

# PAOLO GIARETTA

+1 (617)-216-8494 | [pgiarett@gmail.com](mailto:pgiarett@gmail.com) | [paologiaretta](https://www.paologiaretta.com) | [GiarettaPaolo](https://www.GiarettaPaolo.com) | [Scholar](#) | [Website](#)

## EDUCATION

---

- **Massachusetts Institute of Technology (MIT)** Cambridge, MA, USA  
Master's Thesis Student – Laboratory for Information and Decision Systems (LIDS) Feb. 2026 – Present  
— Working with Prof. Navid Azizan on safe and reliable machine learning for robotic applications, with a focus on hard-constrained diffusion sampling.  
— Publication: *DiRecT: Safe Diffusion-Based Planning via Receding-Horizon Denoising*, P. Giaretta, Z. Li, N. Azizan [Under review at NeurIPS 2026].
- **École Polytechnique Fédérale de Lausanne (EPFL)** Lausanne, Switzerland  
M.Sc. Mechanical Engineering and Data Science – 5.95/6.0 GPA (top 1%) Sep. 2023 – Sep. 2026  
— Coursework: Deep Learning, Reinforcement Learning, Convex Optimization, Applied Machine Learning.  
— Teaching Assistant for the courses *Machine Learning Programming* and *Numerical Flow Simulation*.
- **Politecnico di Milano** Milan, Italy  
B.Sc. Aerospace Engineering – 110 cum laude/110, 29.74/30 GPA (top 1%) Sep. 2020 – Sep. 2023

## EXPERIENCE

---

- **European Space Agency (ESA)** Noordwijk, Netherlands  
Machine Learning Engineer Intern – Advanced Concepts Team Sep. 2025 – Nov. 2025  
— Optimized solar sail trajectories with PPO for low-thrust, long-horizon missions, emphasizing constraint handling and simulation-driven training. Improved transfer times by 20% compared to state-of-the-art genetic baselines.
- **BMW Group** Munich, Germany  
Machine Learning Engineer Intern – Research & Development, Aerodynamics Jan. 2025 – Jul. 2025  
— Researched GNNs and Graph Transformers for next-generation vehicle drag prediction, with emphasis on tire-shape modeling. Optimized for sub-second inference with 1M+ mesh points on a single H100 GPU.  
— Built pipelines for 3D scan acquisition, experiment management, and distributed training/inference.

## RESEARCH PROJECTS

---

- **Inductive Moment Matching for Discrete Language Diffusion** Lausanne, Switzerland  
CLAIRE Laboratory – Prof. Caglar Gulcehre Jun. 2025 – Nov. 2025  
— Adapted Inductive Moment Matching to discrete language diffusion by replacing Gaussian/Laplacian kernels in the MMD loss with information-diffusion kernels. Optimized training and evaluation for dLLMs with 100M+ parameters.
- **Diffusion Based Counterfactual Attacks** Lausanne, Switzerland  
Computer Vision Laboratory – Prof. Pascal Fua, Mathieu Salzmann Sep. 2024 – Jan. 2025  
— Developed adversarial attacks using DDPM-generated counterfactuals to stress-test classifier robustness, implementing adjoint-sensitivity backpropagation through the full stochastic diffusion process.
- **Reinforcement Learning for Design Optimization** Lausanne, Switzerland  
Laboratory for Applied Mechanical Design – Prof. Jürg Alexander Schiffmann Sep. 2024 – Jan. 2025  
— Optimized multi-component actuator designs with PPO, finding Pareto-efficient solutions with fewer samples than genetic optimizers.

## HONORS

---

- **Excellence Fellowship**: scholarship awarded by EPFL to the top 3% of incoming Master's students.
- **Best Freshman Prize**: scholarship awarded by Politecnico di Milano for the highest GPA.
- **Gold Medal** at the International Chemistry Olympiad, IChO 2019.
- **Gold Medal** at the National Chemistry Olympiad, 2019.
- **Bronze Medal** at the Italian Physics Olympiad, 2018 and 2019.

## SKILLS, ACTIVITIES & INTERESTS

---

**Languages:** English (fluent), Italian (native). GRE: (VR: 162, Q: 170, AW: 5.0).

**Extracurricular:** EPFL Changemakers (entrepreneurship program), EPFL Rocket Team (R&D), Skyward Experimental Rocketry (R&D), Fundamentals of Quantum Computing.

**Technical Skills:** Python, C++, Linux, PyTorch, Ansys Fluent, Abaqus, SolidWorks.

**Interests:** Math Puzzles, Competitive Programming, Aviation, 3D Printing, Italian Cooking, Running.