

Import python library on Linux OS

This document aims to guide the user on the import of the AeroDIODE python libraries on a Linux OS. Knowing that we do not have a PC with a native Linux OS, we will use a virtual machine.

1. Install a virtual machine with a Linux OS :

- Tuto : <https://www.easytutoriel.com/installer-ubuntu-virtualbox-windows-10.html>
- Virtual box : <https://www.virtualbox.org/wiki/Downloads>
- Ubuntu : <https://www.ubuntu-fr.org/download/>

2. Check python version of Ubuntu:

```
adrien@adrien-VirtualBox:/media/sf_Ubuntu_Dossier_Partage/Mediatheque/build$ python --version
La commande « python » n'a pas été trouvée, voulez-vous dire :
  commande « python3 » du deb python3
  commande « python » du deb python-is-python3
adrien@adrien-VirtualBox:/media/sf_Ubuntu_Dossier_Partage/Mediatheque/build$ python3 --version
Python 3.8.10
```

Normally Python is already installed in the Ubuntu suite, if this is not the case enter the command:

```
$ sudo apt-get python3
```

3. Install Pip

```
$ sudo apt install python3-pip
$ python3 get-pip.py --user
```

The terminal should return the following messages:

```
adrien@adrien-VirtualBox:~$ python3 get-pip.py --user
Collecting pip
  Downloading pip-22.0.3-py3-none-any.whl (2.1 MB)
    2.1/2.1 MB 5.9 MB/s eta 0:00:00
Installing collected packages: pip
  WARNING: The scripts pip, pip3 and pip3.8 are installed in '/home/adrien/.local/bin' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed pip-22.0.3
```

4. Install AeroDIODE library (Tombak with this example)

STEP 1 : Download the base-folder and place it on the desktop

STEP 2 : Go to the desktop

```
cd Desktop
```

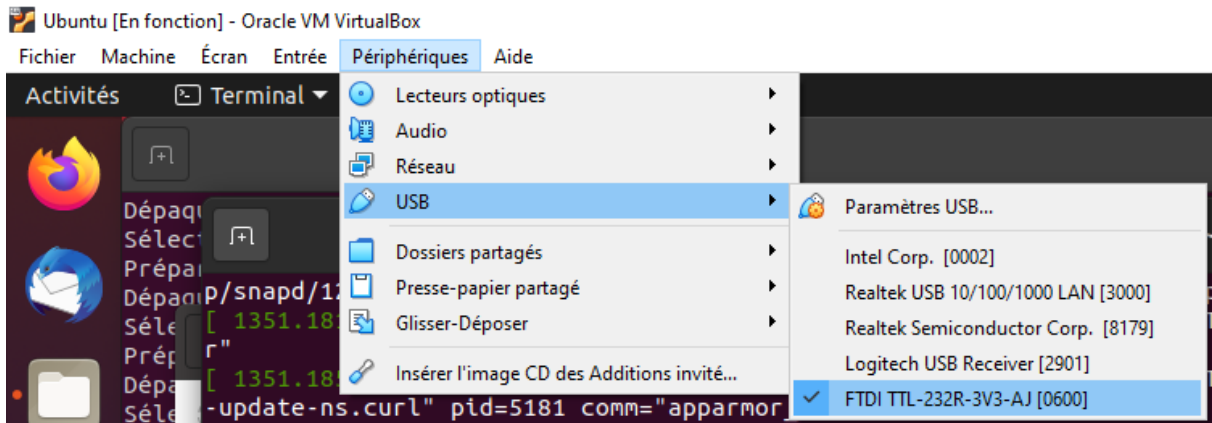
STEP 3 : Change the access rights

```
chmod +x base-folder
```

STEP 4: Install the library

```
cd Desktop\base-folder  
python3 setup.py install
```

5. Connect an USB/JACK cable and allow the device to be read by the virtual machine:



6. Find the port name of your cable :

```
$ dmesg | grep tty
```

```
adrien@adrien-VirtualBox:~/Documents/AeroDIODE/Librairies/Python/TOMBAK/base-folder$ dmesg | grep tty  
[ 0.040137] printk: console [tty0] enabled  
adrien@adrien-VirtualBox:~/Documents/AeroDIODE/Librairies/Python/TOMBAK/base-folder$ dmesg | grep tty  
[ 0.040137] printk: console [tty0] enabled  
[ 1949.189937] usb 1-2: FTDI USB Serial Device converter now attached to ttyUSB0
```

7. Check the right access and change them if needed :

```
$ ls /dev/tty  
$ ls /dev/ttyUSB0  
$ ls -la /dev/ttyUSB0
```

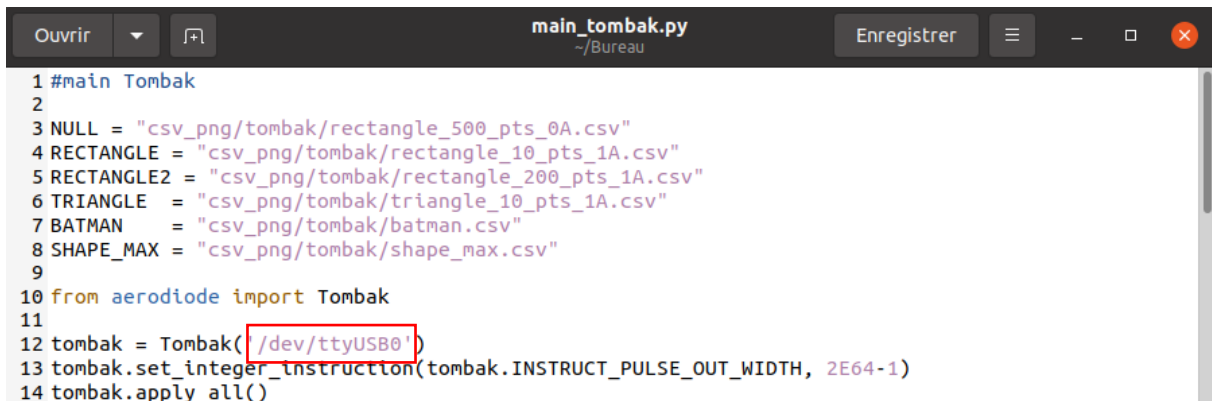
```
adrien@adrien-VirtualBox:~/Bureau$ ls /dev/tty  
/dev/tty  
adrien@adrien-VirtualBox:~/Bureau$ ls /dev/ttyUSB0  
/dev/ttyUSB0  
adrien@adrien-VirtualBox:~/Bureau$ ls -la /dev/ttyUSB0 | grep USB0  
crw-rw---- 1 root dialout 188, 0 févr. 23 16:45 /dev/ttyUSB0  
adrien@adrien-VirtualBox:~/Bureau$
```

Here no read/write access rights are given to "others". Give the rights with the command :

```
$ sudo chmod a+rw /dev/ttyUSB0  
$ ls -la /dev/ttyUSB0 | grep USB0
```

```
adrien@adrien-VirtualBox:~/Bureau$ sudo chmod a+rw /dev/ttyUSB0
adrien@adrien-VirtualBox:~/Bureau$ ls -la /dev/ttyUSB0 | grep USB0
crw-rw-rw- 1 root dialout 188, 0 févr. 23 17:06 /dev/ttyUSB0
adrien@adrien-VirtualBox:~/Bureau$
```

8. Modify the name of the communication port associated with the cable used in your python file



```
Ouvrir main_tombak.py Enregistrer
1 #main Tombak
2
3 NULL = "csv_png/tombak/rectangle_500_pts_0A.csv"
4 RECTANGLE = "csv_png/tombak/rectangle_10_pts_1A.csv"
5 RECTANGLE2 = "csv_png/tombak/rectangle_200_pts_1A.csv"
6 TRIANGLE = "csv_png/tombak/triangle_10_pts_1A.csv"
7 BATMAN = "csv_png/tombak/batman.csv"
8 SHAPE_MAX = "csv_png/tombak/shape_max.csv"
9
10 from aerodiode import Tombak
11
12 tombak = Tombak('/dev/ttyUSB0')
13 tombak.set_integer_instruction(tombak.INSTRUCT_PULSE_OUT_WIDTH, 2E64-1)
14 tombak.apply_all()
```

9. Run your python code and verify commands are received with the control software (Windows OS)

```
$ python3 main_tombak.py
```

```
adrien@adrien-VirtualBox:~/Bureau$ python3 main_tombak.py
Do you prefer (tap 1 or 2) :
1.Standalone
2.Digital Delay Generator
3.AWG (Arbitrary Waveform Generator)
1
Set Configuration
Tap divider value :30
output frequency = 6666666.666666667
Tap duty cycle (en %) :40
pulse width = 59.999999999999999
Read Configuration
INSTRUCT_FUNCTIONING_MODE = 2
INSTRUCT_PULSE_IN_SRC = 0
INSTRUCT_PULSE_IN_FREQUENCY_DIV = 30
INSTRUCT_SYNC_OUT_1_SRC = 3
INSTRUCT_PULSE_OUT_WIDTH = 59
adrien@adrien-VirtualBox:~/Bureau$
```

