Constant BOURDREZ

SUMMARY

I am an engineer from ESPCI Paris-PSL, currently doing an M2 internship at the Data Science Center of ENS-PSL, where I work at the intersection of generative models and reinforcement learning.

EDUCATION

2024–2025 Paris, France
PSL University, *IASD Msc in Artificial Intelligence and Data Science*
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 Paris, France
ESPCI Paris-PSL, *MEng in Physics and Data Science*
Research-oriented engineering degree. Relevant Coursework: Mathematical and numerical methods, Applied statistics, Machine learning, Advanced deep learning, Advanced programming in C++, Biochemistry, Cell biology, Medical imaging, Neuroscience, Waves and acoustics, Quantum Physics, Soft Matter.

2019–2021 Paris, France
Lycée Henri-IV, Paris, France, *CPGE PCSI/PC**
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

March 2025 – Present Paris, France
ENS Ulm, *Research Intern in Machine Learning*
- Project: 'Optimizing diffusion models with RL', supervised by Olivier Cappé and Alexandre Vérine.

May – August 2024 HCMC, Vietnam
Oxford University, *Research Intern in Machine Learning*
- 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 – December 2023 Paris, France
Deepki, *R&D Data Scientist - Energy Engineer Intern*
- 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 Paris, France
Lycée Henri-IV / Lycée Fénelon / IPESUP, *Oral Examiner*
I conducted weekly examinations for undergraduate students enrolled in a selective mathematics programme at Lycée Henri-IV, Lycée Fénelon and IPESUP, with the objective of preparing them for engineering schools.

July 2022 Paris, France
Institut Langevin, *Research Intern in Wave Physics*
- 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.

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.

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.

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