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1 <?xml version='1.0'?>
2 <sdf version='1.4'>
3   <model name="atom">
4     <static>false</static>
5
6     <!-- Make Chassis of Bot -->
7     <link name="chassis">
8       <pose>0 0 0.2 0 0 0</pose>
9       <inertial>
10        <mass>15.0</mass>
11        <inertia> <!-- inertias are tricky to compute -->
12          <!-- http://gazebosim.org/tutorials?tut=inertia&cat=build_robot
-->
13          <ixx>1.535</ixx>          <!-- for a box: ixx = 0.083 * mass *
(y*y + z*z) -->
14          <ixy>0.0</ixy>          <!-- for a box: ixy = 0 -->
15          <ixz>0.0</ixz>          <!-- for a box: ixz = 0 -->
16          <iyy>1.535</iyy>         <!-- for a box: iyy = 0.083 * mass *
(x*x + z*z) -->
17          <iyz>0.0</iyz>          <!-- for a box: iyz = 0 -->
18          <izz>1.745</izz>         <!-- for a box: izz = 0.083 * mass *
(x*x + y*y) -->
19        </inertia>
20      </inertial>
21      <collision name="collision">
22        <geometry>
23          <box>
24            <size> 1 0.5 0.2 </size>
25          </box>
26        </geometry>
27      </collision>
28
29      <visual name="visual">
30        <geometry>
31          <box>
32            <size> 1 0.5 0.2 </size>
33          </box>
34        </geometry>
35
36        <material>
37          <script>
38            ,
39            <uri>model://atom/materials/scripts/repeated.material</uri>
40            ,
41            <name>Atom</name>
42            </script>
43            </material>
44
45          </visual>
46
47        </link>
48
49      <!-- Right Wheel Back -->
50      <link name="right_wheel_back">
51        <pose> -0.2 0.3 0.1 0 1.5707 1.5707</pose>
52        <inertial>
53          <mass>5.0</mass>
54          <inertia> <!-- inertias are tricky to compute -->
55            <!-- http://gazebosim.org/tutorials?tut=inertia&cat=build_robot
-->
56            <ixx>0.1</ixx>
57            <ixy>0.0</ixy>
58            <ixz>0.0</ixz>

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57         <iyy>0.1</iyy>
58         <iyz>0.0</iyz>
59         <izz>0.1</izz>
60     </inertia>
61 </inertial>
62 <visual name="visual">
63     <geometry>
64         <cylinder>
65             <radius> 0.1 </radius>
66             <length>0.05</length>
67         </cylinder>
68     </geometry>
69     <material> <!-- Wheel material -->
70         <ambient>0.1 0.1 0.1 1</ambient>
71         <diffuse>0.1 0.1 0.2 1</diffuse>
72         <specular>0 0 0 0</specular>
73         <emissive>0 0 0 1</emissive>
74     </material> <!-- End wheel material -->
75 </visual>
76 <collision name="collision">
77     <geometry>
78         <cylinder>
79             <radius> 0.1 </radius>
80             <length>0.05</length>
81         </cylinder>
82     </geometry>
83 </collision>
84
85 </link>
86
87 <!-- Right Wheel Front -->
88 <link name="right_wheel_front">
89     <pose> 0.2 0.3 0.1 0 1.5707 1.5707</pose>
90     <inertial>
91         <mass>5.0</mass>
92         <inertia> <!-- inertias are tricky to compute -->
93             <!-- http://gazebosim.org/tutorials?tut=inertia&cat=build_robot
-->
94             <ixx>0.1</ixx>
95             <ixy>0.0</ixy>
96             <ixz>0.0</ixz>
97             <iyy>0.1</iyy>
98             <iyz>0.0</iyz>
99             <izz>0.1</izz>
100         </inertia>
101     </inertial>
102     <visual name="visual">
103         <geometry>
104             <cylinder>
105                 <radius> 0.1 </radius>
106                 <length>0.05</length>
107             </cylinder>
108         </geometry>
109         <material> <!-- Wheel material -->
110             <ambient>0.1 0.1 0.1 1</ambient>
111             <diffuse>0.1 0.1 0.2 1</diffuse>
112             <specular>0 0 0 0</specular>
113             <emissive>0 0 0 1</emissive>
114         </material> <!-- End wheel material -->
115     </visual>
116     <collision name="collision">

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117         <geometry>
118             <cylinder>
119                 <radius> 0.1 </radius>
120                 <length>0.05</length>
121             </cylinder>
122         </geometry>
123     </collision>
124 </link>
125
126 <!-- Left Wheel Back -->
127 <link name="left_wheel_back">
128     <pose> -0.2 -0.3 0.1 0 1.5707 1.5707</pose>
129     <inertial>
130         <mass>5.0</mass>
131         <inertia> <!-- inertias are tricky to compute -->
132             <!-- http://gazebosim.org/tutorials?tut=inertia&cat=build_robot
-->
133             <ixx>0.1</ixx>
134             <ixy>0.0</ixy>
135             <ixz>0.0</ixz>
136             <iyy>0.1</iyy>
137             <iyz>0.0</iyz>
138             <izz>0.1</izz>
139         </inertia>
140     </inertial>
141     <visual name="visual">
142         <geometry>
143             <cylinder>
144                 <radius> 0.1 </radius>
145                 <length>0.05</length>
146             </cylinder>
147         </geometry>
148         <material> <!-- Wheel material -->
149             <ambient>0.1 0.1 0.1 1</ambient>
150             <diffuse>0.1 0.1 0.2 1</diffuse>
151             <specular>0 0 0 0</specular>
152             <emissive>0 0 0 1</emissive>
153         </material> <!-- End wheel material -->
154     </visual>
155     <collision name="collision">
156         <geometry>
157             <cylinder>
158                 <radius> 0.1 </radius>
159                 <length>0.05</length>
160             </cylinder>
161         </geometry>
162     </collision>
163 </link>
164
165 <!-- Left Wheel Front -->
166 <link name="left_wheel_front">
167     <pose> 0.2 -0.3 0.1 0 1.5707 1.5707</pose>
168     <inertial>
169         <mass>5.0</mass>
170         <inertia> <!-- inertias are tricky to compute -->
171             <!-- http://gazebosim.org/tutorials?tut=inertia&cat=build_robot
-->
172             <ixx>0.1</ixx>
173             <ixy>0.0</ixy>
174             <ixz>0.0</ixz>
175             <iyy>0.1</iyy>
176             <iyz>0.0</iyz>

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177         <izz>0.1</izz>
178     </inertia>
179 </inertial>
180 <visual name="visual">
181     <geometry>
182         <cylinder>
183             <radius> 0.1 </radius>
184             <length>0.05</length>
185         </cylinder>
186     </geometry>
187     <material> <!-- Wheel material -->
188         <ambient>0.1 0.1 0.1 1</ambient>
189         <diffuse>0.1 0.1 0.2 1</diffuse>
190         <specular>0 0 0 0</specular>
191         <emissive>0 0 0 1</emissive>
192     </material> <!-- End wheel material -->
193 </visual>
194 <collision name="collision">
195     <geometry>
196         <cylinder>
197             <radius> 0.1 </radius>
198             <length>0.05</length>
199         </cylinder>
200     </geometry>
201 </collision>
202 </link>
203
204 <!-- Define Joints -->
205 <!-- Right Wheel Joint Back-->
206 <joint type="revolute" name="right_wheel_hinge_back">
207     <pose>0 0 0.03 0 0 0</pose>
208     <child>right_wheel_back</child>
209     <parent>chassis</parent>
210     <axis>
211         <xyz>0 1 0</xyz>
212     </axis>
213 </joint>
214
215 <!-- Right Wheel Joint Front-->
216 <joint type="revolute" name="right_wheel_hinge_front">
217     <pose>0 0 0.03 0 0 0</pose>
218     <child>right_wheel_front</child>
219     <parent>chassis</parent>
220     <axis>
221         <xyz>0 1 0</xyz>
222     </axis>
223 </joint>
224
225 <!-- Left Wheel Joint Back-->
226 <joint type="revolute" name="left_wheel_hinge_back">
227     <pose>0 0 -0.03 0 0 0</pose>
228     <child>left_wheel_back</child>
229     <parent>chassis</parent>
230     <axis>
231         <xyz>0 1 0</xyz>
232     </axis>
233 </joint>
234
235 <!-- Left Wheel Joint front-->
236 <joint type="revolute" name="left_wheel_hinge_front">
237     <pose>0 0 -0.03 0 0 0</pose>

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238     <child>left_wheel_front</child>
239     <parent>chassis</parent>
240     <axis>
241         <xyz>0 1 0</xyz>
242     </axis>
243 </joint>
244
245 <!-- Camera -->
246 <link name="camera_link">
247     <pose>0.26 0 2 0 0 0</pose>
248
249     <visual name="visual">
250         <geometry>
251             <box>
252                 <size>0.05 0.05 0.05</size>
253             </box>
254         </geometry>
255     </visual>
256
257     <collision name="collision">
258         <geometry>
259             <box>
260                 <size>0.05 0.05 0.05</size>
261             </box>
262         </geometry>
263     </collision>
264
265     <sensor type="camera" name="camera1">
266         <update_rate>30.0</update_rate>
267         <camera name="head">
268             <horizontal_fov>1.3962634</horizontal_fov>
269             <image>
270                 <width>800</width>
271                 <height>800</height>
272                 <format>R8G8B8</format>
273             </image>
274             <clip>
275                 <near>0.02</near>
276                 <far>300</far>
277             </clip>
278         </camera>
279         <always_on>1</always_on>
280         <visualize>1</visualize>
281         <plugin name="camera_controller"
filename="libgazebo_ros_camera.so">
282             <alwaysOn>true</alwaysOn>
283             <updateRate>0.0</updateRate>
284             <cameraName>atom/camera</cameraName>
285             <imageTopicName>rgb/image_raw</imageTopicName>
286             <cameraInfoTopicName>rgb/camera_info</cameraInfoTopicName>
287             <frameName>camera_link</frameName>
288             <hackBaseline>0.07</hackBaseline>
289             <distortionK1>0.0</distortionK1>
290             <distortionK2>0.0</distortionK2>
291             <distortionK3>0.0</distortionK3>
292             <distortionT1>0.0</distortionT1>
293             <distortionT2>0.0</distortionT2>
294             <publishTF>true</publishTF>
295         </plugin>
296     </sensor>
297 </link>

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298
299 <!-- Camera Joint -->
300 <joint type="fixed" name="camera_joint" >
301   <!--<pose>0.26 0 0.15 0 0 0</pose> -->
302   <parent>chassis</parent>
303   <child>camera_link</child>
304   <axis>
305     <xyz>0 1 0</xyz>
306   </axis>
307 </joint>
308
309 <!-- Project center to the ground -->
310 <link name="robot_footprint"></link>
311
312 <!-- Plugin -->
313 <plugin name="skid_steer_drive_controller"
filename="libgazebo_ros_skid_steer_drive.so">
314   <updateRate>100.0</updateRate>
315   <robotNamespace></robotNamespace>
316   <leftFrontJoint>left_wheel_hinge_front</leftFrontJoint>
317   <rightFrontJoint>right_wheel_hinge_front</rightFrontJoint>
318   <leftRearJoint>left_wheel_hinge_back</leftRearJoint>
319   <rightRearJoint>right_wheel_hinge_back</rightRearJoint>
320   <wheelSeparation>0.4</wheelSeparation>
321   <wheelDiameter>0.2</wheelDiameter>
322   <robotBaseFrame>robot_footprint</robotBaseFrame>
323   <torque>10</torque>
324   <topicName>cmd_vel</topicName>
325   <odometryTopic>odom</odometryTopic>
326   <odometryFrame>odom</odometryFrame>
327   <commandTopic>cmd_vel</commandTopic>
328   <topic_name_twist>cmd_vel</topic_name_twist>
329   <topic_name_odometry>odom</topic_name_odometry>
330   <topic_name_joint>joint</topic_name_joint>
331   <broadcastTF>true</broadcastTF>
332   <covariance_x>0.0001</covariance_x>
333   <covariance_y>0.0001</covariance_y>
334   <covariance_yaw>0.01</covariance_yaw>
335
336 </plugin>
337
338 <!-- LiDAR -->
339 <link name="hokuyo">
340   <pose>0.24 0 0.33 0 0 0</pose>
341   <inertial>
342     <mass>1e-5</mass>
343     <inertia> <!-- inertias are tricky to compute -->
344       <!-- http://gazebo.org/tutorials?cat=build_robot
-->
345       <ixx>1e-6</ixx>
346       <ixy>0.0</ixy>
347       <ixz>0.0</ixz>
348       <iyy>1e-6</iyy>
349       <iyz>0.0</iyz>
350       <izz>1e-6</izz>
351     </inertia>
352   </inertial>
353
354   <visual name="visual">
355     <geometry>
356       <mesh>
357         <uri> model://atom/meshes/hokuyo.dae</uri>

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358         </mesh>
359     </geometry>
360 </visual>
361
362     <collision name="collision">
363         <geometry>
364             <box>
365                 <size>0.1 0.1 0.1</size>
366             </box>
367         </geometry>
368     </collision>
369
370     <sensor type="ray" name="head_hokuyo_sensor">
371         <pose>0 0 0 0 0 0</pose>
372         <visualize>false</visualize>
373         <update_rate>40</update_rate>
374         <ray>
375             <scan>
376                 <horizontal>
377                     <samples>720</samples>
378                     <resolution>1</resolution>
379                     <min_angle>-1.570796</min_angle>
380                     <max_angle>1.570796</max_angle>
381                 </horizontal>
382             </scan>
383
384             <range>
385                 <min>0.10</min>
386                 <max>30.0</max>
387                 <resolution>0.01</resolution>
388             </range>
389
390             <noise>
391                 <type>gaussian</type>
392                 <!-- Noise parameters based on published spec for Hokuyo
laser
393                     achieving "+-30mm" accuracy at range < 10m. A mean of
0.0m and
394                     stddev of 0.01m will put 99.7% of samples within 0.03m
of the true
395                     reading. -->
396                 <mean>0.0</mean>
397                 <stddev>0.01</stddev>
398             </noise>
399
400         </ray>
401         <plugin name="gazebo_ros_head_hokuyo_controller"
filename="libgazebo_ros_laser.so">
402             <topicName>/scan</topicName>
403             <frameName>hokuyo</frameName>
404         </plugin>
405     </sensor>
406 </link>
407
408     <joint name="hokuyo_joint" type="fixed">
409         <pose></pose>
410         <parent>chassis</parent>
411         <child>hokuyo</child>
412         <axis>
413             <xyz>0 1 0</xyz>
414         </axis>
415     </joint>

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416 |  
417 |      </model>  
418 | </sdf>
```