

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** and **Representation Learning**. (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.

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 → 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

Online Learning

Sequential Learning

Stopping times

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 — IMA 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) during the 1st year — 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

