

Constant BOURDREZ

SUMMARY

I am an engineer from ESPCI Paris-PSL and a master's student in IASD MSc with a background in artificial intelligence and biotechnology looking for a PhD contract starting in September 2025. My research interests are in the field of deep learning, reinforcement learning, speech processing, and computational cognitive (neuro)science, with a particular focus on interpretability.

EDUCATION

- 2024–2025 **IASD Msc in Artificial Intelligence and Data Science, ENS-PSL/ Paris Dauphine/ Mines Paris-PSL, Paris, France**
Joint-Master of PSL Research University between: Paris-Dauphine University - ENS Ulm - Mines ParisTech.
Courses taken: Fundamentals of learning, Optimal Transport, Reinforcement Learning, Optimization for ML, From Denoising to Data Generation, Mathematics of Deep Learning, Machine Learning with Kernel Methods, Point Clouds and 3D Modeling, Statistical Physics and Machine Learning, Large Language Models, Deep Learning for Image Analysis, Monte-Carlo Search and Games, Data Acquisition, Extraction and Storage.
- 2021–2024 **MEng in Data Science and Biotechnology, ESPCI Paris-PSL, Paris, France, GPA: 3.87**
Research-oriented engineering degree. Relevant Coursework: Mathematical and numerical methods, Applied statistics, Machine learning, Advanced deep learning (Adversarial attacks / RNN / Best-RQ / Transformers), Advanced programming in C++, Biochemistry, Cell biology, Medical imaging, Neuroscience, Waves and acoustics.
- 2019–2021 **CPGE PCSI/PC*, Lycée Henri-IV, Paris, France, GPA: 4**
A two-year intensive programme at the university level in mathematics, physics and chemistry designed to prepare students for the highly competitive nationwide examination for admission to engineering schools in France.

RESEARCH AND WORK EXPERIENCE

- May 2024 – August 2024 **Research Intern in Machine Learning, Oxford University, HCMC, Vietnam**
 - Project: ‘Probabilistic Forecasting of Dengue Fever in HCMC’, supervised by Dr. Marc Choisy at OUCRU.
 - Developed a diffusion model using climate data and graphs to provide 30-day forecasts.
 - Achieved performance of 0.56 daily CRPS and 0.51 weekly CRPS.
- July 2023 – December 2023 **R&D Data Scientist - Energy Engineer Intern, Deepki, Paris, France**
 - Internship supervised by Dr. Thimothée Thiery.
 - Trained, validated and deployed a hierarchical Bayesian model.
 - Studied the impact of climate change on building consumption using inverse modelling, MCMC and climate models.
 - Implemented initial solutions for pattern recognition in load curves.
- 2021–Present **Oral Examiner, Lycée Henri-IV / Lycée Fénélon / IPESUP, Paris, France**
I conducted weekly examinations for undergraduate students enrolled in a selective mathematics programme at Lycée Henri-IV, Lycée Fénélon and IPESUP, with the objective of preparing them for engineering schools.
- July 2022 **Research Intern in Wave Physics, Institut Langevin, Paris, France**
 - Project: ‘Study of Faraday instability in a random environment’, supervised by Dr. Emmanuel Fort.
 - Constructed and exploited an experimental setup, reconstructed surface waves via image and signal processing.

SKILLS AND INTERESTS

Computer Skills: Advanced Python (Numpyro, Xarray, Pytorch, Numpy, Seaborn, Matplotlib, Sklearn, Streamlit, Pandas, Pytorch Lightning, Pytorch Geometric, JAX), Advanced C++, Matlab and Latex. Intermediate Microsoft office and SQL. Git, Docker, GCP

Language Skills: Fluent in English (Cambridge C1 certificate obtained in 2019 and 990 TOEIC score), French native speaker, intermediate Spanish.

Interests: DJing, electronic music, volley-ball (10 years-several France championships), drums (16 years), cycling and running.

ACHIEVEMENTS

Paris Artificial Intelligence Research Institute Excellence Scholarship (Pr[Ai]rie)

3IA Pr[Ai]rie scholarship for the academic year 2024-2025 for the Ms-IASD programme awarded on academic criteria.

LEADERSHIP EXPERIENCE

2022–2023 **President, ESPCI student pub, Paris, France**

Managed a team of 15 people three nights a week. Assigned tasks to each member of the team. Negotiated with the university's administration to organise events during the year and synthesised those meetings to my team.

2022–2023 **Organizer of the student ski trip, ESPCI student sport organisation, Paris, France**

Planned a one-week trip for 106 students including transportation, housing, ski passes and events. Collaborated with the different suppliers. Informed and promoted the trip to students. Budgeted the trip and allowed several scholarships to a few students.

2019 **American Delegate at the security council, Schulfarm Insel Scharfenberg Model UN, Berlin, Germany**

Discussed with my fellow delegates of the situation in Syria and its implications for international peace and security. Proposed different amendments in order to regulate the conflict and to maintain peace. Debated with my fellow delegates of the security council. Synthesised the amendments that were voted in a resolution. Won the prize for the best delegation.