T2A: Foundational Principles of ML
Pre-requisites

- (**T1A**, Applied Stats): **M**aximum **L**ikelihood **E**stimate and related notions
- (**T1B**, Maths for DS): **Basic Linear Algebra**

  → **Note that T1A and T1B are mandatory, i.e. you must attend them to be allowed to follow T2A (FPML=this)**

  → Check out **previous years exam** to see the level of math-mastery that is expected *(of course some of it is covered in this course, but you need solid basics).*
- We'll use **numpy** heavily.
  We expect you to know some **scientific programming.**
- (**T2B**, Optimization): **Gradient Descent** mostly (we'll discuss it) **– it is very advised to take it** as well if you plan to learn a lot of ML.
  More advanced notions are very useful to understand SVMs for instance.

(**T2D or T2E**, Hands On ML with sklearn): it's a good complement to this class, very good to master sklearn.
Here we'll look *inside* the algos of sklearn.

T2A – FPML
Goals

What you should know ***by the end of the term***

Know a bit of the **ML vocabulary+**standard pipeline

1. **Know** a couple of standard algorithms
(from the Loss, be able to derive the pseudo-code, explain how they work)

2. Be able to code an algo (implement it) by **reading its doc** (documentation ≃ book chapter)

Also, to some extent :

3. Given a **problem** (task) or an **issue** (lerning going wrong), explain simple phenomena, guess the solution

T2A – FPML
Goals

In the ***long term***

- Learn **life-long fundamentals** that will not be outdated (obsolescent) in a couple of years
- Know the fundamentals enough so that you may **go beyond them** (with other classes) – to understand **newer paradigms**, you need to know about the previous one !

- This class is thaught by François Landes, more details at https://gitlab.inria.fr/flandes/fpml