

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

Automatic Code Refactoring with AI — Internship Infotel Consulting Mar 25 – Aug 25

- 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).

Deep Learning Estimation Lead — Autonomous (Driverless) Formula Student Car TLS'e Racing sep 24 – aug 25

Autonomous Driving EKF + Deep Estimation Scrum • Integration

- Led the Driverless Estimation Team to develop estimation pipelines combining Extended Kalman Filters with neural estimators.

Student Consultant Upsilon Student Tech Consulting sep 22 – aug 23

- Designed communication strategies and visuals for clients and partners.

EDUCATION

Master — MVA Mathematics Vision Learning ENS Paris-Saclay Sep 25 – Apr 26

Advanced coursework in modern machine learning theory and applications. Focus on **Reinforcement Learning**, theoretical underpinnings of deep networks, and probabilistic/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 24 – Mar 25

- 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 sep 20 – may 23

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 (Blindfolded).

SKILLS

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

