python

Installation.   If `python` is not installed on your machine, or it is too old, follow the installation instructions here `https://www.anaconda.com/products/individual`.

Resources.   We suggest to use the following `python` advices `https://github.com/pierreablin/python-sessions` (in English) by Pierre Ablin and Mathurin Massias and `http://josephsalmon.eu/HLMA310.html` (Level 1 intro in French), and `http://josephsalmon.eu/HMMA238.html` (Level 2 intro in French) both by Joseph Salmon.

Report

When compiling your report please follow the following *simple* guidelines

- It is *strongly* recommended to write you reports in groups of at least 2 and at most 3 students.

- Your report should be compiled in LaTeX. The main body should contain at most 5 pages with *unlimited* appendix. If you include appendix, be aware that the reviewer is not obliged to read it. Please use your names to name the your report in the pdf format (example: `ENSAE2020_TP1_Chzhen_Denis.pdf`).

- *Do not* include code in the report, unless specifically asked by the question.

- Make beautiful plots and tables in order to present your results.

- If you include any plot or a table, then you should discuss in the text the content and the conclusions from it.

- You can use *any* supervised/unsupervised/semi-supervised method as long as you *provide its high-level definition* in your report. **Example**. Least-squares estimator is defined as

$$\hat{\boldsymbol{\beta}} \in \operatorname*{arg\,min}_{\boldsymbol{\beta} \in \mathbb{R}^p} \|\boldsymbol{y} - \mathbf{X}\boldsymbol{\beta}\|_2^2 \ ,$$

where $\mathbf{X} \in \mathbb{R}^{n \times p}$ is the design matrix, $\boldsymbol{y} \in \mathbb{R}^n$ is the signal vector.

- Send your code (`.py` or `.ipynb`) in a separate file. Extra points will be given for following PEP8 guidelines `https://www.python.org/dev/peps/pep-0008/`.

- At last, be creative, improvise, but be consistent. Everything that is not forbidden is allowed.