



Andrea Combette

Mater's Degree
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🐙 GitHub Profile

🌐 LinkedIn Profile

EDUCATION

- **Lycée Joffre, Montpellier** 2018
High School Degree mark : 19,63/20, with honors
- **UFR Médecine, Montpellier** 2019
PACES (common first year of health studies) rank bio-physics: 5/3336
- **Lycée Joffre, Montpellier** 2020-2021
Undergraduate courses to prepare nationwide competitive exams in liberal sciences rank : 2/40
- **Ecole Normale Supérieure, Paris** 2022
BSC Degree in Physics

EXPERIENCE

- **IPGG - Institut Pierre-Gille de Gennes** May 2023
Intern Paris, France
 - Electro-Osmosis Filtration with nano-membrane
 - Study of the Hysteresis in the flow
- **IMS - Intégration Matériaux Systèmes** July 2023
Intern Bordeaux, France
 - Neural Signals generation with MEARec
 - GUI interface implementation
 - Optimization of a Spiking Neural Network
- **IBENS - ENS biology Institute** September 2023 - February 2024
Intern Paris, France
 - Spikesorting pipelines, working on Lussac
 - Exploration of Purkinje's cells in cerebellum

PERSONAL PROJECTS

- **Hydrodynamics and mechanics simulations** 2021-2022
Optimization of Von Karman Street for Energy Harvesting
 - Tools & technologies used: Comsol (finite element calculus, API), Python
 - Achievements : Build an optimized Generator using induction and von Karman Streets
- **Stocks and meteorological predictions (ML)** 2022-2023
Time and spatial Forecasting using free Datasets
 - Tools & technologies used: Tensorflow (LSTM neural network), Python
 - Achievements :
 - * For stocks exchange Predictions : Build a clean day-interpolated datasets of near 2000 stocks for 20 years, reasonable predictions
 - * For meteorological forecasting : Build a python package to forecast weather all over french territory
- **Classification of flower species (ML)** 2021-2022
CNN neural network for image Classification
 - Tools & technologies used : Tensorflow (CNN), Python
 - Achievements : Build a neural Network recognizing 5 species of flowers
- **Generating realistic matter fields for cosmological simulations (ML)** 2023-2024
CNN and diffusion network models, use of Quijote and CAMELS datasets
 - Tools & technologies used : Pytorch, Python, Globus
 - Achievements : Generating 2D samples of matter fields
- **Fractal, Attractor and N-body study** 2021-2022
Python Exploration
 - Tools & technologies used : Python

TECHNICAL SKILLS AND INTERESTS

Languages: French, English (B2|C1), German (B1|B2)

Developer Tools: Python, HTML, CSS, L^AT_EX

Frameworks: Machine Learning application in Physics

Soft Skills: Guitarist, DJ, Producer, graphic designer

Coursework: Data Science PSL Formation, ICFP Master ENS

Areas of Interest: Informatic, Sciences, Music, Graphic Art

POSITIONS OF RESPONSIBILITY

• **Associative coordinator**, BOUM - mixclub

2023-2024