

Mobile Sensing – Lab 2 Python framework for data processing

1. Jupyter Notebook installation

The Jupyter Notebook is a powerful tool for prototyping and presenting data science projects. If you do not have it on your computer, follow this tutorial for installation: <https://jupyter.org/install>

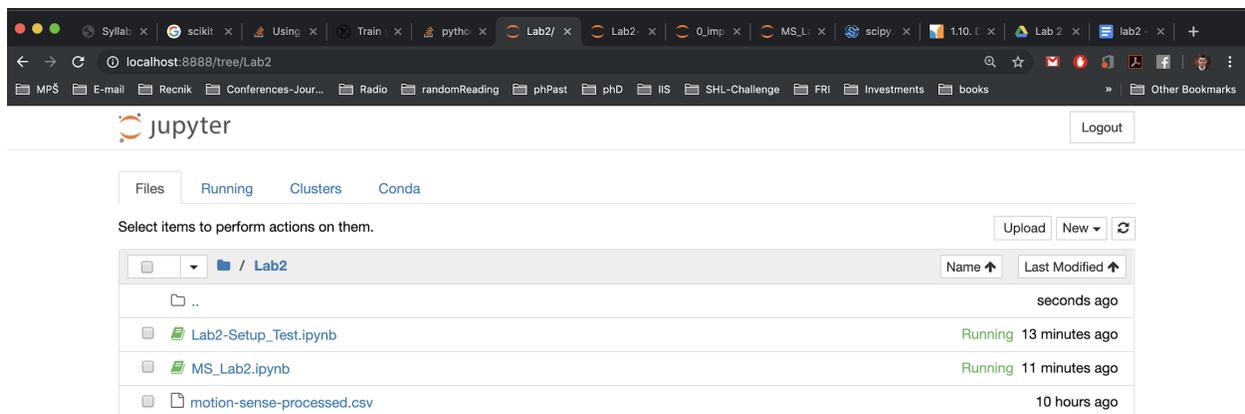
Once you have Jupyter Notebook running on your computer, you should install a few Python packages required for this lab: *numpy*, *pandas*, *matplotlib*, *scikit-learn*, *seaborn* and *scipy*. Depending on how you installed Jupyter Notebook, you can install these packages via the conda distribution, or using pip (python's package manager). For the latter case, run the following commands using the command line (terminal):

```
pip install <package_name> (e.g. pip install numpy)
```

2. Running the code

Once you have everything installed, start Jupyter Notebook by running the following command in the command line: **jupyter notebook** (if you are using Windows and have installed jupyter notebook through Anaconda/Miniconda, look for a “Jupyter Notebook” shortcut in the Start Menu).

The command will start Jupyter Notebook in your default browser. The browser will present the files and folders from the “current working directory” (if you want, you can change the working directory and restart Jupyter Notebook). The files that have the “.ipynb” suffix are Jupyter Notebook scripts. Clicking on the filename will open the script for running/editing.



3. Task description

We will develop a machine learning pipeline for activity recognition from smartphone sensor data (acceleration, gravity, etc.). In this lab we will tackle the first part of the pipeline, which contains:

1. **Exploratory data analysis** (check data quality and calculate descriptive statistics),
and
2. **Segmentation and filtering** (segment the data into windows e.g., 4 seconds data, and try different filtering methods to improve the sensor data quality i.e., remove noise).

We will use a processed dataset available for download [here](#) (you should have it in your working directory, i.e. where the ipynb file is). The starting code is available on [Ucilnica](#). Download the zip file, unzip it in your working directory, open the Jupyter Notebook (Lab2.ipynb) and follow the guidelines there.

If you were not present in the lab for solving this assignment you should commit your solution to a private Bitbucket repository named **FRIMS2021-LAB-2** and a user **pbdfrita** (**pbdfrita@gmail.com**) should be added as a read-only member. The solutions will be pulled from your repository on **Sunday, March 6, 23:59**.

Happy coding!