Lab Submission - 6

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Reg. No.: 20BRS1188

Subject: Simulation and modelling

Subject code: CSE3102

Professor: Dr. Christy Jackson J

Slot: L57+L58

Make your own robot model using your own URDF file and show the output in rviz.

Quadrotor_base.urdf

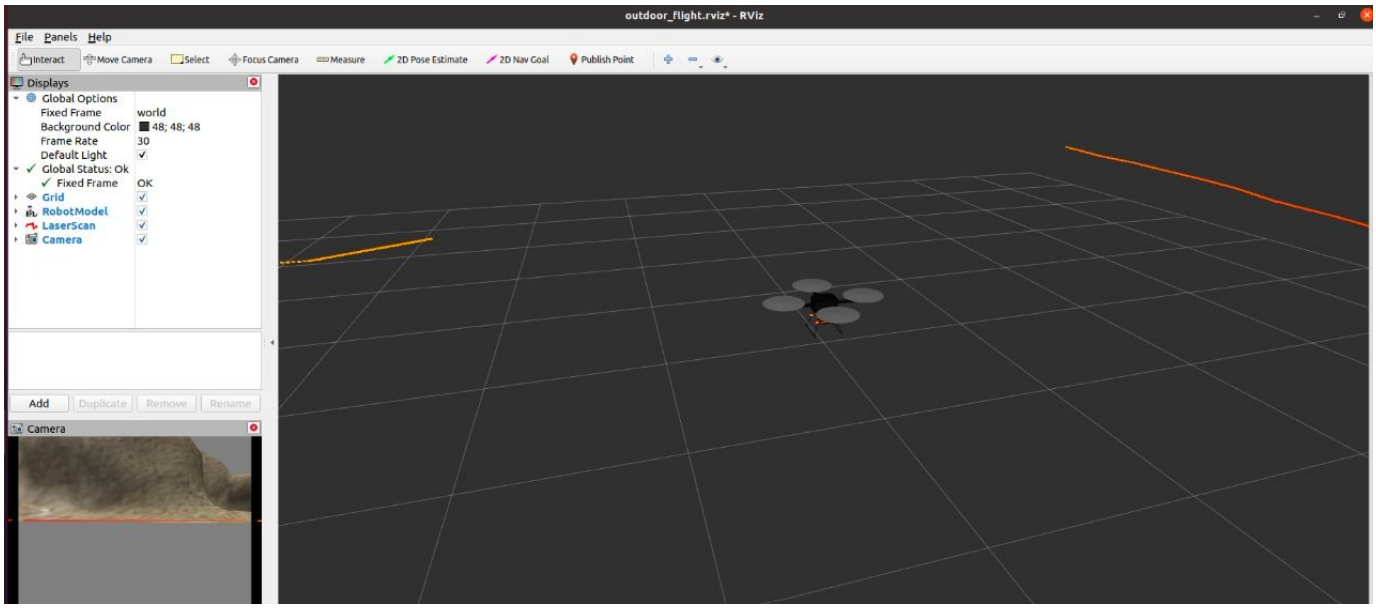
```
<?xml version="1.0"?>

<robot xmlns:xacro="http://www.ros.org/wiki/xacro">

  <xacro:include filename="$(find
hector_sensors_description)/urdf/sonar_sensor.urdf.xacro" />
  <xacro:property name="pi" value="3.1415926535897931" />

  <!-- Main quadrotor link -->
  <xacro:macro name="quadrotor_base_macro">
    <link name="base_link">
      <inertial>
        <mass value="1.477" />
        <origin xyz="0 0 0" />
        <inertia ixx="0.01152" ixy="0.0" ixz="0.0"
iyy="0.01152" iyz="0.0" izz="0.0218" />
      </inertial>

      <visual>
        <origin xyz="0 0 0" rpy="0 0 0" />
        <geometry>
          <mesh
filename="package://hector_quadrotor_description/meshes/quadro
tor/quadrotor_base.dae"/>
        </geometry>
      </visual>

      <collision>
        <origin xyz="0 0 0" rpy="0 0 0" />
        <geometry>
          <mesh
filename="package://hector_quadrotor_description/meshes/quadro
tor/quadrotor_base.stl"/>
```

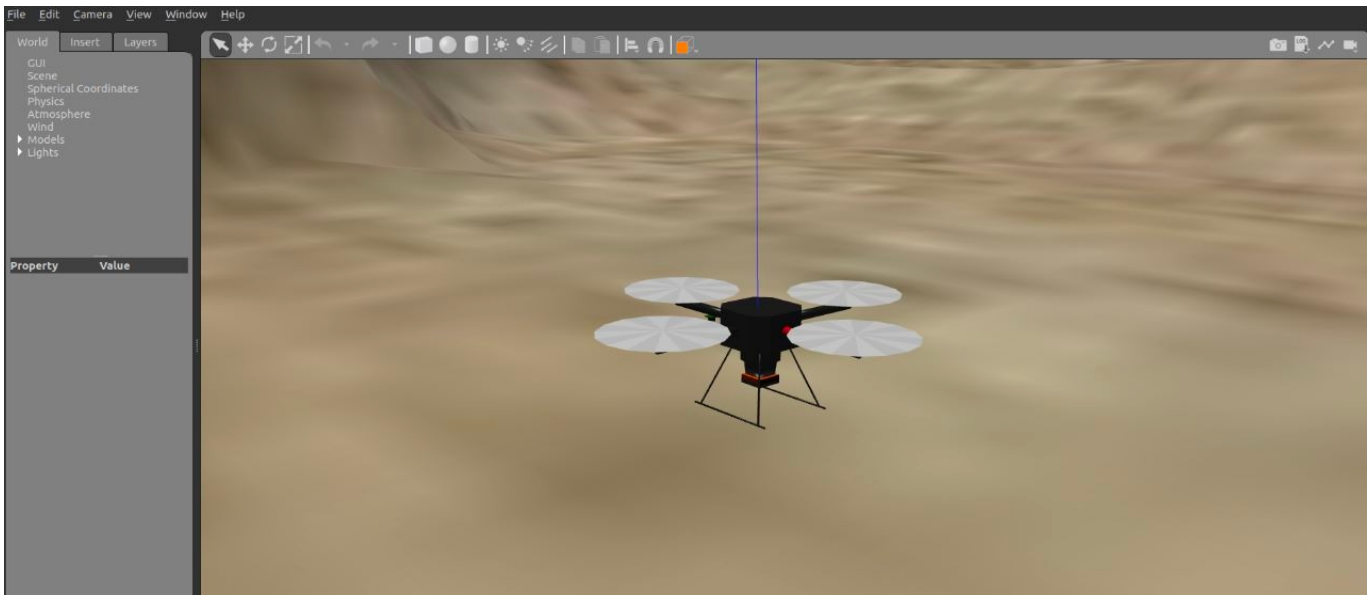
```
        </geometry>
      </collision>
    </link>

    <!-- Sonar height sensor -->
    <xacro:sonar_sensor name="sonar" parent="base_link"
ros_topic="sonar_height" update_rate="10" min_range="0.03"
max_range="3.0" field_of_view="${40*pi/180}" ray_count="3">
      <origin xyz="-0.16 0.0 -0.012" rpy="0 ${90*pi/180} 0"/>
    </xacro:sonar_sensor>

  </xacro:macro>
</robot>
```

Outdoor_flight_gazebo.launch

```
<?xml version="1.0"?>

<launch>

  <!-- Start Gazebo with wg world running in (max) realtime --
>
  <include file="$(find
hector_gazebo_worlds)/launch/rolling_landscape_120m.launch"/>

  <!-- Spawn simulated quadrotor uav -->
  <include file="$(find
hector_quadrotor_gazebo)/launch/spawn_quadrotor.launch" >
    <arg name="model" value="$(find
hector_quadrotor_description)/urdf/quadrotor_hokuyo_utm30lx.ga
zebo.xacro"/>
  </include>

  <!-- Start rviz visualization with preset config -->
  <node pkg="rviz" type="rviz" name="rviz" args="-d $(find
hector_quadrotor_demo)/rviz_cfg/outdoor_flight.rviz"/>

</launch>
```

Output:


outdoor_flight.rviz* - RViz
File Panels Help
Interact Move Camera Select Focus Camera Measure 2D Pose Estimate 2D Nav Goal Publish Point
Displays
Global Options
Fixed Frame world
Background Color 48; 48; 48
Frame Rate 30
Default Light
Global Status: Ok
Fixed Frame OK
Grid
RobotModel
LaserScan
Camera
Add Duplicate Remove Rename
Camera


File Edit Camera View Window Help
World Insert Layers
GUI
Scene
Spherical Coordinates
Physics
Atmosphere
Wind
Models
Lights
Property Value