

## **How to add realsense camera d435 in gazebo**

1. Build the gazebo plugin for the d435.
2. Copy this repository [https://github.com/issaiass/realsense\\_gazebo\\_plugin.git](https://github.com/issaiass/realsense_gazebo_plugin.git) in catkin\_ws which make work exclusively for d435.
3. Then you need original realsense description file which has urdf and mesh file
4. copy this repository [https://github.com/issaiass/realsense2\\_description.git](https://github.com/issaiass/realsense2_description.git) or you can download official github, both are maintained by realsense.
5. Then you can directly add the macro to you urdf file. I have added in DRL-robot-navigation/catkin\_ws/src/multi\_robot\_scenario/xacro/p3dx/pioneer3dx\_body.xacro. You need edit the name (give name what you prefer) , in origin you need to give position with respect to base link.
6. Build your workspace, source it and then run it.

## **How to add other generic depth camera in gazebo**

1. Create a URDF file for camera if you are creating for new robot otherwise directly paste in you xacro. The URDF file should include the depth camera as a sensor. Add camera link to your urdf with joints properly defined then you need to add camera sensor plugin.
2. Here's an example URDF snippet that defines a depth camera sensor plugin for gazebo:

```
<gazebo reference=${you defined camera link name}>
<sensor name="depth_sensor" type="depth">
  <plugin name="depth_sensor_plugin" filename="libgazebo_ros_depth.so">
    <alwaysOn>true</alwaysOn>
    <updateRate>30.0</updateRate>
    <cameraName>depth_camera</cameraName>
    <imageTopicName>depth_camera/image_raw</imageTopicName>
    <cameraInfoTopicName>depth_camera/camera_info</cameraInfoTopicName>
    <pointCloudTopicName>depth_camera/points</pointCloudTopicName>
    <frameName>depth_camera</frameName>
    <fov>1.047</fov>
    <range>10.0</range>
    <noise>0.001</noise>
    <minDepth>0.01</minDepth>
    <maxDepth>10.0</maxDepth>
```

```
<visualize>true</visualize>
<cameraPluginName>gazebo_ros_camera</cameraPluginName>

<depthImageTopicName>depth_camera/depth/image_raw</depthImageTopicName>

<depthImageCameraInfoTopicName>depth_camera/depth/camera_info</depthImage
CameraInfoTopicName>
</plugin>
<alwaysOn>true</alwaysOn>
<visualize>true</visualize>
<updateRate>30.0</updateRate>
<camera>
  <horizontal_fov>1.047</horizontal_fov>
  <image>
    <width>640</width>
    <height>480</height>
    <format>R8G8B8</format>
  </image>
  <clip>
    <near>0.01</near>
    <far>10.0</far>
  </clip>
  <noise>
    <type>gaussian</type>
    <mean>0.0</mean>
    <stddev>0.001</stddev>
  </noise>
</camera>
<ray>
  <scan>
    <horizontal>
      <samples>640</samples>
      <resolution>1</resolution>
    </horizontal>
    <vertical>
      <samples>480</samples>
      <resolution>1</resolution>
    </vertical>
  </scan>
  <range>
    <min>0.01</min>
    <max>10.0</max>
    <resolution>0.01</resolution>
  </range>
</ray>
```

```

<plugin name="gazebo_ros_camera" filename="libgazebo_ros_camera.so">
  <alwaysOn>true</alwaysOn>
  <updateRate>30.0</updateRate>
  <cameraName>depth_camera</cameraName>
  <imageTopicName>depth_camera/image_raw</imageTopicName>
  <cameraInfoTopicName>depth_camera/camera_info</cameraInfoTopicName>
  <frameName>depth_camera</frameName>
  <hackBaseline>0.07</hackBaseline>
  <CxPrime>320.5</CxPrime>
  <CyPrime>240</CyPrime>
  <focalLength>525.0</focalLength>
  <distortionK1>0.0</distortionK1>
  <distortionK2>0.0</distortionK2>
  <distortionK3>0.0</distortionK3>
  <distortionT1>0.0</distortionT1>
  <distortionT2>0.0</distortionT2>
  <baseline>0.07</baseline>
  <Cx>320.5</Cx>
  <Cy>240.5</Cy>
  <Fx>525.0</Fx>
  <Fy>525.0</Fy>
  <Tx>0.0</Tx>
  <Ty>0.0</Ty>
  <TxPrime>0.0</TxPrime>
  <imageWidth>640</imageWidth>
  <imageHeight>480</imageHeight>
  <distortionModel>plumb_bob</distortionModel>
</plugin>
</sensor>
<gazebo>

```

3. The above camera sensor plugin, I have taken all the parameters that can be defined. You can change this parameter according to your camera properties of that model. If you do not define these properties it can take the default values for gazebo.

4. You can checkout [https://classic.gazebosim.org/tutorials?tut=ros\\_depth\\_camera&cat=connect\\_ros](https://classic.gazebosim.org/tutorials?tut=ros_depth_camera&cat=connect_ros) for more details, how to add camera and details about the parameter.

## **How to add and remove other sensors**

1. Go to file DRL-robot-navigation/catkin\_ws/src/multi\_robot\_scenario/xacro/p3dx/pioneer3dx.xacro
2. comment the line 13 to 29 or delete, if you don't want to use other sensor like velodyne and hokuyo camera.
3. Uncomment the line 13 to 29 it, to use other sensors like velodyne and hokuyo camera.