Luca Trizio

Mathematical Engineer specialized in Statistical Learning

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Personal Profile

First-year PhD Candidate in Mathematics and Mathematical Engineering graduate from Politecnico di Milano. Currently focusing on Bayesian inverse problems for 3D convection-diffusion PDEs applied to human brain MRI data. Background in statistical learning, mathematical modelling, and optimization.

Work Experience

Scientific visitor *Milan, Italy*

Human Technopole *Sept 2024 - Apr 2025*

- **MSc Thesis**: "Reconstructing the natural history of breast cancer from screening data: Bayesian estimation of semi-Markov mixture models" - **R, STAN**
- Participated in lab meetings, journal clubs, and internal presentations, gaining exposure to interdisciplinary research environments and scientific communication.

Poster presentation *Milan, Italy*

Politecnico di Milano, Human Technopole *Apr 2025*

- Participated in the Data Science for Health and Biology workshop with a poster presentation of my thesis.

Tutoring *Milan, Italy*

Politecnico di Milano *Sept 2021 - Feb 2025*

- Academic Tutor for Undergraduate's courses.

Education

Basque Center of Applied Mathematics (BCAM) *Bilbao, Spain*

First-year PhD candidate in Mathematics *Feb 2026 -*

- Research focuses on Bayesian inverse problems for 3D convection-diffusion PDEs, aiming to estimate infinite-dimensional velocity fields from human brain MRI data. Developed in collaboration with Simula Research Laboratory (Oslo) and BCAM, the project seeks to address the challenges of mapping cerebral fluid dynamics to provide new quantitative insights into neurodegenerative diseases such as Alzheimer's.

University of Basque Country *Bilbao, Spain*

Specialization course in "Applied Artificial Intelligence and its Mathematical Foundations" *Mar 2026 - Jun 2026*

- Postgraduate course in Mathematical Foundations of Applied AI, focusing on the rigorous study of statistics, linear algebra, and advanced implementation techniques of state-of-the-art Artificial Intelligence methods.

Politecnico di Milano *Milan, Italy*

MSc in Mathematical Engineering 110/110 *Sept 2022 - Apr 2025*

- Developed a strong background in statistics, machine learning, optimization, and scientific programming, with a particular interest in **Bayesian methods**. Explored diverse quantitative domains and consistently applied theoretical knowledge to practical, team-based projects with real-world applications.
- Completed an Erasmus semester at the **University of Heidelberg** (March–August 2023) within the **Department of Informatics**, attending advanced courses in **Computational Statistics and Data Analysis** and **Machine Learning**, along with an intensive German language course.

University Projects

Common Atom Model for Leukemia Subtype Classification

Collaborated in a team to build a Bayesian two-level mixture model to cluster leukemia subtypes using protein data. - **C++**

Beat Classifier for PPG Signals

Independently designed a classifier for PPG beats with N/V/S labeling, confidence scores, and custom metrics, using neural networks (NN), convolutional neural networks (CNN), and LSTM architectures. - **Python**

Reinforcement Learning Project

Worked in a group to train a reinforcement learning agent to play Bomberman in a university competition. - **Python**

Skills

Languages	English (Professional), Italian (Native), Spanish (Intermediate)
Programming	Python (with popular libraries: Pandas, NumPy, PyTorch, Scikit-learn), R, C/C++, SQL
Software / Tools	Bash, HPC clusters, MATLAB, Git, LaTeX