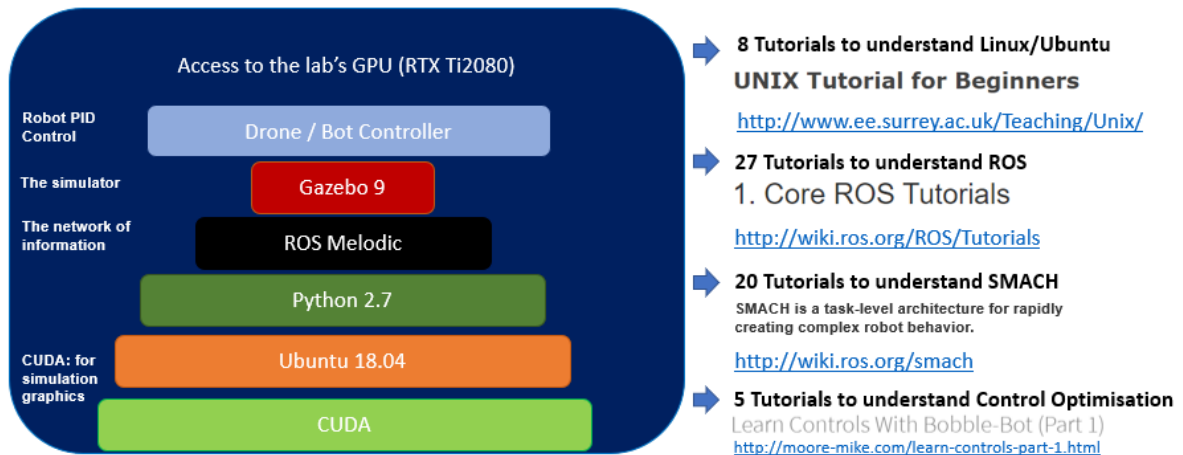**GETTING STARTED WITH ROBOTICS ON LINUX**

This tutorial is meant to cover the **foundational techniques of Unix and ROS used to develop and debug code.** As I have explored the field of robotics, I have often learned the hard way not to dive straight into things – often taking a step back can be rewarding, and even more when someone can give you the correct content – effortlessly.

This is in no ways meant to be an exhaustive list of tutorials. Instead, consider it a bibliography for fundamental concepts that you might otherwise have overlooked. They have helped me very recurringly, and please feel free to add your own.

You will need to learn different elements of robotics

To do the tutorials, you will need to use Ubuntu. I strongly advise AGAINST doing an Ubuntu VM on Windows, especially if you want to do performance analysis for drone racing. I advise you do either a dual boot on your computer or on an external harddrive. This is a standard procedure.

Access to the lab's GPU (RTX Ti2080)

Robot PID Control	Drone / Bot Controller
The simulator	Gazebo 9
The network of information	ROS Melodic
	Python 2.7
CUDA: for simulation graphics	Ubuntu 18.04
	CUDA

8 Tutorials to understand Linux/Ubuntu

UNIX Tutorial for Beginners

http://www.ee.surrey.ac.uk/Teaching/Unix/

27 Tutorials to understand ROS

1. Core ROS Tutorials

http://wiki.ros.org/ROS/Tutorials

20 Tutorials to understand SMACH

SMACH is a task-level architecture for rapidly creating complex robot behavior.

http://wiki.ros.org/smach

5 Tutorials to understand Control Optimisation

Learn Controls With Bobble-Bot (Part 1)
http://moore-mike.com/learn-controls-part-1.html

Unix

Unix: A beginners guide to the **Unix** and **Linux** operating system. Eight simple tutorials which cover the basics of UNIX / Linux commands.

Tutorial One

- Listing files and directories
- Making Directories
- Changing to a different Directory
- The directories . and ..
- Pathnames
- More about home directories and pathnames

Tutorial Two

- Copying Files
- Moving Files
- Removing Files and directories
- Displaying the contents of a file on the screen
- Searching the contents of a file

Tutorial Three

- Redirection
- Redirecting the Output
- Redirecting the Input
- Pipes

Tutorial Four

- Wildcards
- Filename Conventions
- Getting Help

1.1 Beginner Level

1. Installing and Configuring Your ROS Environment

   This tutorial walks you through installing ROS and setti

2. Navigating the ROS Filesystem

   This tutorial introduces ROS filesystem concepts, and

3. Creating a ROS Package

   This tutorial covers using roscreate-pkg or catkin to cre

4. Building a ROS Package

   This tutorial covers the toolchain to build a package.

5. Understanding ROS Nodes

   This tutorial introduces ROS graph concepts and discu tools.

6. Understanding ROS Topics

   This tutorial introduces ROS topics as well as using the

7. Understanding ROS Services and Parameters

   This tutorial introduces ROS services, and parameters tools.

ROS

ROS: Tutorials front page. The ROS filesystem is fundamental, and stumbling into robotic development is ill-advised. Once you have done so, feel free to use the cheatsheets you can find here:

http://air.imag.fr/images/f/f7/ROScheatsheet.pdf

https://clearpathrobotics.com/ros-robot-operating-system-cheat-sheet/