<?xml version="1.0" encoding="utf-8"?>

<!-- This URDF was automatically created by SolidWorks to URDF Exporter! Originally created by Stephen Brawner (brawner@gmail.com)

Commit Version: 1.6.0-1-g15f4949 Build Version: 1.6.7594.29634

For more information, please see http://wiki.ros.org/sw\_urdf\_exporter -->

<robot

name="farm\_bot\_urdf">

<link

name="base\_link">

<inertial>

<origin

xyz="-0.00413302315404124 0.00666211969872622 -8.65044041209199E-11"

rpy="0 0 0" />

<mass

value="0.365211098963578" />

<inertia

ixx="0.000587851832472422"

ixy="-2.5088865580259E-06"

ixz="-1.85797674499311E-11"

iyy="0.00275979469789039"

iyz="-3.06654702051706E-13"

izz="0.00220629413672777" />

</inertial>

<visual>

<origin

xyz="0 0 0"

rpy="0 0 0" />

<geometry>

<mesh

filename="package://farm\_bot/meshes/base\_link.STL" />

</geometry>

<material

name="">

<color

rgba="0.792156862745098 0.819607843137255 0.933333333333333 1" />

</material>

</visual>

<collision>

<origin

xyz="0 0 0"

rpy="0 0 0" />

<geometry>

<mesh

filename="package://farm\_bot/meshes/base\_link.STL" />

</geometry>

</collision>

</link>

<link

name="piston front">

<inertial>

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xyz="1.38777878078145E-17 3.43680040246323E-17 0.0304789370624094"

rpy="0 0 0" />

<mass

value="0.0492496861306418" />

<inertia

ixx="3.61940839038542E-05"

ixy="-6.38007239207329E-23"

ixz="-3.17637355220363E-21"

iyy="3.61940839038542E-05"

iyz="-5.03314590811531E-21"

izz="5.26782397919921E-06" />

</inertial>

<visual>

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xyz="0 0 0"

rpy="0 0 0" />

<geometry>

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filename="package://farm\_bot/meshes/piston front.STL" />

</geometry>

<material

name="">

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rgba="0.792156862745098 0.819607843137255 0.933333333333333 1" />

</material>

</visual>

<collision>

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xyz="0 0 0"

rpy="0 0 0" />

<geometry>

<mesh

filename="package://farm\_bot/meshes/piston front.STL" />

</geometry>

</collision>

</link>

<joint

name="piston1"

type="prismatic">

<origin

xyz="-0.043301 0 0.025"

rpy="-3.1416 -0.5236 3.1416" />

<parent

link="base\_link" />

<child

link="piston front" />

<axis

xyz="0 0 1" />

<limit

lower="-0.06"

upper="0"

effort="0"

velocity="0" />

</joint>

<link

name="piston rear">

<inertial>

<origin

xyz="6.93889390390723E-18 -1.85814245279061E-17 0.0304789370624093"

rpy="0 0 0" />

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value="0.0492496861306418" />

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ixx="3.61940839038542E-05"

ixy="2.45808401609207E-24"

ixz="-1.6940658945086E-21"

iyy="3.61940839038542E-05"

iyz="-2.46741021972222E-21"

izz="5.2678239791992E-06" />

</inertial>

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rpy="0 0 0" />

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</geometry>

<material

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</material>

</visual>

<collision>

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rpy="0 0 0" />

<geometry>

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</geometry>

</collision>

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<joint

name="piston2"

type="prismatic">

<origin

xyz="0.043301 0 0.025"

rpy="3.1416 0.5236 3.1416" />

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link="base\_link" />

<child

link="piston rear" />

<axis

xyz="0 0 1" />

<limit

lower="-0.06"

upper="0"

effort="0"

velocity="0" />

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<link

name="wheel right front">

<inertial>

<origin

xyz="-0.0481728034412505 0 1.38777878078145E-17"

rpy="0 0 0" />

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value="0.170342906048753" />

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ixx="0.000197594540802262"

ixy="5.82461381845058E-21"

ixz="4.09496689598892E-21"

iyy="0.000115040014294501"

iyz="-1.35525271560688E-20"

izz="0.000115040014294501" />

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rpy="0 0 0" />

<geometry>

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</geometry>

<material

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<color

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</material>

</visual>

<collision>

<origin

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rpy="0 0 0" />

<geometry>

<mesh

filename="package://farm\_bot/meshes/wheel right front.STL" />

</geometry>

</collision>

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<joint

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type="continuous">

<origin

xyz="-0.1 -0.05 0.03"

rpy="-2.0772 0 1.5708" />

<parent

link="base\_link" />

<child

link="wheel right front" />

<axis

xyz="1 0 0" />

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lower="0.0"

effort="20"

velocity="100" />

</joint>

<link

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<inertial>

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xyz="-0.0481728034412505 0 6.93889390390723E-18"

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iyz="0"

izz="0.000115040014294501" />

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rpy="0 0 0" />

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rgba="0.792156862745098 0.819607843137255 0.933333333333333 1" />

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<collision>

<origin

xyz="0 0 0"

rpy="0 0 0" />

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</geometry>

</collision>

</link>

<joint

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type="continuous">

<origin

xyz="-0.1 0.05 0.03"

rpy="2.8045 0 -1.5708" />

<parent

link="base\_link" />

<child

link="wheel left front" />

<axis

xyz="-1 0 0" />

<limit

upper="3.14"

lower="0.0"

effort="20"

velocity="100" />

</joint>

<link

name="wheel left rear">

<inertial>

<origin

xyz="-0.0481728034412505 0 2.08166817117217E-17"

rpy="0 0 0" />

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iyy="0.000115040014294501"

iyz="5.0821976835258E-21"

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</geometry>

<material

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<color

rgba="0.792156862745098 0.819607843137255 0.933333333333333 1" />

</material>

</visual>

<collision>

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filename="package://farm\_bot/meshes/wheel left rear.STL" />

</geometry>

</collision>

</link>

<joint

name="wheel\_left\_rear"

type="continuous">

<origin

xyz="0.1 0.05 0.03"

rpy="-3.0288 0 -1.5708" />

<parent

link="base\_link" />

<child

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xyz="-1 0 0" />

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upper="3.14"

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effort="20"

velocity="100" />

</joint>

<link

name="wheel right rear">

<inertial>

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xyz="-0.0481728034412505 -1.38777878078145E-17 5.55111512312578E-17"

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<mass

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ixx="0.000197594540802262"

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ixz="2.19619835461011E-22"

iyy="0.000115040014294501"

iyz="-3.72694496791892E-20"

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</geometry>

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</visual>

<collision>

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rpy="0 0 0" />

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</collision>

</link>

<joint

name="wheel\_right\_rear"

type="continuous">

<origin

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rpy="-2.0959 0 1.5708" />

<parent

link="base\_link" />

<child

link="wheel right rear" />

<axis

xyz="1 0 0" />

<limit

upper="3.14"

lower="0.0"

effort="20"

velocity="100" />

</joint>

<gazebo>

<plugin name="gazebo\_ros\_control" filename="libgazebo\_ros\_control.so">

<robotNamespace>/farm\_bot</robotNamespace>

</plugin>

</gazebo>

<transmission name="wrr\_">

<type>transmission\_interface/SimpleTransmission</type>

<joint name="wheel\_right\_rear">

<hardwareInterface>EffortJointInterface</hardwareInterface>

</joint>

<actuator name="Motor1">

<hardwareInterface>EffortJointInterface</hardwareInterface>

<mechanicalReduction>10</mechanicalReduction>

</actuator>

</transmission>

<transmission name="wlr\_">

<type>transmission\_interface/SimpleTransmission</type>

<joint name="wheel\_left\_rear">

<hardwareInterface>EffortJointInterface</hardwareInterface>

</joint>

<actuator name="Motor2">

<hardwareInterface>EffortJointInterface</hardwareInterface>

<mechanicalReduction>10</mechanicalReduction>

</actuator>

</transmission>

<transmission name="wlf\_">

<type>transmission\_interface/SimpleTransmission</type>

<joint name="wheel\_left\_front">

<hardwareInterface>EffortJointInterface</hardwareInterface>

</joint>

<actuator name="Motor3">

<hardwareInterface>EffortJointInterface</hardwareInterface>

<mechanicalReduction>10</mechanicalReduction>

</actuator>

</transmission>

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<type>transmission\_interface/SimpleTransmission</type>

<joint name="wheel\_right\_front">

<hardwareInterface>EffortJointInterface</hardwareInterface>

</joint>

<actuator name="Motor4">

<hardwareInterface>EffortJointInterface</hardwareInterface>

<mechanicalReduction>10</mechanicalReduction>

</actuator>

</transmission>

<gazebo reference="base\_link">

<sensor type="ray" name="head\_hokuyo\_sensor">

<pose>0 0 -0.025 0 0 -3.14</pose>

<visualize>true</visualize>

<update\_rate>10</update\_rate>

<ray>

<scan>

<horizontal>

<samples>5</samples>

<resolution>1</resolution>

<min\_angle>-1.570796</min\_angle>

<max\_angle>1.570796</max\_angle>

</horizontal>

</scan>

<range>

<min>0.10</min>

<max>1.0</max>

<resolution>0.01</resolution>

</range>

<noise>

<type>gaussian</type>

<!-- Noise parameters based on published spec for Hokuyo laser

achieving "+-30mm" accuracy at range < 10m. A mean of 0.0m and

stddev of 0.01m will put 99.7% of samples within 0.03m of the true

reading. -->

<mean>0.0</mean>

<stddev>0.01</stddev>

</noise>

</ray>

<plugin name="gazebo\_ros\_head\_hokuyo\_controller" filename="libgazebo\_ros\_laser.so">

<topicName>/rrbot/laser/scan</topicName>

<frameName>base\_link</frameName>

</plugin>

</sensor>

</gazebo>

<gazebo reference="base\_link">

<gravity>true</gravity>

<sensor name="imu\_sensor" type="imu">

<always\_on>true</always\_on>

<update\_rate>10</update\_rate>

<visualize>true</visualize>

<topic>\_\_default\_topic\_\_</topic>

<plugin filename="libgazebo\_ros\_imu\_sensor.so" name="imu\_plugin">

<topicName>imu</topicName>

<bodyName>imu\_link</bodyName>

<updateRateHZ>10.0</updateRateHZ>

<gaussianNoise>0.0</gaussianNoise>

<xyzOffset>0 0 0</xyzOffset>

<rpyOffset>0 0 -1.57</rpyOffset>

<frameName>base\_link</frameName>

<initialOrientationAsReference>false</initialOrientationAsReference>

</plugin>

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

</sensor>

</gazebo>

<gazebo>

<plugin name="novatel\_gps\_sim" filename="libhector\_gazebo\_ros\_gps.so">

<alwaysOn>1</alwaysOn>

<updateRate>10.0</updateRate>

<bodyName>base\_link</bodyName>

<topicName>fix</topicName>

<velocityTopicName>fix\_velocity</velocityTopicName>

<referenceLatitude> 0.0</referenceLatitude>

<referenceLongitude> 0.0 </referenceLongitude>

<gaussianNoise>0.0 0.0 0.0</gaussianNoise>

<velocityGaussianNoise>0.0 0.0 0.0</velocityGaussianNoise>

</plugin>

</gazebo>

</robot>