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ROS Developer Learning Path

Agenda

- Instructor profile
- Course Motivation
- Vision and Mission
- Course Eligibility
- Course Requirements
- Course Plan
- PC Setup

About Course Mentor

- **Lentin Joseph**
  - 10 years of experience in ROS programming
  - Author of 8 books in ROS [I am still a student]
  - Founder of Qbotics Labs: [Robot software development]
  - Worked in Robotics startups, CMU RI, USA
  - Masters in Robotics and Automation
  - TEDx speaker

Course Motivation

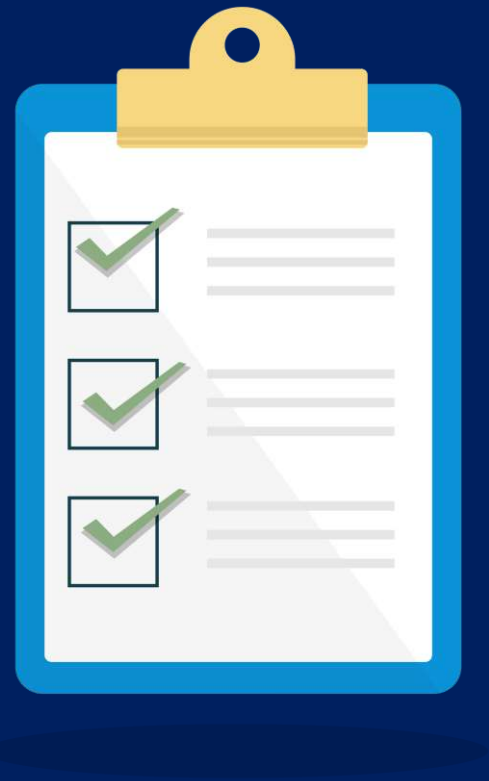
- Feedback of
  - Readers of my book
  - Developers in my network
- Difficulties in following ROS tutorials
  - ROS wiki [Difficult to follow]
  - YouTube tutorials [Fragmented]
  - Books [May require help from author]
  - ROS Courses [Courses are limited to beginners]
- Absence of dedicated ROS mentors

Vision and Mission

- **Vision**
  - Upskilling in ROS and Robot programming
  - Creating impressive quality portfolio of ROS projects with good documentation
  - Open source contribution from students
- **Mission**
  - Providing good mentoring, lecturing and support for students for shaping them as a good ROS developer

Course Eligibility

- **Mandatory**
  - Basic understanding of any of the programming languages
  - Interest and basic understanding in Robotics



- **Optional**
  - Understanding of Ubuntu Linux and Linux commands
  - Object-Oriented Concepts, C++, Python

Course Requirements

- **Hardware**
  - Mandatory: PC/Laptop with >=4GB RAM, 8GB RAM is preferred
  - Mandatory: A good headphone with mic for discussions
  - Optional: Two USB drive: 8GB drive and 32 GB drive
  - Optional: Raspberry Pi , Arduino Uno/Mega board with basic sensors [Will give a detail list of hardware before starting a module]
- Software
  - Mandatory: Operating System: [Windows/Ubuntu Linux/OSX]
  - VMWare/VirtualBox for virtual installation [Windows/OSX]
- PC setup will be discussed in the end of the class

Course Plan: Syllabus

- **Course Syllabus**
  - Module 1: ROS for Absolute Beginners
  - Module 2: Mastering ROS for Robotics Programming
  - Module 3: ROS Advanced
  - Module 4: Becoming a ROS developer
- Most of the course syllabus is based on my books
- E-book copies of my book will be provided to everyone

Course Plan: Schedule

- **Course Schedule**
  - Lecture: 4 hrs./week (alternate days) [Monday, Wednesday, Saturday]
  - Q&A and interaction: 8 hrs./week
  - Total Estimated course time: 140- 170 hr.

- Q&A interaction can be text chat/voice [In discord app]
- Q&A will be mainly from [7 PM to 1:30 AM IST, all days]
- You can also ask whenever you want, I will support you whenever I am free

Course Plan: Features

- ROS Live classes
- Mentorship in ROS projects
- Certification
- Tutorial code and instructions
- Free 200$ worth ROS books
- Technical assistance
- Internship as a ROS Developer (Open source contribution)

Course Plan: Execution

- Lecturing
  - Using PPT/Book/PDF/Web page based [Screensharing with video]
  - Discussion oriented lecturing [Anyone can interrupt during lecturing for asking doubts]
  - Mute your microphone if you don’t want to ask questions
  - Instructor can ask questions to students during lecturing [Like a real class room]
  - Lectures and discussions will be recorded [Don’t panic if you lose internet connection]
  - There will be reading assignments
  - It will not be a spoon-feeding course. The lectures will discuss the essential content

Course Plan: Execution

- Lecturing
  - Requesting sincere participation from students [Don’t make it as a just another certification course]
  - Remember this course is for you, for your upskilling: So make use of my knowledge.
  - I am not a master of ROS, I am still a student. Because of my vast experience I can share my knowledge, and if I don’t’ know something, I can refer and get back to you

Course Plan: Execution

- Discussions
  - Discussions text/voice will be happening over discord
  - Try to ask essential questions over discord, don’t be a spammer
  - Try to search in Google first, this will improve your self learning ability
  - If you are failing, discuss in discord
  - If you have too much questions, either chat personally, or we can setup a voice session in discord

Course Plan: Execution

- Robotics News Channel
  - Be updated always, share robotics news in Discord News channel
  - Remember you have to always updated, otherwise you will be outdated.
  - Will add you to these channels after the class

Course Plan: Execution

- Course materials and code
  - All notes, lecturing videos, book links will be updating in Robocademy Git repository [private]
  - https://github.com/therobocademy
  - https://github.com/therobocademy/ROS_Learning_Path_A [private repo]
  - I will be sending invitation to Robocademy Git repository
  - Notes and Links during our discussion will be updates in Git as .md file
  - You can fork and give pull request if you want to add something in the main repo

Course Plan: Execution

- You Must have
  - A public Github.com account
  - A technical blog
    - Free
      - wordpress.com
      - Medium.com
      - Google Blogger
      - Github page
    - Paid:
      - Self hosted WordPress blog (E.g.: Robocademy) (Server hosting: Bluehost, Cloud hosting: AWS LightSail)
      - Wix.com
      - Wordpress.com paid options
  - A Portfolio page: Github Pages
  - A YouTube Channel: Tutorial and Demo Video
  - An updated LinkedIn profile: Post your updates periodically

Course Plan: Execution

- Why should we need all this
  - You will get better visibility in internet (New business opportunities, jobs, freelance projects, collaborations and more)
  - Your projects and tutorials can help others (Contribution to community)
  - Your Github profile measures your coding ability
  - Your code is the blueprint of the quality of your coding
  - Your tutorial blog tells how much you know about this technology
  - Your videos in YouTube is a virtual demonstration of your project output.
  - LinkedIn and Git portfolio is your digital CV

Course Plan: Execution

- Let’s start with the course: Lecturing and meeting
  - There will lecturing regarding the essential topics of ROS
  - There will be projects related to this topics (Learning by Doing)
    - You can create your own innovative idea (Preferred)
    - You can pick one of the ideas that I am putting in discord
  - There will be regular course meeting on every Sunday (7PM IST)
  - You can present and demo your project and its updates. Mention your road blocks too.

Course Plan: Execution

- Let’s start with the course: Projects
  - There is no limitation in number of projects you are doing
  - Try to do as much as projects you can. No deadline, do comfortably
  - Remember, Give importance to quality more than quantity
  - Remember, this course is for you. Copying some other work will not improve you. If you take others project, make sure you have improved their work

Course Plan: Execution

- Let’s start with the course: Open Source contribution
  - During this course, I can suggest some open-source projects in which you can contribute. (Like Google summer of code).
  - You have to do at least 1 contribution. It can be a bug fix, feature enhancement via pull request.
  - Contributing open-source will help
    - To get more professional connections
    - To get more understanding in doing big projects
    - Golden badge in your CV
    - Contribution to community

Expected Results

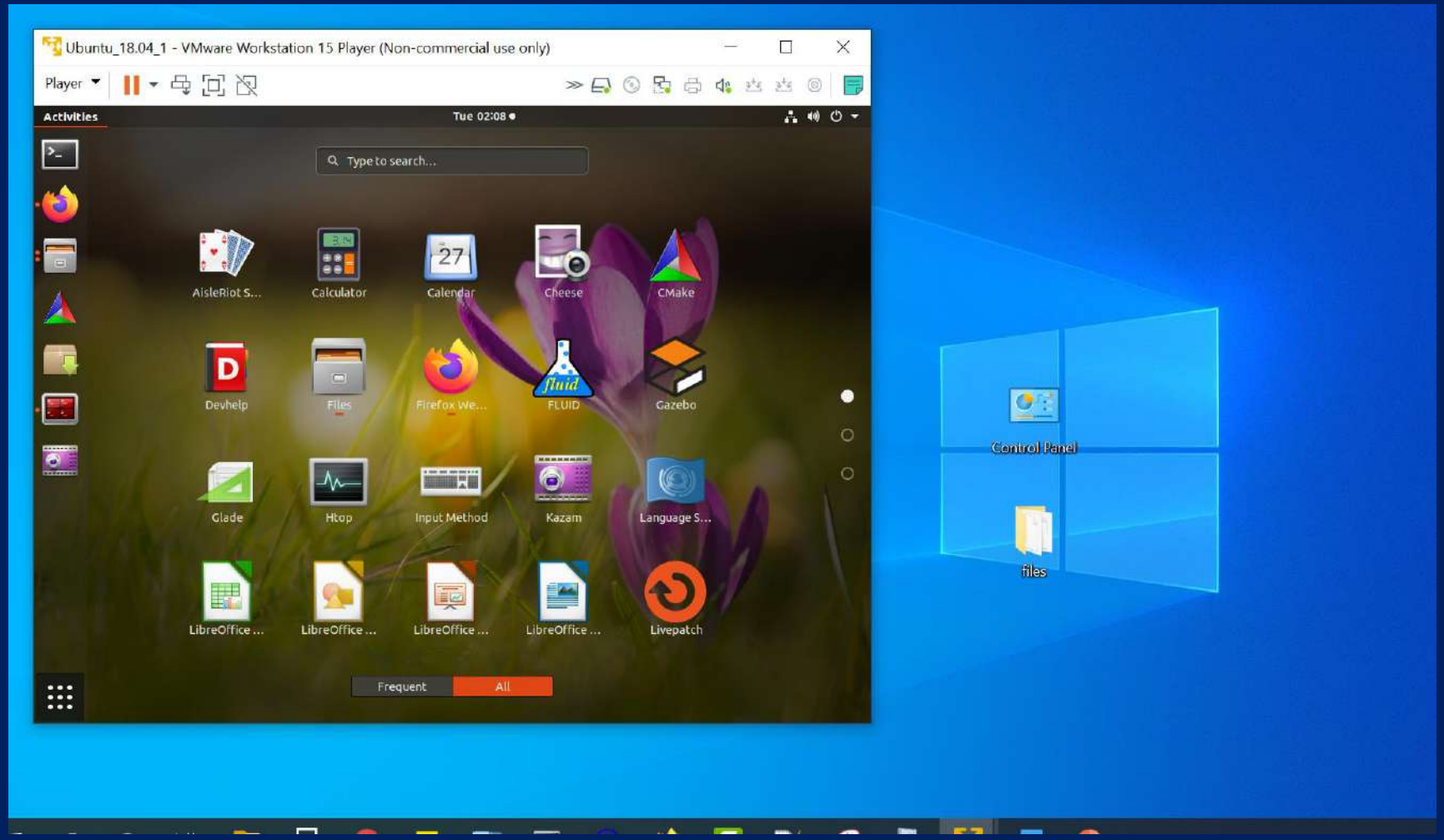
- After this course, you should have
  - A clear understanding of ROS concepts
  - A bunch of good ROS projects
  - Few open-source contribution
  - Tutorials on blogs and YouTube
  - A good portfolio website
  - A good CV/LinkedIn for recruitment/Startup

PC Setup for ROS

- We need Ubuntu 16.04/18.04/20.04 for working with ROS

- Windows 7/10:
  - Use VirtualBox/VMWare
  - Installing Ubuntu in Thumb drive
  - Install Ubuntu in real PC
- Ubuntu Linux:
  - You are set
- OSX:
  - Use VirtualBox
  - Use partitioning in install Ubuntu

PC Setup for ROS



Time for Discussions

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Thank You!