

Python is a coding language that combines versatility (making the computer do exactly what you want it to do) with abstraction (not having to know the exact inner workings of your code, just the results), making it ideal for scientists that just want to calculate the results of their research.

In our case, we will be using it to visualize, process and extract information from brain signals to the best of our abilities.

The most important logic behind Python is that it allows for Object Oriented Programming and Procedural Programming. Objects refer to being able to combine information as values and functionality (processing of the values) in the same variable. On the other hand, procedural programming allows for a more streamlined approach, separating the entire code into blocks that perform a single task.

Downloading Python differs based on the Operating System (OS) your computer has. That's why:

Windows → Follow the steps in the video : [Windows Installation](#)

Mac → Follow the steps in the video : [MacOs Installation](#)

Ubuntu/Debian → Follow the steps in the video: [Linux Installation](#)

Installation should be relatively easy, so we would appreciate it if you could try it on your own. If it feels like too much, do not hesitate to come with questions. Also, some OS (e.g. Ubuntu) might have Python pre-installed. As for the version, you can choose the recommended one for your case, or experiment with an earlier one but not below the 3.11 version.

Together with Python should come a package manager called pip (Pip Installs Packages). Through pip you are able to download other people's code (called modules) and use it in your own project. Even though everyone can make a module, some modules have maintained a good enough audience to become essential for anyone interested in brain signals. Some examples are numpy, matplotlib, scikit-learn, mne, pytorch and tensorflow.

To use any module, you have to install it on your computer first. That can be done in the terminal through the command

```
'pip install <package_name>'
```

To automate the installation of many packages at once, we can write all of them in a .txt file and let pip install all of them for us. Usually we name the file requirements.txt hence the command is

```
'pip install -m requirements.txt'
```

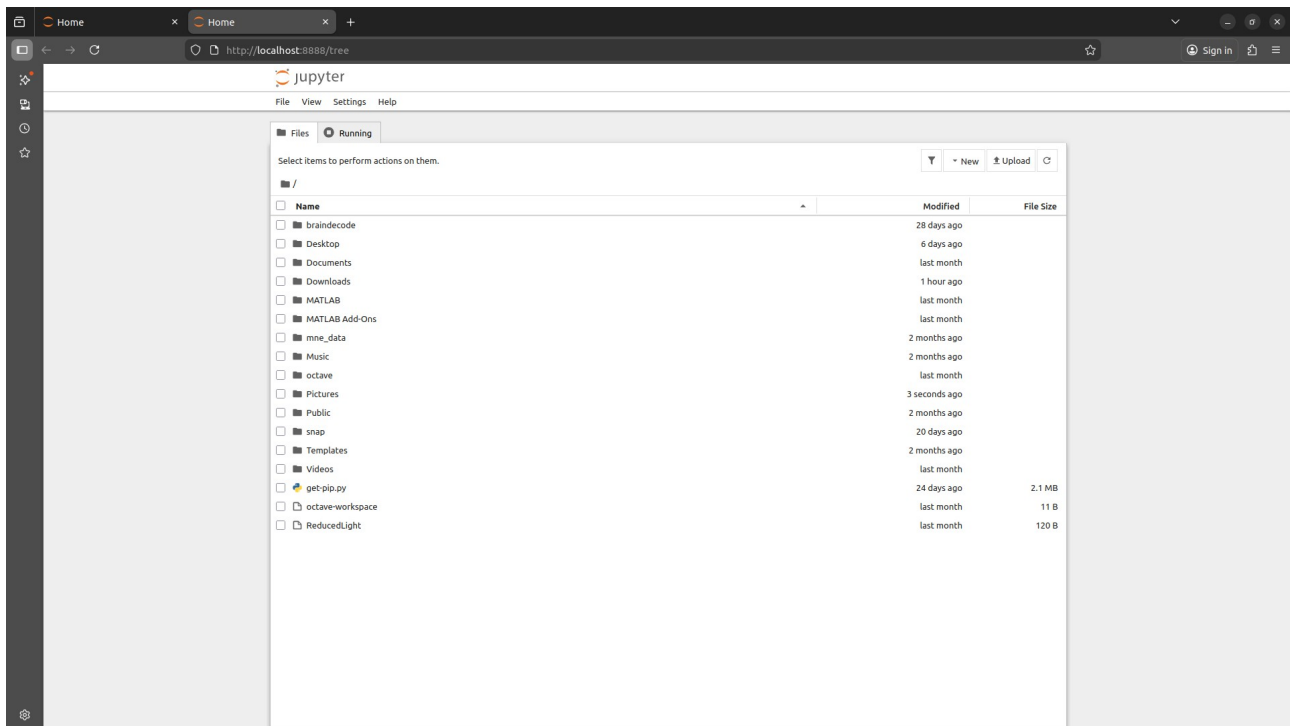
Jupyter is a little different from a typical module, but can also be installed through pip. It is a coding environment which makes the code a little more modular. Its architecture allows for easier exploration and experimentation before deployment of the final code as a standalone unit. It allows to see the results of blocks of the code (called cells) and explore with greater ease different cases. To install it, use the following command in the terminal

```
'pip3 install jupyter'
```

After the installation is complete, run the command

```
'jupyter notebook'
```

It should prompt you to either open a link or will pop up a new window on the browser of your choice.



If all is set and done, you should have no problems playing with Python either through the jupyter notebooks or in any other way. Get acquainted with the environment and then come and then come and meet us as well :)