Exercise Session   **EPFL**
CIVIL-459   School of Civil Engineering
Spring 2021   **Prof. Alexandre Alahi**

Getting Started

Note: These instructions best work on a Linux or Mac device, and the lab computers have a Linux OS. If you want to use a Windows machine, it is recommended to set up an Ubuntu virtual machine since the clusters you might have access to for your project are Linux machines. There are many tutorials to do so such as this tutorial.

Start by first installing Python 3.6 by following the installation procedure (depending on your operating system) found here: `https://www.python.org/downloads/`
To make sure that python was successfully installed, run this command on your terminal/command line:
python3 –version
The output should show the version number of the python your are running.
The *pip3* command is the command used to install libraries for Python3. Since we installed Python 3.6, *pip3* should already be installed. If not, follow this guide.
To install the packages needed for the lab sessions, run this command on your terminal/command line:
python3 -m pip install –user numpy scipy matplotlib ipython jupyter pandas sympy nose

Download and submit the exercises

To start, download the Exercise Files from the Course Moodle page.
Using the terminal, go to the folder where the exercise files are stored by using the *cd* command, and run jupyter by issuing this command:
jupyter notebook
The jupyter notebook will open on your default browser. This allows you to edit,run, and save the files. Follow the instructions for each exercise in the notebooks.
Make sure to save your files after every change. Your files can be found in the folder you created.
For submission, zip all the files together especially the filled notebooks in one zipped folder and upload it to Moodle.

Helpful References

- Python Documentation: `https://docs.python.org/3/`

- Python Tutorial: Official link, MIT tutorial, Collection

- Python Numpy Tutorial(WARNING : Uses Python 2 and not 3): `http://cs231n.github.io/python-numpy-tutorial/`

- Python coding style: `https://www.python.org/dev/peps/pep-0008/`

- Github Tutorial (for project): `https://rogerdudler.github.io/git-guide/index.html`

- Jupyter Notebook:

Problem Set 1

The first problem set contains 3 notebooks to help you get familiar with python and another notebook to apply what you learned to build a linear regressor. Follow the problem statement of each exercise.

NumPy and Vector Calculations

The "npprimer.ipynb" is a notebook that acts as a cheat sheet for the numpy library which you will use in your exercises.

If you are familiar with Matlab, a good starting point is this guide. Be careful that we will use way more the array structure compared to the matrix structure.