



ERA IITK

Corona Break Learning

Instructions

- You are expected to attempt all tasks.
 - The final report should be submitted through GitHub by Making a folder Task 4 in your forked folder from ERA-IITK/learning101
 - For CMake Tasks, submit files in a seperate folder.
 - For ROS tasks, Submit a Work-space <TEAMNAME>_ws with package name ERA_Task4
 - Your team-name is the colour of your team given in slack
 - the Task part 1 - CMake is to be done individually.
 - It is advisable that both members of your team attempt both the ends of the part 2- sending and receiving information.
 - The final Repo should include all your results, code snippets and necessary information of the task.
 - Relevant links can be found at ERA-IITK/res
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1 Introduction to ROS Ecosystem- Part 2

1.1 Getting comfortable with the ROS Eco-System - CMake

- What is CMake? Why should we be using it
 - Go through 'An Introduction to Modern CMake' from cliutils
 - Installing CMake
 - Running CMake
 - Complete chapter 2- an introduction to the basics.
 - Complete tutorial 1 made by the Cmake Foundation
 - Complete Using Dependencies Guide
 - Those who did not complete ROS tasks by making a package need to do it in this way
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2 Having fun with ROS.

2.1 You have to work in pairs to write a subscriber publisher pair that can communicate over the network to your partner's computer

- Ping the network, Perform simple addition.
- You must use a ROS based approach.
- Submit these task as a separate compiled workspace
- Generate the RQT graph and submit that as an image file

2.2 Modify your talker subscriber network such that the talker on your computer is able to control the turtlesim turtle in your partner's computer.

- The movements are forward and backward, turn left 90* turn right 90*. The forward-backward motion must be quantized for each keypress irrespective of the duration of the keypress.

2.3 Now modify your above program to include gesture recognition. Control the turtlesim turtle on your partner's computer using hand gestures in front of your webcam

- The same movement constraints apply as above.
- You must get feedback of the current position of the turtle, back on your screen.
- Use OpenCV for image processing

2.4 Continue reading Effective Robotics Programming with ROS - Third Edition

- Complete section 4
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