Yuba Amoura, PhD

5 years experience in **solving complex problems** using **mathematical modelling** and **numerical simulations**. Proficient in **Python** programming and **statistical analysis**, with a strong foundation in data manipulation and **visualization**, as well as **Monte Carlo** and **optimization** techniques. Eager to leverage my strong **problem-solving**, **analytical** reasoning and **communication** skills acquired during my PhD.

EXPERIENCE

Doctoral Researcher
May 2019 – Aug 2023

University of Waterloo, Waterloo, ON, Canada

- Led a project to design a new original method to use galaxy cluster data. Improves our Universe comprehension using existing data, at no extra cost.
- Acquired, cleaned and transformed raw simulation data (TBs) from various sources with different formats to a unique universal usable set of data about cluster ages **(Python, Numpy, SQL, Matplotlib, Pandas)**
- Predicted Universe properties using the cleaned data and regression methods
- Developed a set of 25 simulations of the Universe, generated 100TB of a unique data set which will be the basis for new projects over the next decade **(Cloud computing, Linux, Bash, C++)**

Teaching Assistant
Sep 2019 – Dec 2022

University of Waterloo, Waterloo, ON, Canada

- Designed lesson materials, visuals and digital presentations to supplement lesson plans
- Consulted with and supported students to help address and solve technical and personal issues
- Collaborated with other TA's and instructors for the design and implementation of teaching material

Research Intern
Mar 2016 – Jul 2016

Institut d'Astrophysique de Paris, Paris, France

- Developed a model to test the accuracy of Euclid, an ESA telescope **(Python, Numpy, Matplotlib, Scipy, scikit-learn)**
- Used a maximum likelihood estimator and a minimization routine in Python to predict optimal galaxy parameters matching the data
- Discovered a discrepancy in part of the data, which would have caused years of delay if uncorrected.

EDUCATION

Ph. D. in Astrophysics
May 2019 – Aug 2023

University of Waterloo, Waterloo, ON, Canada

Masters in Statistics-Modelling-ML
Sept 2018 – Mar 2019

Université Paris Descartes, Paris, France

Relevant coursework: Optimization, Stochastic Algorithms, Classification, High Dimension Learning, Poissonian Processes
Ranked first in the masters.

Masters in High Energy Physics
Sept 2014 – Aug 2016

Sorbonne Université-UPMC Paris 6, France

Bachelors of Physics
Sept 2011 – Aug 2014

Université Lille 1, Lille, France

CONTACT

• Waterloo, ON, Canada
+33676677693/+12269783575
• amourayuba@gmail.com
• Linkedin
• GitHub
• Personal website

TECHNICAL SKILLS

Advanced Python: Numpy, Scipy, Matplotlib, Jupyter. LaTeX, Linux
Intermediate OpenCV, Scikit-learn, SQL, Pandas, Git/GitHub
Familiar R, SQL, C/C++, Matlab, TensorFlow, PyTorch

SOFT SKILLS

• **Analytical reasoning** and **Problem solving** acquired through studying Physics and solving complex research problems

• **Communication** and **Collaboration** through teaching, presentations and collaborating on research projects

• **Quantitative skills**, **rigor** and **attention to detail** through studying math and physics, analyzing research papers, writing, reading and debugging codes

• **Innovation, Learning**, **Independence** and **Empirical research** through the design, development, and completion of novel projects in unexplored areas with little available information

COMMUNICATION

Fluent in English, French, Berber and Arabic

OTHER

- Tutored 100+ students (high school and university) in Math, Physics, Statistics
- Teaching chess to visually deficient students using original and innovative learning techniques adapted to the students