Alejandro Argüelles

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M.Sc. candidate in **Mathematics & AI** at **ENS Paris–Saclay (MVA, Mathematics, Vision, Learning)**, seeking research internships and PhD opportunities in **Mathematics** and **Machine Learning**. My main interests include **Reinforcement Learning**, **Representation Learning**, and related areas. *Available from April 2026.*

Education

M.Sc. — MVA: Mathematics, Vision & Learning, ENS Paris–Saclay   Sep 2025 – Apr 2026
Selected courses: Reinforcement Learning; Theoretical Foundations of Deep Learning; Representation Learning; Online/Sequential Learning; Optimal Transport; Probabilistic Graphical Models; Computer Vision; Topological Data Analysis; LLMs for Code & Proof; Multimodal Explainable AI; Statistical Learning; Graphs in ML; Large-Scale Distributed Optimization.

M.Sc. — Mathematics & Computer Science for AI (IMA), Université de Toulouse, Sep 2024 – Mar 2025
Overall average: 15.423/20; **rank 1/9**.   *Internship:* 17.33/20 (rank 2/103).
Selected coursework: Statistics 17.09/20 (1/46); Advanced Probabilities 17.9/20 (1/47); Advanced Algorithms 16.3/20; Convex Optimization 16.2/20; Random Simulation 15.6/20.

B.Sc. — Pure Mathematics, Université Toulouse III — Paul Sabatier   Sep 2020 – May 2023
Year 1: avg 18.286/20, **rank 1/91**.
Selected: Measure Theory 18.02/20 (rank 1/78); Complex Analysis I 18.5/20 (rank 1/30); Topology 17/20 (rank 3/88), Information Theory 18.16/20 (rank 1/74);

Experience

Deep Learning Estimation Lead – Driverless Formula Student Team, TLS'e Racing, Sep 2024 – Aug 2025

- Estimation pipelines combining Extended Kalman Filters with learned estimators; close integration with Computer Vision and Path Planning.
- FSUK 2025: Static events overall 13/56.

Automatic Code Refactoring with AI — Intern, Infotel Consulting   Mar 2025 – Aug 2025

- Designed and implemented a private VS Code extension for automated refactoring with LLMs (LoRA fine-tuning, RAG, multi-agent orchestration).
- Synthetic data via diffusion models; improved a published *God Class* detector (F1 from 0.53 to 0.58).

Student Consultant, Upsilon Student Tech Consulting   Sep 2022 - May 2023

- Communication strategies and visual assets for clients and partners.

Awards & Honors

ANITI Scholarship (Artificial & Natural Intelligence Toulouse Institute); AVENIR Scholarship (2020, Dialogue Association); 4th place — Spanish Mathematical Olympiad (Phase I, 2020).

Skills

Programming: Python, C/C++, JavaScript, R, OCaml, Coq.
ML/Tools: PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, Matplotlib, Hugging Face, LangChain, SCIP.
Soft skills: hard curiosity, tenacity, creativity.
Workflow: Git, VS Code, Linux; Scrum, collaborative integration.

Other

Languages: Spanish (Native); English (C1); French (C1).
Complementary interests: Cybersecurity, Cryptography, Neuroscience.
Hobbies: Filmmaking, Painting, Photography, Pole Vaulting, Gymnastics, Rubik's Cube (Blindfolded).

For more information and projects, visit my website: `alejandro-arguelles.github.io/web`