<?xml version='1.0'?>

<robot name="udacity\_bot" xmlns:xacro="http://www.ros.org/wiki/xacro">

<xacro:include filename="$(find udacity\_bot)/urdf/udacity\_bot.gazebo" />

<xacro:include filename="$(find udacity\_bot)/urdf/materials.xacro" />

<link name="robot\_footprint"></link>

<joint name="robot\_footprint\_joint" type="fixed">

<origin xyz="0 0 0" rpy="0 0 0" />

<parent link="robot\_footprint"/>

<child link="chassis" />

</joint>

<link name='chassis'>

<pose>0 0 0.1 0 0 0</pose>

<inertial>

<mass value="15.0"/>

<origin xyz="0.0 0 0" rpy=" 0 0 0"/>

<inertia

ixx="0.1" ixy="0" ixz="0"

iyy="0.1" iyz="0"

izz="0.1"

/>

</inertial>

<collision name='collision'>

<origin xyz="0 0 0" rpy=" 0 0 0"/>

<geometry>

<box size=".4 .2 .1"/>

</geometry>

</collision>

<visual name='chassis\_visual'>

<origin xyz="0 0 0" rpy=" 0 0 0"/>

<geometry>

<box size=".4 .2 .1"/>

</geometry>

<material name="orange"/>

</visual>

<collision name='back\_caster\_collision'>

<origin xyz="-0.15 0 -0.05" rpy=" 0 0 0"/>

<geometry>

<sphere radius="0.0499"/>

</geometry>

</collision>

<visual name='back\_caster\_visual'>

<origin xyz="-0.15 0 -0.05" rpy=" 0 0 0"/>

<geometry>

<sphere radius="0.05"/>

</geometry>

</visual>

<collision name='front\_caster\_collision'>

<origin xyz="0.15 0 -0.05" rpy=" 0 0 0"/>

<geometry>

<sphere radius="0.0499"/>

</geometry>

</collision>

<visual name='front\_caster\_visual'>

<origin xyz="0.15 0 -0.05" rpy=" 0 0 0"/>

<geometry>

<sphere radius="0.05"/>

</geometry>

</visual>

</link>

<link name="left\_wheel">

<inertial>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<mass value="5"/>

<inertia

ixx="0.1" ixy="0" ixz="0"

iyy="0.1" iyz="0"

izz="0.1"/>

</inertial>

<visual>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<geometry>

<cylinder length="0.05" radius="0.12"/>

</geometry>

<material name="black"/>

</visual>

<collision>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<geometry>

<cylinder length="0.05" radius="0.1"/>

</geometry>

</collision>

</link>

<link name="right\_wheel">

<inertial>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<mass value="5"/>

<inertia

ixx="0.1" ixy="0" ixz="0"

iyy="0.1" iyz="0"

izz="0.1"/>

</inertial>

<visual>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<geometry>

<cylinder length="0.05" radius="0.12"/>

</geometry>

<material name="black"/>

</visual>

<collision>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<geometry>

<cylinder length="0.05" radius="0.1"/>

</geometry>

</collision>

</link>

<link name="Platform">

<inertial>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<mass value="5"/>

<inertia

ixx="0.1" ixy="0" ixz="0"

iyy="0.1" iyz="0"

izz="0.1"/>

</inertial>

<visual>

<origin xyz="0 0 0" rpy="0 0 0"/>

<geometry>

<cylinder length="0.3" radius="0.05"/>

</geometry>

<material name="orange"/>

</visual>

<collision>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<geometry>

<cylinder length="0.2" radius="0.12"/>

</geometry>

</collision>

</link>

<link name="Cargo">

<inertial>

<origin xyz="0 0 0" rpy="0 0 0"/>

<mass value="2"/>

<inertia

ixx="0.1" ixy="0" ixz="0"

iyy="0.1" iyz="0"

izz="0.1"/>

</inertial>

<visual>

<origin xyz="0 0 0" rpy="0 0 0"/>

<geometry>

<box size=".2 .2 .1"/>

</geometry>

<material name="grey"/>

</visual>

<collision name='back\_caster\_collision'>

<origin xyz=" 0 0 -0.05" rpy=" 0 0 0"/>

<geometry>

<sphere radius="0.0499"/>

</geometry>

</collision>

<visual name='back\_caster\_visual'>

<origin xyz=" 0 0 -0.05" rpy=" 0 0 0"/>

<geometry>

<sphere radius="0.05"/>

</geometry>

</visual>

<collision>

<origin xyz="0 0 0" rpy="0 1.5707 1.5707"/>

<geometry>

<box size=".2 .2 .1"/>

</geometry>

</collision>

</link>

<link name="camera">

<inertial>

<origin xyz="0 0 0" rpy="0 0 0"/>

<mass value="0.1"/>

<inertia

ixx="1e-6" ixy="0" ixz="0"

iyy="1e-6" iyz="0"

izz="1e-6"/>

</inertial>

<visual>

<origin xyz="0 0 0" rpy="0 0 0"/>

<geometry>

<box size="0.05 0.05 0.05"/>

</geometry>

<material name="black"/>

</visual>

<collision>

<origin xyz="0 0 0" rpy="0 0 0"/>

<geometry>

<box size="0.05 0.05 0.05"/>

</geometry>

</collision>

</link>

<link name="hokuyo">

<inertial>

<origin xyz="0 0 0" rpy="0 0 0"/>

<mass value="0.1"/>

<inertia

ixx="1e-6" ixy="0" ixz="0"

iyy="1e-6" iyz="0"

izz="1e-6"/>

</inertial>

<visual>

<origin xyz="0 0 0" rpy="0 0 0"/>

<geometry>

<mesh filename="package://udacity\_bot/meshes/hokuyo.dae"/>

</geometry>

</visual>

<collision>

<origin xyz="0 0 0" rpy="0 0 0"/>

<geometry>

<box size="0.05 0.05 0.05"/>

</geometry>

</collision>

</link>

<joint type="fixed" name="camera\_joint">

<origin xyz="0 0 0.2" rpy="0 0 0"/>

<child link="camera"/>

<parent link="Platform"/>

<axis xyz="0 0 0" rpy="0 0 0"/>

<limit effort="10000" velocity="1000"/>

<joint\_properties damping="1.0" friction="1.0"/>

</joint>

<joint type="fixed" name="hokuyo\_joint">

<origin xyz="0.15 0 0.1" rpy="0 0 0"/>

<child link="hokuyo"/>

<parent link="chassis"/>

<axis xyz="0 0 0" rpy="0 0 0"/>

<limit effort="10000" velocity="1000"/>

<joint\_properties damping="1.0" friction="1.0"/>

</joint>

<joint type="continuous" name="left\_wheel\_hinge">

<origin xyz="0 0.15 0" rpy="0 0 0"/>

<child link="left\_wheel"/>

<parent link="chassis"/>

<axis xyz="0 1 0" rpy="0 0 0"/>

<limit effort="10000" velocity="1000"/>

<joint\_properties damping="1.0" friction="1.0"/>

</joint>

<joint type="continuous" name="right\_wheel\_hinge">

<origin xyz="0 -0.15 0" rpy="0 0 0"/>

<child link="right\_wheel"/>

<parent link="chassis"/>

<axis xyz="0 1 0" rpy="0 0 0"/>

<limit effort="10000" velocity="1000"/>

<joint\_properties damping="1.0" friction="1.0"/>

</joint>

<joint type="fixed" name="platform\_joint">

<origin xyz="0 0 0.1" rpy="0 0 0"/>

<child link="Platform"/>

<parent link="chassis"/>

<axis xyz="0 1 0" rpy="0 0 0"/>

<limit effort="10000" velocity="1000"/>

<joint\_properties damping="1.0" friction="1.0"/>

</joint>

<joint type="fixed" name="cargo\_joint">

<origin xyz="-0.3 0 0" rpy="0 0 0"/>

<child link="Cargo"/>

<parent link="chassis"/>

<axis xyz="0 1 0" rpy="0 0 0"/>

<limit effort="10000" velocity="1000"/>

<joint\_properties damping="1.0" friction="1.0"/>

</joint>

</robot>