Instructions for students

Installation

To use interactive python notebooks (ipynb), you need to choose the platform that best suits your needs and resources. There is no optimal solution for every case as every platform has advantages and disadvantages. You can install Anaconda (https://www.anaconda.com/download) and run Jupyter Notebook. Other options include installing Visual Studio Code or running the notebooks on Google Colab.

Running the notebooks on Google Colab

- If you have a (free) google account, you can run Jupyter notebooks on colab directly on your browser without having to download or install anything on your computer. To do so, simply click the links bellow: -Notebook with PCA using COVID-19 data -Notebook with non-linear methods using COVID-19 data -Notebook with PCA using single-cell RNAseq data -Notebook with non-linear methods using single-cell RNAseq data
- Feel free to make alterations in the Jupyter notebooks you can allways go back to the original files or save your own versions.
- You can use Google Colab to open Jupyter notebooks on your local computer by going to https://colab.research.google.com/ and pressing "File/Upload notebook" on the top menu. The colab interface is slightly different from the Jupyter one, but both will run the same Python code.

Interacting with the notebooks

- Notebook Structure: Understand the Notebook Structure. The notebook is divided into cells which can contain either code or markdown text for explanations. Cells are executed in order, from top to bottom. To execute a code cell, click on it and press Shift + Enter. This will run the cell. The output of the code in that cell (if any) is displayed below it.
- Importing Libraries: The first cells contain import statements for libraries that are used in the notebook. Make sure to run these cells to import the necessary libraries before running the cells that use the modules. If you encounter a "ModuleNotFoundError: No module named …" error, it means that the Python interpreter couldn't find that specific module in that environment. 'Pandas' for instance is a very popular data manipulation library in Python, but it's not included in the standard library. Therefore, it needs to be installed separately. It can be done directly from the notebook by running a code cell with !pip install pandas.
- Data Loading and Preprocessing: There will be cells dedicated to loading the required data (usually in CSV or similar format) and preprocessing it (cleaning, normalization, etc.). Download the files, place the files in the same folder as the notebook, and carefully read the comments and

markdown text to understand what each step does.

- Data Analysis and Visualization: Several cells contain code for analyzing the data and visualizing the results using plots and charts. Make sure you read any accompanying text or comments and remember that the best way to learn is by doing. Do not hesitate to modify the code, try new things, and see what happens!