Exercise Session   **EPFL**
CIVIL-459   School of Civil Engineering
Spring 2023   **Prof. Alexandre Alahi**

Getting Started

Welcome to Civil-459! The goal of the first exercise session is to help you get familiar with Google Colab and python. We will first introduce Google Colab and then do some exercise tasks in python.

Google Colab

Colab is an online Jupyter Notebook environment from Google. It provides an environment where everyone can run their python code. Basically, it provides computational resource as well as installed libraries. To start, go to https://colab.research.google.com/. Then, log in using your Gmail account (if you don't have a Gmail, build one). Now, we need to open the exercise notebooks. Select "File → Open notebook → Github" and paste this address: "https://github.com/vita-epfl/DLAV-2023". Our playground is ready.

    Important note: When each notebook is opened, save it to your drive by pressing "ctrl + s", then start running it. Otherwise, it would be lost by closing it.

Exercises

Each week, we will upload the new exercises on GitHub. You can load them as explained in the previous section. Make sure to save your final files at the end. 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: https://jupyter.readthedocs.io/en/latest/

Problem Set 1

The first problem set contains 3 notebooks to help you get familiar with python. The fourth notebook is 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.