

ASSIGNMENT 7

INTEGRATING GPS CODE -

```
<?xml version="1.0"?>
<robot>
  <gazebo>
    <!-- imu plugin -->
    <gazebo>
      <plugin name="imu_plugin" filename="libgazebo_ros_imu.so">
        <alwaysOn>true</alwaysOn>
        <bodyName>base_footprint</bodyName>
        <topicName>imu</topicName>
        <serviceName>imu_service</serviceName>
        <gaussianNoise>0.0</gaussianNoise>
        <updateRate>20.0</updateRate>
      </plugin>
    </gazebo>
    <!-- gps plugin -->
    <gazebo>
      <plugin name="gps" filename="libhector_gazebo_ros_gps.so">
        <updateRate>10.0</updateRate>
        <topicName>sensor_msgs/NavSatFix</topicName>
        <gaussianNoise>0.0 0.0 0.0</gaussianNoise>
        <offset>0 0 0</offset>
        <velocityGaussianNoise>0 0 0</velocityGaussianNoise>
        <frameId>base_link</frameId>
      </plugin>
    </gazebo>
    <plugin name="differential_drive_controller" filename="libgazebo_ros_diff_drive.so">
      <legacyMode>>false</legacyMode>
      <alwaysOn>true</alwaysOn>
      <updateRate>10</updateRate>
      <leftJoint>left_wheel_hinge</leftJoint>
      <rightJoint>right_wheel_hinge</rightJoint>
      <wheelSeparation>0.4</wheelSeparation>
      <wheelDiameter>0.2</wheelDiameter>
      <torque>10</torque>
      <commandTopic>cmd_vel</commandTopic>
      <odometryTopic>odom</odometryTopic>
      <odometryFrame>odom</odometryFrame>
      <robotBaseFrame>chassis</robotBaseFrame>
    </plugin>
  </gazebo>
  <gazebo reference="chassis">
    <material>Gazebo/Orange</material>
  </gazebo>
  <gazebo reference="left_wheel">
    <material>Gazebo/Blue</material>
  </gazebo>
  <gazebo reference="right_wheel">
    <material>Gazebo/Blue</material>
  </gazebo>
</robot>
```

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</gazebo>
<gazebo reference="camera">
<material>Gazebo/Green</material>
<sensor type="camera" name="camera1">
<update_rate>30.0</update_rate>
<camera name="head">
<horizontal_fov>1.3962634</horizontal_fov>
<image>
<width>800</width>
<height>800</height>
<format>R8G8B8</format>
</image>
<clip>
<near>0.02</near>
<far>300</far>
</clip>
</camera>
<plugin name="camera_controller" filename="libgazebo_ros_camera.so">
<alwaysOn>true</alwaysOn>
<updateRate>0.0</updateRate>
<cameraName>mybot/camera1</cameraName>
<imageTopicName>image_raw</imageTopicName>
<cameraInfoTopicName>camera_info</cameraInfoTopicName>
<frameName>camera</frameName>
<hackBaseline>0.07</hackBaseline>
<distortionK1>0.0</distortionK1>
<distortionK2>0.0</distortionK2>
<distortionK3>0.0</distortionK3>
<distortionT1>0.0</distortionT1>
<distortionT2>0.0</distortionT2>
</plugin>
</sensor>
</gazebo>
<!-- hokuyo -->
<gazebo reference="hokuyo">
<sensor type="gpu_ray" name="head_hokuyo_sensor">
<pose>0 0 0 0 0 0</pose>
<visualize>false</visualize>
<update_rate>40</update_rate>
<ray>
<scan>
<horizontal>
<samples>720</samples>
<resolution>1</resolution>
<min_angle>-1.570796</min_angle>
<max_angle>1.570796</max_angle>
</horizontal>
</scan>
<range>
<min>0.10</min>
<max>30.0</max>

```