MAXENCE NOBLE

PhD student in Applied Mathematics (Machine Learning)
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EDUCATION

PhD in Machine Learning – *CMAP, Ecole Polytechnique* — Sep. 2022-present

- Supervision: Prof. Alain Durmus (Ecole Polytechnique).
- Interests: generative modelling, optimal transport, score-based diffusion models, Schrödinger Bridge, Markov Chain Monte Carlo methods.

Master of Research in Mathématiques, Vision & Apprentissage (MVA) – *Ecole Normale Supérieure Paris-Saclay* — Sep. 2021-Sep. 2022

- Grade: Distinctions with jury's congratulations.
- Relevant coursework: Generative modelling, Bayesian Machine Learning, Computational statistics, Optimal Transport, Probabilistic Graphical models.

Master of Science in Applied Mathematics (Ingénieur Polytechnicien) – *Ecole Polytechnique* — Aug. 2018-Aug. 2021

- Grade: GPA 3.93/4, top 10% of all students.
- Relevant coursework: Statistics, Optimization, Advanced Machine learning, Statistical modelling, Monte Carlo simulations, Stochastic calculus.

Bachelor of Arts in Philosophy (Add. degree) – *University of Paris-Nanterre* — Oct. 2019-Jul. 2020

- Grade: Honours.
- Distance-learning on various philosophy subjects such as gender, art, science, sociology, literature and cinema.

French preparatory classes – *Sainte Geneviève college, Versailles* — Aug. 2016-Aug. 2018

- High-level undergraduate science program (GPA 3.97/4).
- Two-year intensive university-level preparation for highly competitive nationwide science exams (Mathematics, Physics and Computer science).

WORK EXPERIENCE

Visiting Research Student – *Department of Statistics, Oxford University* — Nov. 2022

Supervised by Prof. Arnaud Doucet, worked on an extension of diffusion-based models to compute Wasserstein barycenters [2].

Research Intern – *Center for Data Science, ENS Ulm, Paris* — Apr. 2022-Sep. 2022

Supervised by Valentin de Bortoli, worked on sampling algorithms for constrained spaces with self-concordant barriers [3].

Research Intern - *CMAP, Ecole Polytechnique & INRIA Lille* — Apr. 2021-Nov. 2021

Supervised by Aymeric Dieuleveut and Aurélien Bellet, worked on federated learning comprising concerns about privacy and data heterogeneity [5].

Data Scientist Intern – *Deepki, Paris* — Jun. 2020-Aug. 2020

Worked with the R&D team on improving data completeness in the collection and use of energy consumption invoices (scraping & parsing).

PUBLICATIONS

[1] Stochastic Localization via Iterative Posterior Sampling, ICML 2024
L. Grenioux*, MN*, M. Gabrié, A. Durmus (*spotlight*)

[2] Tree-based Diffusion Schrödinger Bridge with Applications to Wasserstein Barycenters, MN, V. de Bortoli, A. Doucet, A. Durmus NeurIPS 2023 (*spotlight*)

[3] Unbiased constrained sampling with self-concordant Barrier Hamiltonian Monte Carlo, MN, V. De Bortoli, A. Durmus NeurIPS 2023

[4] Non-asymptotic convergence bounds for Sinkhorn iterates and their gradients: a coupling approach, G. Greco, MN, A. Durmus, G. Conforti COLT 2023

[5] Differentially Private Federated Learning on Heterogeneous data, MN, A. Bellet, A. Dieuleveut AISTATS 2022

TEACHING EXPERIENCE

Teaching Assistant Sep. 2022-Sep. 2024

- MRe 'MVA' – Ecole Normale Supérieure Paris-Saclay
  - Computational Statistics
- MSc Data Science for Business - Ecole Polytechnique & HEC Paris
  - Machine Learning, Statistics, Optimization, and Linear Algebra courses
- BSc in Mathematics – Ecole Polytechnique

REVIEWING EXPERIENCE

ICLR	2025
ICML (*Top reviewer*), NeurIPS, TMLR	2024
AISTATS, UAI, ICML Workshop, NeurIPS (*Top reviewer*), TMLR	2023
NeurIPS	2022

TALKS

Google DeepMind's reading group on generative models, transport and sampling [1]	2024
Mostly Monte Carlo Seminar, Paris Santé Campus [1]	2024
ELLIS un-conference ICML, HEC Paris [3]	2023
Isaac Newton Institute for Mathematical Sciences Workshop, Cambridge University [2]	2023

AWARDS AND HONOURS

- 2022: Awarded a selective PhD scholarship by Ecole Polytechnique.
- 2021: Awarded the Ecole Polytechnique Research Centre Prize in Applied Mathematics for [4].
- 2021: Outstanding Investment Award for involvement in Polytechnique student community.
- 2019: National defence medal (bronze level).

SKILLS

Programming	Python, PyTorch
Other	LaTex, Git, Slurm
Languages	French (native) - English (fluent) - German (advanced)