DARIO SHARIATIAN

dario.shariatian@inria.fr ⋄ github.com/darioShar ⋄ https://darioshar.github.io
Paris, France

Developing methodologies for deep generative models, focus on diffusion models and related approaches

EDUCATION

PhD, Inria, SIERRA, *Paris, France* *October 2023 - 2026*
Francis Bach's lab. Supervised by Umut Simsekli, Alain Durmus
• Developing methodologies for deep generative models, focus on diffusion models and related approaches

MSc in Mathematics - Part C, University of Oxford **(Distinction)**, *UK* *2022 - 2023*
• Main focus on ML, deep learning, statistics
• Various broadening courses, e.g., random matrices, differential geometry, algebraic topology...

BSc/MSc in Applied Mathematics, École Polytechnique, **(Top 20%)** *France* *2019 - 2022*
• After an initial focus on CS and system design, I switched to applied maths and data science
• Courses in ML/proba/stats. Minor in CS, pure maths, theoretical physics, and humanities

Preparatory Program MPSI/MP*, Lycée Saint-Louis, **(Top 4%)**, *Paris, France* *2019 - 2022*
Classical french 2 years preparation for Grandes Écoles
• Advanced maths, physics, CS, humanities

WORK EXPERIENCE

Quantitative Research Intern, Squarepoint Capital, *London, UK* *March-August 2022*
Supervised by Dr. Asgeir Birkisson
Quantitative hedge fund focused on a collaborative approach
• Developed predictive mathematical models for equities (mid-frequency)
• Developed and presented a novel spectral graph approach to various teams and management

Firmware Engineer Intern, Ledger, *Paris, France* *June-September 2021*
Supervised by Mr. Raphael Geslain
World leader in cryptocurrency hardware wallets
• Wrote emulator for flagship Ledger Nano X, to streamline debugging and accelerate development
• Gained expertise in ARM SE architecture, QEMU emulation and secure OS principles

R&D Intern, Gendarmerie Elite Unit (GIGN), *Versailles, France* *November-April 2020*
• Selected to lead a team in developing innovative projects to support elite military unit
• Developed and implemented projects like audio noise reduction and object detection
• Collaborated with field agents, technical teams, and French institutions to optimize projects outcomes

SKILLS

Programming	Python, C/C++, q/KDB, Java, Ocaml, SQL
API, Tools, Softwares	PyTorch, Anaconda/Jupyter, Qt, git, gdb, OpenGL
Languages	English *(fluent)*, French *(native)*, Spanish *(notions)*, Persian *(notions)*

VARIOUS

• **Music** Guitar, bass, drums. I enjoy playing funk/rock, with my band or during jam sessions
• **Sports** Volley-ball, ski, kung-fu, surf, sky-diving
• **Community Involvement** Rehabilitation of Chateau de Guédelon, in France

PUBLICATIONS

Discrete Markov Probabilistic Models (DMPM) *arxiv preprint*
Shariatian, D.*, Pham, L.T.N.*, Ocello, A., Conforti, G., & Durmus A.O.
We introduce a novel CTMC framework for discrete diffusion

Denoising Lévy Probabilistic Models (DLPM) *ICLR 2025*
Shariatian, D., Simsekli, U., & Durmus, A.O.
We introduce a novel framework to use heavy-tailed noise in diffusion models

Piecewise Deterministic Generative Models *NeurIPS 2024*
Bertazzi, A.*, **Shariatian, D.***, Durmus, A.O., Simsekli, U., & Moulines, É
We introduce a novel class of generative models based on piecewise deterministic Markov processes (PDMPs), which combine deterministic motion with random jumps at random times

VARIOUS ACADEMIC EXPERIENCE

Reviewer: ICML24, NEURIPS24, AAAI25, TMLR, ICLR25
Teaching Assistant: MAA106 Numerical Analysis, École Polytechnique *March-June 2024*
Oral Examiner: MSc Data Science for Business/Finance, X-HEC *2024, 2025*
Oral Presentations:
DLPM, Inria, Sierra, *Paris*, *February 2024*
DLPM, Alan Turing Institute, *London*, *July 2024*
DLPM, École Polytechnique, IP Paris, *Paris*, *January 2025*
DMPM, Oberwolfach Research Institute for Mathematics, *Oberwolfach*, *February 2025*

PRE-PHD RESEARCH / SELECTED PROJECT WORK

An Alternative to the Log-Likelihood *December-April 2023*
Department of Statistics, University of Oxford (Master thesis), *supervised by Dr. Gonzalo Mena*
(Master thesis) Studied an alternative to log-likelihood for parameter estimation inspired by entropic optimal transport (Sinkhorn EM), in the non-asymptotic regime

Discrete Morse Theory for Relative/Persistent Cosheaf Homology *March 2023*
Department of Mathematics, University of Oxford, *Supervised by Dr. Vidit Nanda*
Explored discrete Morse theory to accelerate homology computations in various contexts

Can Neural ODEs Offer Free Robustness? *November-December 2022*
Department of Mathematics, University of Oxford, *Supervised by Dr. Jared Tanner*
Studied robustness and expressivity of neural ODEs vs neural SDEs, examined as regularization