# Francesco Maria Vinciguerra

francescomariavinciguerra@gmail.com linkedin.com/in/francesco-maria-vinciguerra-969078290
Milan, Italy & Lausanne, Switzerland

## Summary

*Applied Mathematics MSc (EPFL)* with experience building end-to-end ML pipelines and agentic workflows.
Strong foundation in probability, optimization, and data analysis.

## Education

EPFL — École Polytechnique Fédérale de Lausanne — Lausanne, Switzerland
**MSc, Applied Mathematics** — *Sep 2025 – Present*
Selected coursework: *Machine Learning; Stochastic Calculus; Statistical Inference; Stochastic Simulation.*

Bocconi University — Milan, Italy
**BSc, Mathematical and Computing Sciences for Artificial Intelligence** (GPA 28/30) *Sep 2022 – Jun 2025*
Thesis: *"An Analysis of Kleiner's Proof of Gromov's Theorem on Groups of Polynomial Growth" supervised by Professor Alessandro Pigati.*

Selected coursework: *Machine Learning,Probability & Statistics; Stochastic Processes; Optimization; Algorithms; Numerical Methods for ODEs.*
Programs: *Exchange — University of Leeds* (*Sep 2024 – Jan 2025*); *Guest student — University of Milan* (*May 2024 – Feb 2025*).

## Work Experience

Accenture — Milan, Italy
*Data and AI Intern* — *Jun 2025 – Sep 2025*

**Agentic systems & orchestration**

- Built multi-agent workflows and standardized orchestration for enterprise use cases (MCP, Microsoft Azure, LangChain, open-source LLMs).
- Strengthened guardrails and observability for internal AI framework/PoCs (prompt flows, tool integration, logging/design patterns).

**Deployment-ready ML & data patterns**

- Co-designed patterns for data pipelines and agentic workflows with emphasis on reliability, latency, and maintainability.

Keywords: `Python, Azure, MCP, LLMs,.`

## Conferences & Workshops

**Reading Course in Algebraic Topology** — Milan, Italy
*Reading Course — with Prof. G. Savarè, Prof. E. Bruè, Prof. A. Pigati* — *2025*
Foundations & applications

- Studied algebra, topology, and algebraic topology with applications to decision theory, physics, and economics.
- Produced a technical report and delivered presentations.

**IAS Winter School: Cryptography and Machine Learning** — Turin
*Advanced Lecture Series* — *Feb 2026*
Participated in advanced lectures on the intersection of cryptography and AI, covering adversarial vulnerabilities, integrity of AI systems, and cryptanalysis tailored to ML.

**IMC Trading Competition** LAUSANNE, SWITZERLAND
*EPFL University* *2025*
Selected among the top 30 students for IMC's market-making workshop and live trading challenge.

---

## Selected Projects

Quasi-Monte-Carlo Methods for Option Pricing
*Python, NumPy, SciPy, Matplotlib*

- Implemented quasi–Monte Carlo (QMC) and pre-integration methods for high-dimensional integrals with kinks/jumps in the integrand, applied to Asian and digital option pricing.
- Analyzed convergence rates and error behavior between Monte Carlo, QMC, and smoothed QMC estimators under varying discretization levels.
- Used stochastic simulation of lognormal asset paths (SDE discretization, Cholesky factorization, and Lévy–Ciesielski construction) to evaluate expected payoffs.
- Benchmarked computational performance and variance-reduction techniques to achieve $10^{-2}$ mean-squared relative accuracy.

Keywords: `Stochastic simulation, QMC, Monte Carlo, option pricing, numerical analysis`.

AI-project-SuBERT (Computer Vision) LINK
*Python, PyTorch, Ultralytics*

- Developed an end-to-end segmentation and recognition pipeline, leveraging synthetic data generation to overcome data scarcity and achieving real-time inference speeds through PyTorch optimization.
- NLP: Engineered a specialized Translation Pipeline for Sumerian glyphs into Italian by fine-tuning and prompting LLMs.

---

## Programming

**Python** (*NumPy, pandas, scikit-learn, PyTorch, OpenCV, Ultralytics, matplotlib*), **R**. **Platforms/Tools:** Microsoft Azure, LangChain, Git.

---