

Gianluigi Lopardo

Applied Mathematician, PhD

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Professional Experience

- Jul 2025 – ongoing
Research Analyst
International Policy
Analysis Division
[European Central Bank](#)
(Frankfurt, Germany)
- Research and development of machine learning methods for macroeconomic forecasting and policy analysis, exploiting non-traditional data sources*
- Leading oil price forecasting project using LLMs to analyze market reports and developing econometric framework for forecast evaluation
 - Developing AI tools to strengthen the division's analytical framework
 - Providing analytical support to multiple division projects, e.g., the analysis of US tariff threats and cross-border payment costs with stablecoins
- Oct 2024 – May 2025
PhD Trainee
International Policy
Analysis Division
[European Central Bank](#)
(Frankfurt, Germany)
- Research and development of machine learning methods for financial markets and policy analysis, exploiting non-traditional data sources*
- Led research project developing firm-level AI exposure measures using textual analysis, examining impact on financial performance
 - Co-authored [ECB Working Paper](#) (under journal submission) and [VoxEU column](#), presenting findings at internal seminars
 - Proposed and developed *Trump Tariff Threats Index* from analysis of tweets, subsequently integrated into division's policy analysis toolkit
- Sep 2021 – Aug 2024
Teaching Assistant
[Université Côte d'Azur](#)
(Nice, France)
- Led theoretical and practical instruction in mathematics and statistics*
- Delivered lectures for undergraduate and graduate courses in French, including students from economics disciplines
 - Supervised labs, developed teaching materials, managed assessments
- Mar 2021 – Sep 2021
AI Research Intern
[Maasai Team, Inria](#)
(Sophia Antipolis, France)
- Research on explainable AI for business decision-making*
- Developed the [SMACE](#) interpretability method and [Python package](#) for composite decision systems, resulting in a first-authored publication
- Sep 2020 – Feb 2021
ML Engineer Intern
[Alten](#) (Sophia A., France)
- R&D of computer vision solutions to automate document processing*
- Developed and optimized computer vision pipelines to automate document digitization and information extraction

Education

- Sep 2021 – Sep 2024
Ph.D. in Applied Mathematics
[Inria & Université Côte d'Azur](#) (Nice, France)
- Thesis: [Foundation of Machine Learning Interpretability](#)
 - Supervisors: [Prof. Damien Garreau](#) and [Prof. Frédéric Precioso](#)
 - In-depth mathematical research on interpretability methods for machine learning models and algorithms
 - Developed novel interpretability approaches resulting in high-quality publications in top venues, such as [ICML](#), [AISTATS](#), and [ECML](#)
- Oct 2019 – Oct 2021
M.Sc. Mathematical Engineering
[Politecnico di Torino](#)
(Turin, Italy)
- Thesis: [Explainable AI for business decision-making](#)
 - Supervisors: [Prof. Elena Maria Baralis](#) (PoliTo), [Prof. Damien Garreau](#) and [Prof. Frédéric Precioso](#) (UCA/Inria), [Dr. Greger Ottosson](#) (IBM)
 - M.Sc. focus on statistical data science, mathematical modeling and optimization, machine learning, risk management, financial engineering
- Oct 2016 – Oct 2019
B.Sc. in Applied Mathematics
[Politecnico di Torino](#)
(Turin, Italy)
- Thesis: [Quantitative and qualitative analysis on the relation between innovation and economic performances in companies](#)
 - Supervisor: [Prof. Federico Caviggioli](#) (PoliTo)
 - B.Sc. focus on core applied mathematical areas including probability, statistics, scientific computing, and programming

Publications

Peer-Reviewed

Lopardo, G., Precioso, F., Garreau, D., [Attention Meets Post-hoc Interpretability: A Mathematical Perspective](#), Proceedings of the 41st International Conference on Machine Learning (ICML), 2024

Lopardo, G., Precioso, F., Garreau, D., [A Sea of Words: An In-Depth Analysis of Anchors for Text Data](#), Proceedings of the 26th International Conference on Artificial Intelligence and Statistics (AISTATS), 2023

Lopardo, G., Garreau, D., Precioso, F., Ottosson, G., [SMACE: A New Method for the Interpretability of Composite Decision Systems](#), European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD), 2022

Lopardo, G., Precioso, F., Garreau, D., [Understanding Post-hoc Explainers: The Case of Anchors](#), 54es Journées de Statistique (JdS), Société Française de Statistique, 2023

Lopardo, G. and Garreau, D., [Comparing Feature Importance and Rule Extraction for Interpretability on Text Data](#), 2nd Workshop on Explainable and Ethical AI (XAIE @ ICPR), 2022

Working Papers & Policy Publications

Ca' Zorzi, M., Lopardo, G., Manu, A.-S., [Verba Volant, Scripta Manent: What Corporate Earnings Calls Reveal About the AI Stock Rally](#), European Central Bank Working Paper Series No. 3093, 2025

Ca' Zorzi, M., Lopardo, G., Manu, A.-S., [What Corporate Earnings Calls Reveal About the AI Stock Rally](#), VoxEU column, Centre for Economic Policy Research, 2025

Lopardo, G., Precioso, F., Garreau, D., [Faithful and Robust Local Interpretability for Textual Predictions](#), arXiv preprint, 2023

Theses

Lopardo, G. [Foundations of Machine Learning Interpretability](#), PhD thesis, Université Côte d'Azur, 2024

Lopardo, G. [Explainable AI for business decision-making](#), MSc thesis, Politecnico di Torino, 2021

Professional Activities

Award	Young Researcher Prize 2025 by Métropole Nice CdA for “high quality” PhD thesis
Selected Presentations	Presented research at international ML conferences including ICML 2024 (Vienna), AISTATS 2023 (Valencia), ECML 2022 (Grenoble), XAIE @ ICPR 2022 (Montreal); invited talks at Cognizant AI (remote), Maasai (Sophia Antipolis), AI4Media (Florence), and internal ECB seminars (IPA Economic Seminar, AI in Economics Workshop, ML Community Meeting); PhD (Oct 2024) and MSc (Oct 2021) defense
Academic	Reviewer for AISTATS , ECML , KGML workshop ; co-organized NWI Workshop
Open Source Projects	forecast-evaluation (Nov 2025): Python library for comparing forecast accuracy using statistical tests; Corporate Talks (Aug 2025): Dashboards tracking discussion trends in S&P 500 earnings calls, with GenAI discussions classified by sentiment; Hack the Act! (Feb 2025): RAG chatbot for navigating the European Union AI Act
Additional Experience	Visionary (2019-2022, Turin, Italy): Data-driven analysis and optimization for non-profit event operations; JEToP (2016-2018, Turin, Italy): Led IT projects and development for student-run Junior Enterprise; Deputy Head of IT from Nov 2017

Technical skills

Languages	Italian (native), English (fluent), French (proficient)
Programming	Python (advanced), R, MATLAB (proficient), Julia, Stata, SQL, C, Java (intermediate)
ML & NLP	Language Models (OpenAI, Azure, Ollama), retrieval-augmented generation (LangChain, vector DBs), transformer architectures (PyTorch, Hugging Face), interpretability, sentiment analysis, topic modeling
Econometrics & Statistics	Time-series analysis and forecasting, evaluation, risk quantification, causal inference (DiD, panel methods, PSM), statistical inference and pre-asymptotic statistics