Etienne Gauthier

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EDUCATION

Inria & ENS ULM, PhD Program 2024 – 2027
- Under the supervision of Francis Bach and Michael I. Jordan
- Working on decision-making in multi-agent environments

Ecole Normale Supérieure Paris-Saclay, Master MVA (Mathematics, Vision, Learning) 2023 – 2024
- Relevant coursework includes *Reinforcement Learning, Computational Optimal Transport, Convex Optimization and Applications in Machine Learning, Object Recognition and Computer Vision, Kernel Methods for Machine Learning, Graphs in Machine Learning, Generative Models for Images*

Ecole Polytechnique, Cycle Ingénieur 2020 – 2024
- One of France's leading universities for science and engineering
- Specialization in *Applied Mathematics* with a strong emphasis in *Mathematics* and *Computer Science*
- Relevant coursework includes *Algebraic Topology, Galois Algebra, Algebraic Geometry, Statistics, Optimization and Control, Algorithms for Data Analysis, Topological Data Analysis, Computational Geometry*

Lycée Sainte Geneviève, Preparatory Program 2018 – 2020
- A post-secondary program in advanced math, physics and computer science leading to nationwide entrance examinations to the *Grandes Ecoles* for scientific studies
- Undergraduate coursework includes *Topology, Linear Algebra, Probability, Analysis, Programming: Python, SQL*

WORK EXPERIENCE

Kyoto University Institute for Advanced Study – Kyoto, Japan Mar – Aug 2023
- Research internship supervised by Yasuaki Hiraoka
- Designed a new kernel for commutative ladders in multidimensional topological data analysis
- Conducted research in theory of representations of associative algebras

Fintica – Tel Aviv, Israël Jun – Sep 2022
- Quantitative research intern in a start-up specialized in AI in finance
- Developed a Monte Carlo algorithm that revealed an optimal tradeoff point for selecting rolling windows, regarding the accuracy of the ML model when trained on z-scores, and the similarity between z-scores and returns
- Designed a ML-based investment strategy on the equity market that outperformed the original approach on common KPIs, by conducting and integrating insights of statistical analysis to identify areas of suboptimal performance

French Navy – *Charles de Gaulle* aircraft carrier Nov 2020 – Apr 2021
- Part of Ecole Polytechnique's first year curriculum
- Officer cadet in a NH90 helicopter unit of the *Charles de Gaulle*
- Deployed in the Mediterranean Sea, the Red Sea, the Indian Ocean, and the Persian Gulf during the *Clemenceau 21* mission

SELECTED RESEARCH PROJECTS

Statistical Collusion by Collectives on Learning Platforms Feb 2025
- Joint work with F. Bach and M. Jordan
- Investigated approaches for collectives to measure and exert data-driven impact on learning systems
- Submitted to ICML 2025

Interval Replacements of Persistence Modules Mar 2024
- Joint work with A. Hideto and E. Liu
- Developed interval rank invariants to generalize interval decomposition for persistence modules over finite posets
- Submitted to Discrete & Computational Geometry

TEACHING EXPERIENCE

Université Paris 1 Panthéon-Sorbonne Sep 2022 - Jan 2023
- Teaching Assistant: *Statistics: Probabilities* for 2nd year undergraduate students

OTHER

META, FAIR Paris Aug 2022 - Mar 2023
- Annotation of mathematical statements in Lean language, used as a dataset for neural theorem proving

SKILLS

- Python (Pandas, Scikit-Learn, PyTorch)
- Languages: French (native), English (TOEFL: 109/120)