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Leaning Topics

If you didn't learn properly before, I would suggest you to go through this tutorial once again.

Learn- ROS Playlist

Now after finishing the above things, it is necessary to learn vim, tmux and SSH. You'll find it essential in future.

Vim- It is a text editor like notepad. Using vim needs some speciality. Learn- YouTube-Vim

SSH- It is a method for secure remote login from one computer to another. We can use it to login to the Linux terminal of one PC from the Windows terminal and vice versa like magic. We use it to access Raspberry Pi terminal from our laptop.

Learn- SSH on Windows and Linux Server

Tmux- It allows you to create several "pseudo terminals" from a single terminal in Linux. If you can learn it, you can use it while working.

Learn- TMUX

Advanced Topics

- Creating ROS Package:
  - Install Catkin- `sudo apt-get install ros-noetic-catkin`
  - Video- Creating ROS Workspaces (and Packages)

- Detect ArUco: ArUco is an OpenSource library for camera pose estimation using squared markers. It is used in augmented reality. In ERC and other competitions, there is a specific number division for detecting tags. It can be an ArUco or custom tag. We generally use the opencv library to detect these.

My advice is to search online and learn to detect ArUco, have ideas about camera calibration and maintenance.

Demo- Multiple aruco markers detection using ROS
Pose Estimation- Aruco pose estimation demonstration

- Create URDF:

What is URDF-
https://docs.ros.org/en/foxy/Tutorials/Intermediate/URDF/URDF-Main.html#:~:text=URDF%20(Unified%20Robot%20Description%20Format,to%20clean%20up%20your%20code

We simulate a physical robot in a virtual environment using URDF.

I didn't find any good URDF playlist for ROS1. So I would suggest to install Virtual Box. In the box, install Ubuntu 22.04, ros2. If you don't use Windows, only use Ubuntu 20.04 don't uninstall it. You will need it for running ROS noetic. In Ubuntu 20.04, install Virtual Box or Gnome Boxes. Then configure Ubuntu 22.04 and ROS2 in it.

Must fully cover this playlist.
Playlist- https://youtube.com/playlist?list=PLunhqkrRNRhYAffV8JDiFOatQXuU-NnxT

- Docker: We need Docker for ERC remote submission.

What is Docker- What is Docker? | Containerization Explained! | Why use Docker Container? (In …
Installation- How to Install Docker On Ubuntu 20.04 LTS Focal Fossa
Do this playlist. Very very important- https://youtube.com/playlist?list=PLunhqkrRNRhaqt0UfFxxC_oj7jscss2qe

Events

Search online to know about these competitions- European Rover Challenge Onsite & Remote, IRC, IRDC, ARC, URC, Kibo RPC

Interesting Topic

Right now, I am working on stereo camera navigation with our Soft.lead A K M Rakinuzzaman Bhai. I am still learning. If you guys are interested in these topics then explore **Ros Noetic Autonomous Navigation, SLAM, RTAB-Map, IntelRealSense camera feed to Pointcloud conversion, 3D printing.**

It will be very fun if we can learn from you guys. Remember, you are my best juniors.