Yuba Amoura, PhD

Researcher with a passion for unraveling complex problems. Expertise in Python programming, statistical analysis, and data visualization. Equipped with a strong foundation in data manipulation and simulation techniques. Eager to leverage my problem-solving, analytical and quantitative reasoning and communication skills acquired during my PhD to drive impactful solutions to challenging problems. Ready to excel and make a difference.

EXPERIENCE

Doctoral Researcher
May 2019 – June 2023

University of Waterloo, Waterloo, ON, Canada **GitHub repository**

- Acquiring, cleaning and transforming raw simulation data (TBs) from various sources with different formats to a unique universal usable set of data about cluster ages (**Python, Numpy, SQL**)
- Predicted Universe properties using the cleaned data and regression methods (**Python, Scipy**)
- Designed a new original method to use galaxy cluster data, results published in a peer-reviewed journal
- Run a set of 25 simulations of the Universe, generated 100TB of a unique data set which will be used over the next decade to understand fundamentals of the formation of structures in the Universe (**Cloud computing, Linux, Bash, C++**)

Teaching Assistant
Sept 2019 – Dec 2022

University of Waterloo, Waterloo, ON, Canada

- Designed lesson materials, visuals and digital presentations to supplement lesson plans
- Assisted in maintaining engaging and respectful educational environment by promoting discipline and cooperation

Research Intern
March 2016 – July 2016

Institut d'Astrophysique de Paris, Paris, France

- Testing the accuracy of the detection of Euclid, an ESA telescope
- Acquiring, cleaning and transforming prospect telescope data
- Using 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. Lead to a participation in a publication in a peer-reviewed journal

EDUCATION

Ph. D. in Astrophysics
May 2019 – June 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-Université Pierre et Marie Curie, Paris, France

Bachelors of Physics
Sept 2011 – Aug 2014

Université Lille 1, Lille, France

CONTACT

- Waterloo, ON
- +33676677693/+12269783575
- amourayuba@gmail.com
- Linkedin
- GitHub

TECHNICAL SKILLS

7+ years Python: Numpy, Scipy, Jupyter, LaTeX
4 years Pycharm, CSV, OpenCV, Git
<1 year R, SQL, C/C++, Matlab

OTHER

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

COMMUNICATION

Fluent in English, French, Berber and Arabic

ML Projects

- Classification competition: detecting windmills from satellite images. Used a superlearner with svm, random forest and glm. 91% accuracy obtained
- K-means image size reduction. Reducing number of colors with minimal impact on quality
- PCA to predict which combination of genes are most correlated to different cancer types.

SCIENTIFIC PUBLICATIONS

" Cluster Assembly Times as a Cosmological Test", Y. Amoura et al., *Monthly Notices of the Royal Astronomical Society*, Vol. 508, pp.100-117 (2021)

" Euclid preparation. III. Galaxy cluster detection in the wide photometric survey, performance and algorithm selection", EUCLID Collaboration, *Astronomy & Astrophysics*, Vol. 627, 27 pp. (2019)