

JULIEN AUBERT

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RESEARCH INTERESTS

I am a PhD student in Applied Mathematics under the supervision of Patricia Reynaud-Bouret and Luc Lehéricy, at the Université Côte d'Azur, where I am part of the J. A. Dieudonné laboratory. My research focuses on non-asymptotic statistical estimation methods for non-stationary data with applications to model selection in bandits algorithms. The objective is to establish a theoretical framework for fitting cognitive models to learning data of an individual.

EDUCATION

Université Côte d'Azur - PhD in Statistics, Machine Learning *Oct 2021 - Dec 2024*
Estimating the learning process of the brain

Research interests: Statistics, Reinforcement learning, Cognition; online learning, bandits theory, non-asymptotic model selection.

University of Oxford - MSc in Mathematical Sciences (OMMS) *2020 - 2021*

Academic courses: Advanced Simulation Methods, Advanced Topics in Statistical Machine Learning, Algorithmic Foundations of Learning, Bayes Methods, Continuous Optimization, Graphical Models, Stochastic Differential Equations, Stochastic Models in Mathematical Genetics.

Ecole CentraleSupélec - Engineering degree *2018 - 2021*

Academic courses: Mathematics, Computer Science, Machine Learning, Quantum Physics, Electromagnetism, Mechanics, Economics, Urbanism.

Université Paris-Saclay, Orsay - MSc in Pure Mathematics *2019 - 2020*

Academic courses: Probabilities, Distributions, Statistics, Cryptology.

Université Paris-Saclay, Orsay - Bachelor in Pure Mathematics *2018 - 2019*

Lycée Louis Le Grand, Paris - Preparatory classes *2015 - 2018*

Lycée Louis Le Grand, Paris *Jun 2015*
Scientific Baccalaureate

RESEARCH PROJECTS/PUBLICATIONS

Julien Aubert, Christelle Jozet, Louis Kohler, Luc Lehéricy, Patricia Reynaud-Bouret. *Learning behaviors of octopus and cuttlefish in an episodic-like task: an algorithmic point of view* **Ongoing work**, 2024

Julien Aubert, Louis Kohler, Luc Lehéricy, Giulia Mezzadri, Patricia Reynaud-Bouret. *Learning how contextual bandits learn*. **Submitted**, 2024

Julien Aubert, Luc Lehéricy, Patricia Reynaud-Bouret. *General oracle inequalities for a penalized log-likelihood criterion based on non-stationary data*. **Submitted**, 2024

Julien Aubert, Luc Lehéricy. *Exponential inequalities for suprema of processes with stochastic normalization*. **Preprint**, 2024. URL: <https://hal.univ-cotedazur.fr/hal-04526484>

Julien Aubert, Luc Lehéricy, Patricia Reynaud-Bouret. *On the convergence of the MLE as an estimator of the learning rate in the Exp3 algorithm*. 39th International Conference on Machine Learning (ICML), 2023. URL: <https://proceedings.mlr.press/v202/aubert23a.html>

EXPERIENCE

Université Côte d'Azur — Teaching Assistant in Probability for 3rd year Bachelor students (64 h/year) — 2021 - 2024

Université Côte d'Azur — Reviewer for AISTATS 2024

Private lessons in mathematics for undergraduate students — *since 2018*

CentraleSupélec — Teaching Assistant — *2019 - 2020*

Courses taught: Convergence, Integration, Probability, Partial Differential Equations

Doc'velos — Assistant in a bike workshop — *June 2019 - August 2019/ June 2020/ September 2020*

CentraleSupélec — Examiner at the French Tournament for Young Mathematicians (TFJM²) — *summer 2019*

SKILLS

Programming languages: R, Python, \LaTeX — ggplot2, numpy, pandas, beamer, TikZ.

Languages: French (native), English (fluent, TOEFL iBT score in 2020: 112/120), Italian (beginner).

Communication: Effective oral communication skills, ability to exchange ideas in an interdisciplinary environment.

ASSOCIATIONS

CentraleSupélec — Captain of the football team — *2018 - 2020*

Pitray Olier – Regional football championship – 2018 - 2021

HOBBIES

Cycling, Football, Hiking, Running

Handworks, Bicycle restoration