ROBOTICS LAB 221 LIA 001

Lab Record

Student Name

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING COLLEGE OF ENGINEERING TRIVANDRUM KERALA

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CERTIFICATE

Certified that this is a bonafide record of work done by **Student Name** (TVE22ECRA0XY) in the ROBOTICS LAB during the academic year 2022 - 23.

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List of Experiments

1	Familiarization with ROS	1
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Experiment 1

Familiarization with ROS

Objective : Familiarize with Robot Operating System

Include a brief introduction to ROS covering basics, not to exceed 4 pages

Experiment 2

ROS Publisher and Subscriber nodes

Objective : Study of ROS publisher and subscriber nodes

Terminologies & key concepts :

Nodes : ROS nodes are Processes that perform computation. Nodes communicate with each other through topics, services, parameter server.

Messages :

Algorithm :

The publisher node 'M1RAA_2022' publishes the message 'Hi CET' on the topic 'Hello_CET'. The message is published at a rate of X Hz as specified by rospy.Rate()

Code

The code for the publisher and subscriber are implemented as two separate python script files.

Publisher Script

```
#!/usr/bin/env python
import rospy
from std_msgs.msg import String
if __name__=='__main__':
    rospy.init_node('M1RAA_2022')
    pub = rospy.Publisher('Hello_CET', String, queue_size=10)
    rate = rospy.Rate(10)
    while not rospy.is_shutdown():
        msg = String()
        msg.data = 'Hi CET !'
        pub.publish(msg)
        rospy.loginfo(msg)
        rospy.loginfo("Node:" + rospy.get_caller_id() + "publishing")
        rate.sleep()
```

Subscriber Script

```
#!/usr/bin/env python
import rospy
from std_msgs.msg import String
if __name__=='__main__':
    rospy.init_node('M1RAA_2022')
    pub = rospy.Publisher('Hello_CET', String, queue_size=10)
    rate = rospy.Rate(10)
    while not rospy.is_shutdown():
        msg = String()
        msg.data = 'Hi CET !'
        pub.publish(msg)
        rospy.loginfo(msg)
        rospy.loginfo("Node:" + rospy.get_caller_id() + "publishing")
```

rate.sleep()

Results

joaquim	ı@joaquim: ~	8
IT: roscore http://	/ioaguim:11311/ 150x16	_
Press Ctrl-C to interrupt Done checking log file disk usage. Usage is <1G8.		
started roslaunch server http://joaquin:46719/ ros_comm version 1.15.14		
SURMARY		
PARAMETERS * /rosdistro: noetic * /rosversion: 1.15.14		
NODES		
joaquim@joaquim: ~ 73x17	joaquim@joaquim: ~ 74x17	
<pre>temperature: 27 current: 0.0] charge: 0.0 of charge: 0.0 of design_capacity: 0.0 gercentage: 0.0 power_supply_health: 0 power_supply_health: 0 power_supply_technology: 0 present: False cell_temperature: [] location: "MIRAA_2022_classbot" sertal_number: '' [INFO] [1609440670.513299]: Battery discharging</pre>	<pre>frame_td: '' voltage: 8.0 temperature: 27.0 current: 0.0 charge: 0.0 capacity: 0.0 design_capacity: 0.0 percentage: 0.0 power_supply_health: 0 power_supply_health: 0 power_supply_health: 0 power_supply_technology: 0 present: False cell_voltage: [] cell_temperature: [] tocation: "MIRAA_2022_classbot"</pre>	

Figure 2.1: Terminal windows showing code execution

	/rosout	
<pre>/battery_state_info /battery</pre>	y_info	
	/led_display	/rosout /rosout
	/rqt_gui_py_node_43452	\sum

Figure 2.2: ROS graph showing the publisher and subscriber nodes