Can POULIQUEN

PhD candidate, Engineer | +33 6 51 64 24 83 | can.pouliquen@gmail.com
Website | GitHub | LinkedIn

Interested in large-scale deep learning systems.

EDUCATION

Ecole Normale Supérieure de Lyon — **Lyon, France**
PhD – Machine Learning — *Nov. 2022 – Dec. 2025*
- Doctoral researcher in both theoretical and practical aspects of machine learning. Supervised by Mathurin Massias, Titouan Vayer, Paulo Gonçalves.
- Published papers in top-level venues in machine learning. Contributed to state-of-the-art projects with efficient Python implementations.

Technical University of Berlin — **Berlin, Germany**
MSc – Machine Learning — *Oct. 2021 – March 2022*
- Exhange program. Mathematical optimization, statistical machine learning, deep learning, AI ethics.

Ecole Polytechnique Universitaire de Montpellier — **Montpellier, France**
Engineering Diploma (MSc) – Electrical Engineering — *Sept. 2019 – Sept. 2022*
- Computer engineering, computer science, embedded systems, electrical engineering.
- Got selected to transition into applied mathematics at the Technical University of Berlin in my final year.

EXPERIENCE

INRIA | *National research institute in informatics and applied mathematics* — **Lyon, France**
PhD candidate — *Nov. 2022 – Dec. 2025*
- Conducting research in machine learning and deep learning for structure learning which led to publishing papers in peer-reviewed venues, with both theoretical and practical contributions.
- Designed algorithms with proven theoretical guarantees and coded efficient implementations in Python.
- Gave numerous technical presentations of my research in international events (Milan, Singapore, …).
- Teaching assistant in mathematical optimization and probability theory.

CNRS | *National scientific research center* — **Toulouse, France**
Deep Learning Research Intern — *April 2022 – Sept. 2022*
- Conducted research in biologically inspired deep learning. Analyzed the oscillatory dynamics of artificial neural networks with predictive coding feedbacks and designed experimental protocols in Python to evaluate the results. My results led to a project that has been pursued after my departure.

Mithril Security | *Deep-tech startup* — **Paris, France**
Deep Learning Engineering Intern — *June 2021 – August 2021*
- Contributed to the premises of a secure deep learning inference server that leverages confidential computing.
- Designed experimental protocols for proofs-of-concept in Python and Rust.

NinjaLab | *Cybersecurity startup* — **Montpellier, France**
Cybersecurity Engineering Intern — *June 2020 – July 2020*
- Built a software to enable hardware attacks that was then leveraged by the company to perform side-channel exploits of microcontrollers.
- This project involved programming in C, knowledge in cryptography and the use of hardware accelerators.

SCIENTIFIC CONTRIBUTIONS

Published and ongoing works
- [1] *Schur's Positive Definite Network: Deep Learning in the SPD cone with structure.* ***C. Pouliquen****, M. Massias, T. Vayer*
  In ICLR, 2025. Paper / code.
- [2] *Implicit differentiation for hyperparameter tuning the weigthed Graphical Lasso.* ***C. Pouliquen****, P. Gonçalves, M. Massias, T. Vayer*
  In Gretsi, 2023. Paper.
- [3] *Maximally modular sparse graph learning.* ***C. Pouliquen****, A. Breloy, P. Gonçalves, M. Massias, T. Vayer*
  Work in progress, 2025.
- [4] *Seeking precision: a benchmark and a versatile solver for the Graphical Lasso.* ***C. Pouliquen****, P. Gonçalves, T. Vayer, M. Massias.*
  Submitted, 2025.
- [5] *Can sparsity improve the privacy of neural networks ? A. Gonon, L. Zheng, C. Lalanne, Q-T. Le, G. Lauga,* ***C. Pouliquen****.*
  In Gretsi, 2023. Paper.

Open-source software
- Implemented a solver for an optimization problem in Python, competitive to SOTA, currently being integrated into the *skglm* package (4,000+ downloads/month and a part of the *scikit-learn* ecosystem) and a modular benchmark using the *benchopt* ecosystem : code
- Awarded the "gold standard" label for reproducible research in Gretsi 2025.
- Implementation of SpodNet [1] : code

Scientific service
- Peer-reviewer for international conferences in machine learning (*NeurIPS 2023, 2024; ICLR 2024; ICML 2024, 2025; Electronic Journal of Statistics 2025*).
- Volunteer in the organization of *COLT 2025* and *Eusipco 2024*.

SKILLS

Programming:
- 5 years of continuous experience with **Python** in prototyping and development in both research and industry environments. Proficient in various frameworks (**PyTorch**, **NumPy**, **scikit-learn**, **SciPy**, etc.) and version control (**Git**, **GitHub**). Experienced with development on computational clusters and GPUs.
- 2 years of experience with **C** in low-level embedded systems development in academic and industry environments
- Prior practical experience with **C++, Rust, MATLAB, Assembly.**

Soft skills: Rapidly building exploitable knowledge in new domains. Problem solving & technical consulting. Collaborations, public speaking & communication.

Spoken languages: French (native), Turkish (native), English (complete fluency), German (B1), Spanish (B1)