Sensing

Estimated time to completion: **3 minutes**

6.4 Camera Sensor Plugin

It is worth noting that we have not covered all existing Gazebo sensor plugins. Among them are the **regular camera** sensor, **IMU** sensor, **GSP** sensor, which you have not covered. To add one of these to your robot model, you must modify your URDF file in a very similar way as you did to include the laser scanner sensor plugin.

First, add a link to where the new sensor can be attached:

In [ ]:
```
<!-- ********************** CAMERA SETUP ********************************  -->
<!-- Each sensor must be attached to a link.                              -->
<joint name="camera_joint" type="fixed">
  <parent link="base_link"/>
  <child link="camera_link"/>
  <origin xyz="0.0 0.0 0.2" rpy="0 0 0"/>
</joint>
<link name="camera_link"/>
```

Then, add the Gazebo plugin. For instance, the code below will add a **camera sensor** to your robot model:

In [ ]:

```
<gazebo reference="camera_link">
    <sensor name="camera" type="camera">
        <update_rate>30.0</update_rate>
        <always_on>1</always_on>
        <camera name="camera">
            <horizontal_fov>1.3962634</horizontal_fov>
            <image>
                <width>480</width>
                <height>360</height>
                <format>R8G8B8</format>
            </image>
            <clip>
                <!-- distance described in meters -->
                <near>0.01</near>
                <far>20</far>
            </clip>
            <distortion>
                <k1>0.0</k1>
                <k2>0.0</k2>
                <k3>0.0</k3>
                <p1>0.0</p1>
                <p2>0.0</p2>
                <center>0.5 0.5</center>
            </distortion>
        </camera>
        <plugin filename="libgazebo_ros_camera.so" name="camera_controller">
        <ros>
            <namespace>/robot1</namespace>
            <remapping>~/image_raw:=camera1/image</remapping>
            <remapping>~/camera_info:=camera1/camera_info</remapping>
        </ros>
        <camera_name>camera_low</camera_name>
        <frame_name>camera_link</frame_name>
        </plugin>
    </sensor>
</gazebo>
```

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