CS664: IoT System Design (2018 Summer Semester)

You are requested to have Linux and Windows (7/10) on your laptop. Please install the software tools as per the instructions given in this document.

For technical assistance, send email with complete information (screenshots, logfiles etc): **cs664a-lab@oblu.io**

Python – Linux (Ubuntu)

System requirement

- Ubuntu 16.04 or newer
- PyCharm Community (https://www.jetbrains.com/pycharm/download). PyCharm Community is free and open source.

1. Without installing anything Ubuntu 16.04 already have versions of python 2.7. Enter below command to check python version

    > python –version

2. Update your system software

    > sudo apt-get update

    > sudo apt-get upgrade

3. Install PIP by enter below command

    > sudo apt-get install python-pip

4. Once the pip's installation is completed you can verify that it was successful by using below command

    > pip -V

6. Install PyQt4 and Tkinter package.

    > sudo apt-get install python-qt4

    > sudo apt-get install python-tk

7. Install BlueZ utility as below

> sudo apt-get install bluez

8. Enter below command. If it open, then above installation is successfully completed

> gatttool –I

9. To check the list of nearby Bluetooth devices. Enter below commands.

> sudo hcitool lescan

10. Install the modules: matplotlib (version 1.5.3) , pyserial and pqtgraph.

> sudo pip install -Iv matplotlib==1.5.3

> sudo pip install pyserial

> sudo pip install pyqtgraph

11. Download the Anaconda installer for Linux (Python 2.7) from https://www.anaconda.com/download/#linux.

12. Copy the package to home folder and Enter the following to install Anaconda for Python 3.6 on terminal.

> bash Anaconda2-5.1.0-Linux-x86_64.sh

13. It will prompts “In order to continue the installation process, please review the license agreement.” Press Enter to check license terms and scroll to bottom. Enter “yes” to accept the license terms.

14. Enter below command to verify your installation. If Navigator opens, you have installed Anaconda successfully.

> anaconda-navigator

15. Install below modules for anaoconda.

> conda install matplotlib==1.5.3

> conda install pyserial

> conda install termcolor

> conda install pyqtgraph

Python – Linux (Other)

1. PyCharm Community (https://www.jetbrains.com/pycharm/download). PyCharm Community is free and open source.

2. Install below package
   - Python 2.7
   - PIP
   - Python-PyQt4
   - Pkinter
   - BlueZ

3. Follow Steps number 10 to 15 in previous section Python Linux (Ubuntu)

Android Studio

System requirement :

- Microsoft® Windows® 7/8/10 (32- or 64-bit)
- 4 GB RAM minimum, 8 GB RAM recommended;
- 2 GB of available disk space minimum, 4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and Emulator)
- 1280 x 800 minimum screen resolution

Android Phone requirement.

- Android 5 Lollipop or above
- 1 GB of RAM
- Bluetooth
- GPS
- USB data cable for debugging

Android Studio Installation

1. Download and Install Android Studio(Windows) from https://developer.android.com/studio/

How to run an App on Android phone, in debug mode

1. Enable USB debugging mode in Android phone. Refer https://www.kingoapp.com/root-tutorials/how-to-enable-usb-debugging-mode-on-android.htm

2. Connect your system and android device using USB. Start debugging or run application on android device.

Setting up MIMUScope (Linux)

Dependency: Follow the steps in Python – Linux (Ubuntu) or Python – Linux (Others)

Download MIMUscope. http://www.inertialelements.com/oblu/share/MIMUscope.zip

Running MIMUscope

In the folder MIMUscope you will find the file named "main". Run it (or open it) using "pythonw".
Done !! Make a shortcut of this fle on your desktop.

Note:

- Before running the MIMUscope, please check the available of serial ports by following commands. e.g.

```
> dmesg | grep tty
```

- Check the serial port's permission to which device is connected by enter below command. e.g.

```
> ll /dev/ttyACM0
```

- If there is no write permission in above command, then give read-write permission to serial port e.g

```
> sudo chmod a+rw /dev/ttyACM0
```

For more clarification, please refer the screenshot - http://www.inertialelements.com/oblu/resources/linux_serial_port.png

Other Miscellaneous Installations for Windows

1. Download Atmel Studio http://www.microchip.com/avr-support/atmel-studio-7
2. Download USB Boot loader Batch Script http://www.inertialelements.com/oblu/resources/openshoe-bootloader.bat
3. Download and install FLIP from the link.
4. How to install USB Bootloader driver for "oblu" https://www.youtube.com/embed/wCzG15_PJQs
5. Install the latest version of Matlab