

# Taher Jalal

Nonparametric statistics   Levy processes   Stable distributions   SDE   Monte-Carlo simulation  
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## EDUCATION

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**Paris-Saclay University** 2020-present

*Ph.D. in Statistics, Master of Science in Probability/Statistics/ML.*

*Paris*

- **Advisors:** Prof. Ester Mariucci (Paris-Saclay, LMV), Prof. Celine Duval (Sorbonne, LPSM).
- **Dissertation title:** "Statistics for random process and applications".
- **Relevant Coursework:** Stochastic calculus, Malliavin calculus, High Dimensional Statistics, Model Selection, Concentration, Extreme value theory, Statistical learning.

**Paris-Saclay University** 2019-2020

*National selection for teaching positions in Mathematics. Ranking in the top 5% over 3000+ applicants.* *Paris*

- Prepared for the highly competitive national examination to select teaching assistants and mathematics educators.
- Authored lessons on 70 advanced topics in applied and fundamental mathematics to prepare for rigorous oral examinations assessed by leading experts.
- Completed intensive training with weekly 6-hour exams in probability, statistics, and analysis to enhance problem-solving skills and expertise in advanced mathematical concepts.

**Ecole Polytechnique** 2016-2019

*Master of Science in Applied Mathematics*

*Paris*

- Highly selective French university specializing in advanced science and engineering studies. Admission rank: 3rd among 30 students selected to apply from all scientific bachelor's programs across French universities.
- Collaborated with experts from Cochin Hospital and INSERM on a group research project to predict opioid addiction. Developed forecasting algorithms to analyze opioid usage trends in France.
- **Relevant Coursework:** Numerical Approximation and Optimization, Uncertainty management and risk analysis, Monte-Carlo Simulations, Random Models in Ecology and Evolution, Variational Methods for PDE, Modeling Random Events.

**Paris-Nanterre University** 2017-2018

*Bachelor of Arts in Philosophy (pursued alongside my engineering curriculum)*

*Paris*

- Produced dissertations on diverse topics aligned with my scientific interests, such as epistemology, philosophy of nature, and the theory of language.

**Paris-Sud University** 2013-2016

*Bachelor of Science in Mathematics and Computer Science*

*Paris*

- **Thesis:** Fractals and Hausdorff measure: Theory and numerical models.
- **Relevant Coursework:** Integration and Probability, Linear Algebra, Graph Theory, Algorithms and data structures, Imperative Programming (C++), Object-Oriented Programming (JAVA), Microprocessor Architecture, Compilation and languages interpretation.

## RESEARCH INTERESTS

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Nonparametric statistics, Deconvolution, Lévy processes,  
Stable distributions, Stochastic differential equations, Monte-Carlo simulation.

## PUBLICATIONS

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- **Submitted:**

- [1] *C.Duval, T.Jalal and M.Mariucci.* Adaptive minimax estimation for discretely observed Lévy processes.
- [2] *C.Duval, T.Jalal and M.Mariucci.* Nonparametric density estimation for the small jumps of Lévy processes.
- [3] *T.Jalal.* Stable and tempered stable distributions and processes: an overview toward trajectory simulation.

## RESEARCH AND INDUSTRY EXPERIENCES

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### Paris-Saclay University - Versailles Campus

2021-present

*Research and Teaching Assistant in the Probability/Statistics team.*

- Contributed to nonparametric estimation in direct and inverse problems of discretely observed Lévy processes, resulting in two submitted papers. Conducted research on Gaussian approximation of small jumps in Lévy processes.
- Achieved a minimax lower and upper bounds for density estimation problems in Lévy processes using novel approaches.
- Developed a Python library for trajectory sampling and adaptive non-parametric estimation.
- Taught various courses to undergraduate students majoring in mathematics, physics, social sciences, and life sciences.

### University Paris-Cité, MAP5

Apr. 2021 - Sep. 2021

*Research Assistant Intern*

Paris

- **Advisors:** Prof. Ester Mariucci, Prof. Celine Duval
- Conducted research on threshold methods applied to stochastic models driven by diffusions and jumps.
- Implemented numerical methods to estimate volatility in jump-diffusion models.

### Undergrad oral examiner, CPGE

Sep. 2020- Apr.2021

*Oral examiner in science preparatory classes for undergrad students.*

- Instructor and examiner, preparing undergraduate students for competitive exams for engineering school admissions.

### Ecole Polytechnique, CMAP

Apr. 2019 - Aug. 2019

*Research Assistant Intern*

Paris

- **Advisor:** Prof. Sylvie Meleard
- Research on stochastic differential equations in biology and genetics applications, including the Wright-Fischer model for horizontal gene transfer.
- Implemented numerical methods to sample SDE and deterministic dynamics.

### Office Cherifien du Phosphate, (OCP)

Jun. 2018 - Aug 2018

*Business Steering analyst intern*

Casablanca

- Implemented data-driven models to minimize costs and optimize the scheduling of various processes.
- Collaborated with members of the MIT Operations Research Lab on optimizing the phosphate extraction process.
- Collaborated on market pricing models and data-driven decision making.

### Teaching instructor (Civic service)

Oct. 2016 - April. 2017

*Tutoring high school students from underprivileged neighborhoods.*

- Mentored students on science projects, earning regional distinction for a project on vascular stents.
- Prepared high-school students for National Maths Olympiads.
- Taught an introduction to programming in Python and C++, as well as data structures.

## TALKS AND CONFERENCES

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*Talks and Posters:*

- **PhD student seminar LMV** - Versailles - Spring 2024
- **Young Probabilists and Statisticians Symposium** – Oléron's island, Fall 2023
- **Congress of Young Researchers in Applied Mathematics** – Paris, Fall 2023
- **StatMathAppli Conference** (Poster) – Fréjus, Summer 2023
- **Seminar of the Versailles Mathematics Laboratory** – Summer 2023
- **9th Meeting of Young Statisticians** – Porquerolles island, Spring 2022

Conferences:

- **Parisian seminar of Statistics** - IHP - *Regular attendance.*
- **Dynstoch** - Paris - 2022
- **Distances for stochastic processes and applications day** - Versailles - 2019

## AWARDS AND DISTINCTIONS

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<b>Vivaldi program laureate</b> <i>Funding for doctoral students to promote junior scientific visibility.</i>	2022
<b>Agency of French Education Abroad fellowship for academic excellence</b> <i>Prestigious scholarship program recognizing outstanding high-school academic results.</i>	2013-2018
<b>International Piano Competition SAR Lalla Maryem</b> <i>1st &amp; 2nd mention in Young Pianist Categories.</i>	2008-2013

## SKILLS

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**Other scientific interests:** Signal/audio processing, Deep learning, Algorithmic puzzles.

**Languages:** French/Arabic (*Native*). English(*Fluent*). Spanish/Japanese(*Beginner*).

**Non-curricular interests:** Harmony/music theory, Band leader/keyboard player (jazz, funk, salsa), Music production/composition, photography, running.

## PROGRAMMING SKILLS

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**Advanced:** Python (Numpy, Scipy, Seaborn/Matplotlib, Manim,...), Latex.

**Familiar:** C++, JAVA, MIPS, UML.

## REFERENCES

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### **Prof. Ester Mariucci**

*Full professor at Paris-Saclay University.*

- **Mail:** ester.mariucci@uvsq.fr
- **Laboratory:** Mathematics Laboratory of Versailles (LMV).

### **Prof. Celine Duval**

*Full professor at Sorbonne University.*

- **Mail:** celine.duval@sorbonne-universite.fr
- **Laboratory:** Probability/Statistics and modelization laboratory (LPSM).

### **Prof. Matthieu Lerasle**

*Full professor at ENSAE, IP-Paris, and Paris-Saclay University*

- **Mail:** matthieu.lerasle@ensae.fr
- **Laboratory:** Research Center for Statistics and Economy (CREST)

### **Yassine El Bouzkouri**

*COO of GEERD, former Business Steering analyst at OCP group.*

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### **Othmane Sabih**

*CEO/CTO of GEERD, former Business Steering analyst at OCP group.*

- **Mail:** o.sabih@geerd.ma