axis xyz="0 0 0" rpy="0 0 0"/>
101  </joint>
102  <!-- ***************************** END **************************** -->
103  <link name="laser_link"/>
104  <joint name="laser_joint" type="fixed">
105    <parent link="base_link"/>
106    <child link="laser_link"/>
107    <origin xyz="0 0 0.3" rpy="0 0 0"/>
108    <axis xyz="0 0 0" rpy="0 0 0"/>
109  </joint>
110  <link name="camera_color_optical_frame"/>
111  <joint name="depth_camera_joint" type="fixed">
112    <parent link="base_link"/>
113    <child link="camera_color_optical_frame"/>
114    <origin xyz="0 0 0.25" rpy="-1.8708 0 -1.5708"/>
115  </joint>
116
117  <link name="camera_depth_optical_frame"/>
118  <joint name="depth_camera_joint2" type="fixed">
119    <parent link="base_link"/>
120    <child link="camera_depth_optical_frame"/>
121    <origin xyz="0 0 0.25" rpy="-1.8708 0 -1.5708"/>
122  </joint>
123 </robot>
```

XML Anchura de la pestaña: 8 Ln 104, Col 42 INS

Abrir Guardar

```
      <origin xyz="0 0 0" rpy="0 0 0"/>
      <geometry>
        <mesh filename="package://robot_description/model/Robotino3_Platform.dae" scale="0.009 0.009 0.009"/>
      </geometry>
    </visual>
    <collision>
      <geometry>
        <mesh filename="package://robot_description/model/Robotino3_Platform.dae" scale="0.009 0.009 0.009"/>
      </geometry>
    </collision>
  </link>
<!-- ========== Platform - Joint ========== -->
  <joint name="platform_joint" type="fixed">
    <parent link="base_link"/>
    <child link="platform_link"/>
    <origin xyz="0 0 0" rpy="0 0 0"/>
    <axis xyz="0 0 0" rpy="0 0 0"/>
  </joint>
  <!-- ***************************** END **************************** -->
  <link name="laser_link"/>

    <parent link="base_link"/>
    <child link="laser_link"/>
    <origin xyz="0 0 0.3" rpy="0 0 0"/>
    <axis xyz="0 0 0" rpy="0 0 0"/>
  </joint>
  <link name="camera_color_optical_frame"/>
  <joint name="depth_camera_joint" type="fixed">
    <parent link="base_link"/>
    <child link="camera_color_optical_frame"/>
    <origin xyz="0 0 0.25" rpy="-1.8708 0 -1.5708"/>
  </joint>

  <link name="camera_depth_optical_frame"/>
  <joint name="depth_camera_joint2" type="fixed">
    <parent link="base_link"/>
    <child link="camera_depth_optical_frame"/>
    <origin xyz="0 0 0.25" rpy="-1.8708 0 -1.5708"/>
  </joint>
</robot>
```

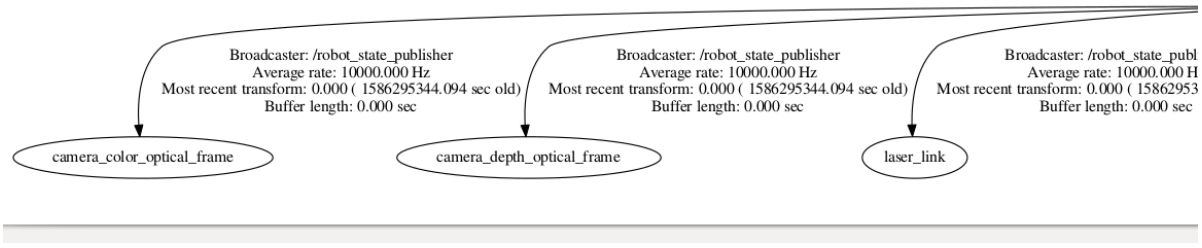
XML Anchura de la pestaña: 8 Ln 104, Col 3 INS

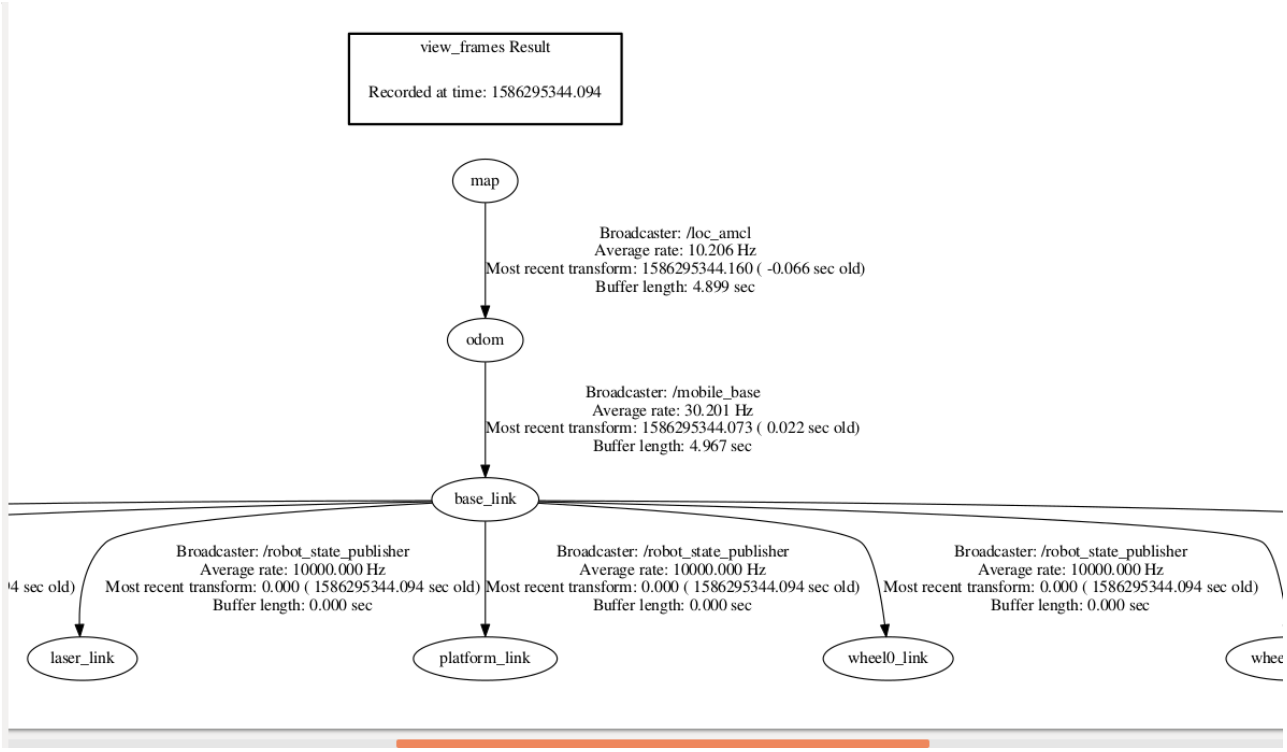


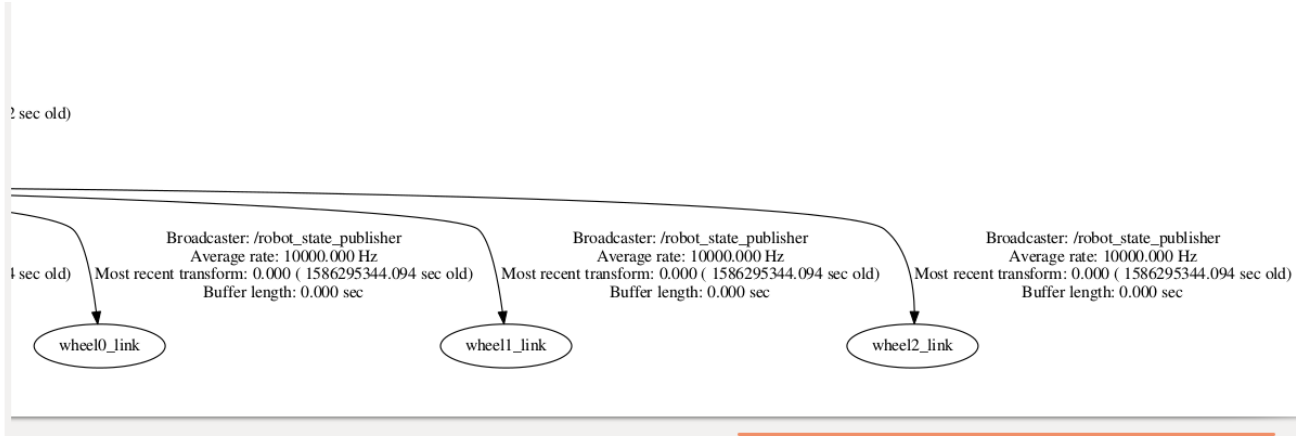
```
    rviz (rviz/rviz)

auto-starting new master
process[master]: started with pid [12889]
ROS_MASTER_URI=http://localhost:11311

setting /run_id to 07a9c068-7a1f-11ea-9239-f8da0c79a971
process[rosout-1]: started with pid [12902]
started core service [/rosout]
process[robot_state_publisher-2]: started with pid [12919]
process[rviz-3]: started with pid [12920]
process[laser_simulator-4]: started with pid [12922]
[ERROR] [1586408429.037525753]: Error reading end tag.
process[mobile_base-5]: started with pid [12933]
INITIALIZING LASER SIMULATOR...
process[rgbd_simul-6]: started with pid [12934]
process[map_server-7]: started with pid [12936]
[ INFO] [1586408429.093263372]: waitForService: Service [/static_map] has not been advertised, waiting...
process[loc_amcl-8]: started with pid [12946]
[ INFO] [1586408429.122187333]: Loading map from image "/home/miguel/MobileRobots-2020-2-for-Covid19/catkin_ws/src/config_files/occupancy_grids
/Universum.pgm"
[ INFO] [1586408429.134283970]: Read a 642 X 513 map @ 0.050 m/cell
[ INFO] [1586408429.143874832]: waitForService: Service [/static_map] is now available.
[ INFO] [1586408429.156434128]: Sending map
[ INFO] [1586408429.306360370]: Requesting the map...
[ INFO] [1586408429.319592904]: Sending map
[ INFO] [1586408429.323345340]: Received a 642 X 513 map @ 0.050 m/pix

[ INFO] [1586408429.361896963]: Initializing likelihood field model; this can take some time on large maps...
INITIALIZING RGBD_SIMUL NODE...
[robot_state_publisher-2] process has died [pid 12919, exit code 255, cmd /opt/ros/kinetic/lib/robot_state_publisher/robot_state_publisher __na
me:=robot_state_publisher __log:=/home/miguel/.ros/log/07a9c068-7a1f-11ea-9239-f8da0c79a971/robot_state_publisher-2.log].
log file: /home/miguel/.ros/log/07a9c068-7a1f-11ea-9239-f8da0c79a971/robot_state_publisher-2*.log
[ INFO] [1586408429.442447134]: Done initializing likelihood field model.
the rosdep view is empty: call 'sudo rosdep init' and 'rosdep update'
[ERROR] [1586408429.773638499]: Failed to find root link: Two root links found: [base_link] and [laser_link]
INITIALIZING MOBILE BASE ...
[ WARN] [1586408444.650691749]: No laser scan received (and thus no pose updates have been published) for 1586408444.650633 seconds.  Verify th
at data is being published on the /scan topic.
[ WARN] [1586408444.650907817]: MessageFilter [target=odom ]: Dropped 100.00% of messages so far. Please turn the [ros.amcl.message_notifier] r
osconsole logger to DEBUG for more information.
```

En esta situación se elimina la línea número 104, correspondiente a un campo ‘joint’, después de ejecutar la simulación la terminal muestra un error además de que el RViz ya no muestra el robot ni la imagen de la cámara sino que solamente muestra el mapa. Esto se presenta debido a que al momento de eliminar un campo joint hace que desaparezcan nodos que publican información, con lo cual el proceso se pierde y no llega toda la información requerida al final.

-Transformaciones y nodos que la publican.




view_frames Result
Recorded at time: 1586295344.094
map
Broadcaster: /loc_amcl
Average rate: 10.206 Hz
Most recent transform: 1586295344.160 (-0.066 sec old)
Buffer length: 4.899 sec
odom
Broadcaster: /mobile_base
Average rate: 30.201 Hz
Most recent transform: 1586295344.073 (0.022 sec old)
Buffer length: 4.967 sec
base_link
Broadcaster: /robot_state_publisher
Average rate: 10000.000 Hz
Most recent transform: 0.000 (1586295344.094 sec old)
Buffer length: 0.000 sec
Broadcaster: /robot_state_publisher
Average rate: 10000.000 Hz
Most recent transform: 0.000 (1586295344.094 sec old)
Buffer length: 0.000 sec
Broadcaster: /robot_state_publisher
Average rate: 10000.000 Hz
Most recent transform: 0.000 (1586295344.094 sec old)
Buffer length: 0.000 sec
laser_link
platform_link
wheel0_link


Broadcaster: /robot_state_publisher
Average rate: 10000.000 Hz
Most recent transform: 0.000 (1586295344.094 sec old)
Buffer length: 0.000 sec
Broadcaster: /robot_state_publisher
Average rate: 10000.000 Hz
Most recent transform: 0.000 (1586295344.094 sec old)
Buffer length: 0.000 sec
Broadcaster: /robot_state_publisher
Average rate: 10000.000 Hz
Most recent transform: 0.000 (1586295344.094 sec old)
Buffer length: 0.000 sec
wheel0_link
wheel1_link
wheel2_link