Baptiste Arnaudo

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Education

École Polytechnique Palaiseau, France

France's leading university for science and engineering *2023 – Present*

- Third-year student specializing in a Master's-level program in Applied Mathematics and Artificial Intelligence with a minor in Theoretical Mathematics
- Relevant coursework: Advanced Statistical Learning Theory, Operations Research, Optimization and Control, Algorithmics...
- Minor in Theoretical Mathematics (Differential Calculus, Complex Analysis, Riemannian Geometry...)
- GPA: 3.97/4.0 (Ranked in the top 10% of the 2023 class)
- Awarded the Outstanding Investment Award for my involvement in the cohort

Nanterre University Nanterre, France

Bachelor of Arts in Philosophy pursued jointly with my scientific studies (awarded with honors) *2024 – 2025*

Lycée Thiers Marseille, France

Preparatory Program in Mathematics, Physics, and Computer Science *2021 – 2023*

- A post-secondary two-year program in advanced mathematics, physics, and computer science leading to nationwide entrance examinations to the Grandes Écoles for scientific studies
- Undergraduate coursework includes Real Analysis, Probability Theory, Topology, Algebra, Thermodynamics, and Classical/Quantum Mechanics
- Valedictorian in Mathematics, Physics, and Computer Science both years
- GPA: 4.0/4.0

La Nativité Aix-en-Provence, France

Baccalaureat in sciences awarded with highest honors *June 2021*

Selected Research

Team Research Project Sep 2025 – Mar 2026

Centre de Mathématiques Appliquées (CMAP) *Ecole Polytechnique, France*

- Project under the supervision of **Dr. Charles-Albert Lehalle**
- Developing a unified metric of topic complexity for a large corpus of interlinked financial and economic documents (Causality Link database)
- Leveraging Hawkes processes, graph-theoretic structures, and word-embedding models to incorporate temporal excitation, cross-document influence, and semantic similarity into a coherent quantitative framework

Team Research Project Sep 2024 – Apr 2025

Institut Pasteur *Paris, France*

- Conducted a statistical analysis of gene perturbations in Drosophila larvae to quantify the contribution of individual genes to behavioral variance
- Developed a Transformer-based model integrating genetic inputs and environmental stimuli to predict larval movement patterns; model interpretation revealed non-trivial behavioral dynamics

Experimental Project May 2024 – June 2024

Department of Computer Science *Ecole Polytechnique, France*

- Devised a multimodal Machine Learning model (DINOv2 + Qwen3-0.6B) for YouTube videos view prediction (see repository)
- Achieved a 2.5 MSLE loss on a highly unbalanced dataset

Experimental Project Jan 2023 – Apr 2023

Lycée Thiers *Marseille, France*

- Devised a cellular automaton model to study population dynamics and the spread of panic in a crowd

Theoretical Project Jan 2023 – Apr 2023

Lycée Thiers *Marseille, France*

- Wrote a detailed paper on how Fourier Analysis on Abelian Groups can be used to study the Fermat-Wiles equation over finite fields (see paper)

Experience

Incoming Visiting Student Researcher Mar 2025 – Aug 2026
Northwestern University *Evanston, Illinois, USA*

- Will work on the informational value of data in decision-making for AI Algorithms under the supervision of **Drs Amine Bennouna and Sébastien Martin**

Machine Learning intern for 3D Medical Imaging June 2025 – Sep 2025
GE Healthcare *Buc, France*

- Integrated nnU-Net v2 and custom segmentation pipelines into GE's breast MRI analysis workflow (3D segmentation + cancer detection)
- Designed and evaluated algorithms for automatic nipple and chest-wall detection on raw MRI volumes, achieving 95% detection accuracy
- Developed optimized, production-grade C++ modules successfully merged into the GE Healthcare codebase

National Gendarmerie - Officer Cadet Sep 2023 – Apr 2024
Leadership Training *Mulhouse, France*

- Participated in multiple high-risk field operations, including hot pursuits and serving as part of an assault entry team during warrant-authorized searches
- Contributed to the training and preparation of the intervention unit (tactics, coordination, and operational readiness)

Skills

Programming Languages: Python, C++, Java, OCaml
Libraries and Frameworks: PyTorch, JAX, TensorFlow, scikit-learn

Extracurricular Activities

Co-Founder, Unaite: Launched a national federation of AI student associations from France's top institutions. Led high-impact initiatives, including *Ignaite*, a start-up accelerator developed in collaboration with Google, Anthropic, and major VC funds.
President, AI Association (Binet IA): Organized workshops, hackathons, and guest lectures to foster a strong AI community within the school.
Treasurer, Career Fair Association (X-Forum): Managed a budget of several hundred thousand euros to organize the school's flagship career fair, hosting 200+ companies and 1000+ students.
Teaching Experience: Wrote a 60-page free mathematics course and a set of exercises and solutions for undergraduate students (see the course and the set of exercises) **Volunteering:** Order of Malta - distribution of food and blankets to homeless people
Sports: Basketball (Captain of Ecole Polytechnique's A team), Swimming (regional championships), e-sports (former semi-professional Overwatch player, ranked top 100 in Europe)