*“Hopper Robot using Gazebo”*

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June, 2022.

**Python Code**

**Directory:** hopper/my\_legged\_robots\_sims/scripts/joint\_publisher.py

**joint\_publisher.py**

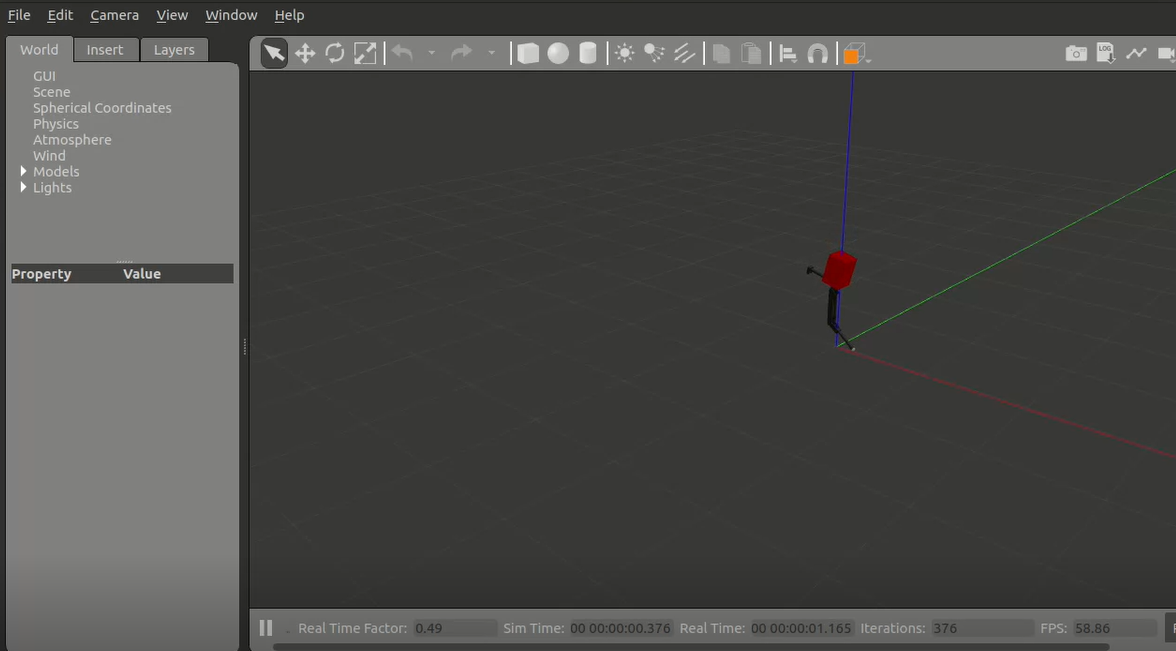
#!/usr/bin/env python3  
import rospy  
from std\_msgs.msg import String  
from std\_msgs.msg import Float64  
class JointPub(object):  
 def \_\_init\_\_(self):  
  
 self.publishers\_array = []  
 self.\_haa\_joint\_pub = rospy.Publisher('/monoped/haa\_joint\_position\_controller/command', Float64, queue\_size=1)  
 self.\_hfe\_joint\_pub = rospy.Publisher('/monoped/hfe\_joint\_position\_controller/command', Float64, queue\_size=1)  
 self.\_kfe\_joint\_pub = rospy.Publisher('/monoped/kfe\_joint\_position\_controller/command', Float64, queue\_size=1)  
   
 self.publishers\_array.append(self.\_haa\_joint\_pub)  
 self.publishers\_array.append(self.\_hfe\_joint\_pub)  
 self.publishers\_array.append(self.\_kfe\_joint\_pub)  
  
 def move\_joints(self, joints\_array):  
  
 i = 0  
 for publisher\_object in self.publishers\_array:  
 joint\_value = Float64()  
 joint\_value.data = joints\_array[i]  
 rospy.loginfo(str(joint\_value))  
 publisher\_object.publish(joint\_value)  
 i += 1  
  
 def start\_loop(self, rate\_value = 2.0):  
 rospy.loginfo("Start Loop")  
 pos1 = [0,1.57,-1.57]  
 pos2 = [0.0,0.0,0.0]  
 position = "pos1"  
 rate = rospy.Rate(rate\_value)  
 while not rospy.is\_shutdown():  
 if position == "pos1":  
 self.move\_joints(pos1)  
 position = "pos2"  
 else:  
 self.move\_joints(pos2)  
 position = "pos1"  
 rate.sleep()  
  
if \_\_name\_\_=="\_\_main\_\_":  
 rospy.init\_node('joint\_publisher\_node')  
 joint\_publisher = JointPub()  
 rate\_value = 5  
 joint\_publisher.start\_loop(rate\_value)

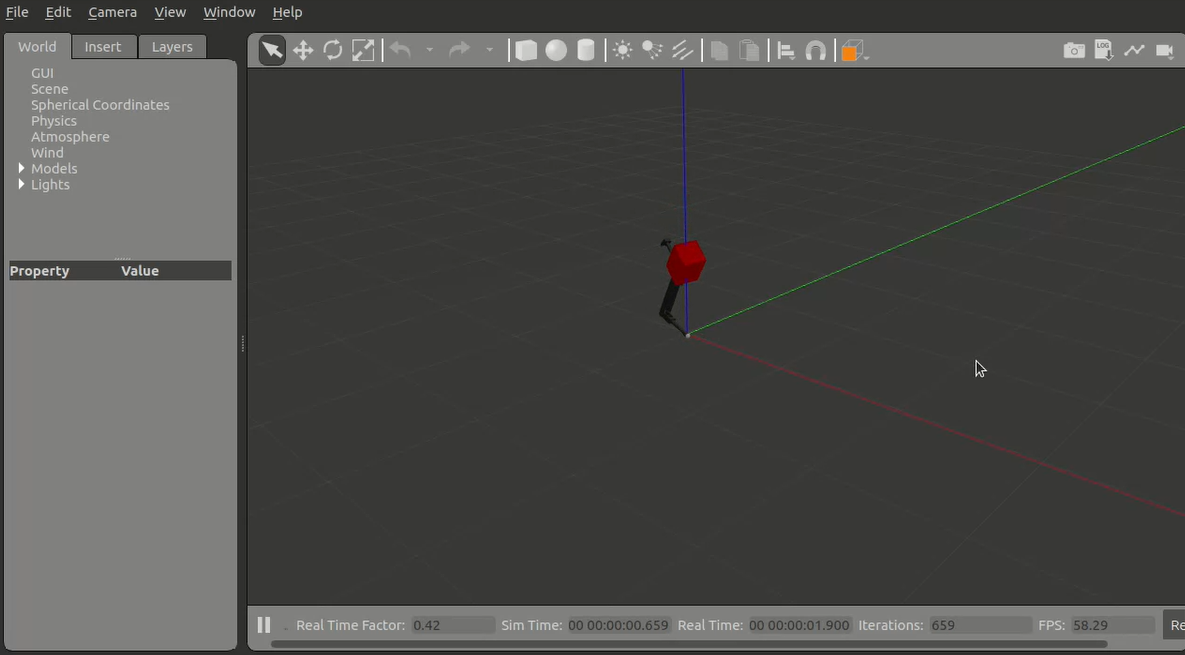
**Instructions**

1. Extract the zip file and copy it into catkin\_ws/src/
2. Open new terminal cd catkin\_ws/ and run catkin\_make
3. source ./devel/setup.bash
4. cd src/hopper/
5. roslaunch my\_legged\_robots\_sims main.launch (Gazebo will be opened).
6. Open another new terminal, direct to cd catkin\_ws/ and run source ./devel/setup.bach
7. cd src/hopper
8. roslaunch my\_hopper\_training main.launch (hopper robot will simulate and trains itself using gym environment).

**To run python code from scratch**

1. Extract the zip file and copy it into catkin\_ws/src/
2. Open new terminal cd catkin\_ws/ and run catkin\_make
3. source ./devel/setup.bash
4. cd src/hopper/
5. roslaunch my\_legged\_robots\_sims main.launch (Gazebo will be opened).
6. Open another new terminal, direct to cd catkin\_ws/src/hopper/my\_legged\_robots\_sims/scripts/
7. run ./joint\_publisher.py (hopper robot will simulate in a hopping fashion).

**Results**

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