

Can POULIQUEN

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

[Website](#) | [GitHub](#) | [LinkedIn](#)

Interested in open source large-scale deep learning projects (Transformers, LLMs and beyond)

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.
- Transitioned to Transformers and LLMs technology towards the end of my PhD, led the Transformers reading group in our team.
- Published papers in top-level venues in machine learning. Contributed to state-of-the-art software projects with efficient Python implementations.

Technical University of Berlin

Berlin, Germany

MSc – Machine Learning

Oct. 2021 – March 2022

- Exchange program. Mathematical optimization, statistical machine learning, deep learning, AI ethics.

Ecole Polytechnique Universitaire de Montpellier

Montpellier, France

Engineering Diploma (MSc) – Electrical Engineering & Embedded Systems

Sept. 2019 – Sept. 2022

- Computer engineering, computer science, embedded systems, robotics, 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 for structure learning with published papers in peer-reviewed venues, with both theoretical and practical contributions.
- Transitioned to Transformers and LLMs towards the end of my PhD, led the Transformers reading group in our team.
- 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.
- Designed the Transformers lab for Mathurin Massias's Generative AI course at the ENS de Lyon.

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, acquired by The H Company

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 & SOFTWARE CONTRIBUTIONS

Open-source software

- Implemented a BPE Tokenizer from scratch for end-to-end use (training+encoding/decoding) : [Tiny-Tokenizer](#)
- Implemented a LLaMA-like Transformer from scratch, WIP to replicate the whole training pipeline : [Tiny-LLaMA](#)
- Implemented the first neural architecture for learning sparse and SPD matrices : [SpodNet](#)
- Integrated a solver into *skglm* (4,000+ downloads/month and a part of *scikit-learn*) and a modular benchmark using the *benchopt* ecosystem : [code](#)
- Awarded the “gold standard” label for reproducible research in Grets2025

Selected 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](#)
- [2] *Implicit differentiation for hyperparameter tuning the weighted Graphical Lasso*. **C. Pouliquen**, P. Gonçalves, M. Massias, T. Vayer
In Grets2023. [Paper](#)
- [3] *Maximally modular sparse graph learning*. **C. Pouliquen**, A. Breloy, P. Gonçalves, M. Massias, T. Vayer
Work in progress, 2025.

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**, **Linux shell**). Experienced in **implementing various deep learning models from scratch**.
- 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)