Alejandro ARGÜELLES

MSc in `Mathematics` and `AI` at

MVA — Mathematics Vision Learning

ENS Paris Saclay

Research-oriented student seeking internship and PhD opportunities in **Reinforcement Learning**, **Representation Learning**, and **Interpretability**. (Availability: April 2026 →)

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EXPERIENCE

Chief of Deep Learning Estimation — Autonomous (Driverless) Formula Student Car TLS'e Racing

2024 – 2025

`Autonomous Driving`   `EKF + Deep Estimation`   `Scrum • Integration`

- Led the Driverless Estimation division to develop estimation pipelines combining Extended Kalman Filters with neural estimators.
- Fused IMU, GPS and LiDAR; integrated with perception and planning for closed-loop autonomy.

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

- Built a private VS Code extension for automated refactoring with LLMs.
- Applied LoRA fine-tuning, RAG, multi-agent orchestration, and diffusion for synthetic data.
- Improved a published *God Class* detector's F1 score ($0.53 \rightarrow 0.58$).

Student Consultant Upsilon Student Tech Consulting 2023

- Designed communication strategies and visuals for clients and partners.

EDUCATION

Master — MVA Mathematics, Vision & Learning ENS Paris-Saclay Sep 2025 – Apr 2026

Advanced coursework in modern machine learning theory and applications. Focus on **Reinforcement Learning**, theoretical underpinnings of deep networks, and geometric/topological methods for data analysis and imaging.

Reinforcement Learning   **Theoretical Foundations of Deep Learning**   **Representation Learning**

`Optimal Transport`   `Probabilistic Graphical Models`   `Computer Vision`   `Topological Data Analysis`

`Differential Geometry for Imaging`   `LLMs for Code & Proof`   `Multimodal Explainable AI`   `Statistical Learning`

`Graphs in ML`   `Large-Scale Distributed Optimization`

Master — Mathematics & Computer Science for AI Université de Toulouse Sep 2024 – Mar 2025

- **Rank: 1st of the promotion (1/9)**

`Statistics`   `Advanced Probabilities`   `Convex Optimization`   `Deep Learning`   `Information Retrieval`

`Advanced Algorithms`   `Language Theory (Code)`   `Random Simulation`   `Signal Processing`

Degree — Pure Mathematics Université de Toulouse 2020 – 2023

Rank: 1st of the promotion (1/93) — Solid foundation across theoretical mathematics: *analysis, algebra, topology, geometry, combinatorics, graph theory, measure theory, probability*.

AWARDS & OTHERS

- **ANITI Scholarship:** Institute of Natural and Artificial Intelligence in Toulouse.
- **AVENIR Scholarship (2020):** Dialogue Association.
- **Olympiad:** 4th place — 56th Spanish Mathematical Olympiad (Phase I, 2020).
- **Languages:** English C1, French C1, Spanish (Native).
- **Complementary interests:** Cybersecurity, Cryptography, Neuroscience.
- **Hobbies:** Filmmaking, Painting, Photography, Pole Vaulting, Gymnastics, Rubik's Cube (BL).

SKILLS

- **Programming:** Python, Coq, OCaml, R, C, C++, JavaScript
- **Libraries:** PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, Matplotlib, Hugging Face, LangChain, SCIP
- **Soft skills:** Team leadership, communication, problem-solving, adaptability, reliability

école normale supérieure paris—saclay   MATHÉMATIQUES VISION APPRENTISSAGE   Université de Toulouse

TLSe racing   UPSILON   infotel