

Filippo Giovagnini

Mathematics PhD @ ICL

Data Scientist @ SP

f.giovagnini23@imperial.ac.uk

filippo.giovagnini@gmail.com

[LinkedIn](#) [Website](#) [GitHub](#)

London, UK

Research Profile

Mathematics PhD candidate at [Imperial College London](#). My work focuses on vortex methods and interacting particle systems, with connections to McKean-Vlasov equations and nonlinear PDEs. This mathematical perspective has led me to study modern machine-learning architectures, particularly transformers and their internal representations. Alongside my research, I have developed practical experience in Python, PyTorch, NLP, model evaluation and unstructured-data pipelines through applied machine-learning work in financial and conversational-data settings.

For more details about my research, projects, and publications, visit <https://filippogiovagnini.github.io/>.

Selected Machine Learning Work

- **Kaggle Silver Medal – NeuroGolf 2026.** Ranked **40th (top 1.4%)** in an AI-agent and ONNX optimization challenge. Built an agent workflow to refine compact ONNX solvers under exact-output, parameter, and memory constraints. [Code](#); [Competition](#).
- **Evolution of Transformer Architectures.** Developing an implementation-driven account of the progression from the original Transformer to modern architectures, analysing the motivation and practical consequences of developments such as KV caching, RoPE, SwiGLU, MoE, SFT. Ongoing.

Machine Learning Experience

Stripe Partners

Data Scientist, Part-time

London, UK

Mar 2026 – Present

- Develop transformer-based statistical pipelines and model-ready features for customer analyses, including PayPal/Venmo and Novo Nordisk.
- Contribute to large-scale conversation-data research; see our latest work on conversational AI in financial judgement and decision-making [here](#).

Aleta Index

Machine Learning Engineer, Part-time

London, UK

Feb 2025 – Feb 2026

- Built real-time NLP pipelines for topic, sentiment, and framing analysis of financial-news streams.

Selected Research Publications

Go to my [website](#) for a complete list.

- **Universality in Deep Neural Networks: An approach via the Lindeberg exchange principle.** With S. Kotitsas and M. Romito, 2026.
- **Non-selection of Lagrangian trajectories in the zero-noise limit for a class of stochastic regularizations.** With L. Galeati and M. Sorella, 2026.
- **A uniform particle approximation to the Navier-Stokes-alpha models in three dimensions with advection noise.** With D. Crisan, 2025.

Education

Imperial College London – PhD in Mathematics – Stochastic Analysis, MFC CDT

London, UK; Dec 2023 – Present

University of Pisa – MSc in Mathematics – 110/110 cum laude, GPA 30/30

Pisa, Italy; 2023

ETH Zürich – Exchange Programme – Quantitative Risk Management and Optimal Transport

Zürich, Switzerland; 2023

University of Pisa – Bsc in Mathematics – 110/110 cum laude, GPA 29.85/30

Pisa, Italy; 2023

Technical Skills

Programming & frameworks: Python, PyTorch, Scikit-learn, NumPy, Pandas, Polars, Git, Linux, C++.

Machine learning: Transformers, NLP, embeddings, agentic workflows, model compression, evaluation, probabilistic modelling, feature engineering, real-time and unstructured-data pipelines.

Research methods: deep-learning theory, high-dimensional probability, stochastic calculus, SDEs/SPDEs, Monte Carlo methods, numerical analysis, statistical learning, optimal transport.

Additional: TA for MSc Stochastic Calculus for Finance at Imperial College Business School (2023–Present); Italian (native), English (fluent), Spanish (conversational).