

Gianluca Covini

PhD Student in Statistics & Computer Science @ Bocconi · MSc in Mathematics

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👤 gianlucacovini

Research Profile

Research-oriented applied mathematician with background in *analysis*, *probability*, and *optimization*. My research interests focus on **optimal transport** and its connections with *statistics*, *optimization*, and *machine learning*, including *variational methods*, and *gradient-flow perspectives*.

Education

PhD in Statistics & Computer Science Bocconi University

📅 2025 – 2029

📍 Milan, Italy

- **Relevant coursework:** Measure Theory, Optimal Transport, Optimization, Statistical Mechanics, Probability Theory, Theoretical Computer Science, Programming.

MSc in Mathematics (110/110 *cum laude*),
GPA: 29.5/30

University of Pavia

📅 2022 – 2025

📍 Pavia, Italy

- **Core areas:** Functional Analysis, Advanced Probability, Stochastic Processes, Numerical Analysis, Machine Learning.

- **Master's thesis:** *Dynamic Parameter Policies for Leading Ones on Enhanced State Spaces*.

Supervisors: Prof. Carola Doerr (Sorbonne Université/CNRS), Prof. Stefano Gualandi (University of Pavia).

Alumnus of the Merit-Based Program Almo Collegio Borromeo

📅 2022 – 2024

📍 Pavia, Italy

Advanced courses and reading groups in analysis and machine learning; participation in selective academic activities.

BSc in Mathematics (110/110 *cum laude*),
GPA: 29.8/30

University of Pavia

📅 2019 – 2022

📍 Pavia, Italy

- **Foundations:** Analysis, Algebra, Geometry, Probability and Statistics, Numerical Analysis, Optimization.

- **Bachelor's thesis:** *Ewens Sampling Formula and Applications to Population Biodiversity*.

Supervisor: Prof. Emanuele Dolera

Research Experience

Research project — Statistical Optimal Transport

📅 2024 – Present

📍 Remote

- Study of *entropic approximations of the Knothe–Rosenblatt rearrangement for filtering*
- **Supervisor:** Prof. Carlo Ciliberto (UCL).

Research project — Optimization Under Uncertainty

📅 2024

📍 Remote

- Investigation of **submodular structures distributionally robust optimization**.
- **Supervisors:** Prof. Angelos Georghiou (University of Cyprus) and Rosario Paradiso (VU Amsterdam).

Statistics Summer Research Intern

Statistical Laboratory, University of Cambridge

📅 2024

📍 Cambridge, UK

- Study of **statistical properties of stochastic optimization problems**.
- **Supervisors:** Prof. Qingyuan Zhao, Tobias Frei- dling.

Research Intern — Operations Research

LIP6, Sorbonne Université/CNRS

📅 2023 – 2024

📍 Paris, France

- Research on **state-dependent regularization parameter control for genetic algorithms**.
- **Supervisor:** Prof. Carola Doerr.
- **Outcome:** Master's thesis and **peer-reviewed conference paper** (FOGA 2025).

Machine Learning Researcher

Sphaera

📅 2023 – 2024

📍 Hybrid

- Research-oriented development of *learning-based tracking models*, combining **neural networks** and **computer vision techniques**.
- **Supervisors:** Dr. Mirko Messori, Dr. Giuseppe Marseglia

Publications

G. Covini, D. Antipov, C. Doerr.

Enhancing Parameter Control Policies with State Information.

FOGA 2025, Leiden, Netherlands.
arXiv:2507.08368.

Teaching

- **Academic Tutor** — Calculus and Probability, University of Pavia (2021–2025).
- Responsible for exercise sessions and problem-solving tutorials, for undergraduate courses in Calculus (Engineering programs) and Probability (Artificial Intelligence and Mathematics programs).
- **Lecturer** — *Advanced Computational Statistics*, Almo Collegio Borromeo (2023).
 - Designed and taught an advanced course covering statistical modeling, simulation, and computational methods in *R*, with applications to real-world data analysis.

Selected Schools

- **Festum Pi**, Analysis and Machine Learning (2025).
- **MaLGa**, Theoretical Foundations of Machine Learning (2025).
- **StatML–Bocconi Spring School**, Computational Optimal Transport and Statistical Learning with Missing Values (2025).
- **NTNU**, PhD Winter School on Advanced Stochastic Optimization (2024).
- **Copenhagen University**, PhD School of Stochastic Programming (2024).

Scholarships

- **Full PhD Scholarship**, Bocconi University (2025–2029).
- **Merit-based scholarships**, Almo Collegio Borromeo.
- **Erasmus+ Traineeship Grant** (LIP6, Paris).

Talks

ROADEF 2025 — Conference presentation (French OR Society).
Presentation of Master's thesis research on state-dependent parameter control.

WIAS Berlin — Public seminar on variational inference via Wasserstein gradient flows as part of PhD admission.

Certifications

- **TOEFL iBT 106/120 (C1)**, *ETS*.
- **GRE General Test: Q168, V162**, *ETS*.
- **Additional certifications**: Getting Started with Deep Learning (NVIDIA, 2023); Introduction to Startups (Pack, 2022); IBM Data Science (Coursera, 2021); DELF B1 (Ministère de l'Éducation Nationale, 2016).

Technical Skills

Scientific Computing

Python NumPy PyTorch Julia Matlab
R

Optimization Software

Pyomo Gurobi CPLEX

Research Workflow

Git Linux Basic HPC Multiprocessing

Languages

Italian (native) · **English** (C1) · **French** (B1)

⁰I give consent to process my data with the purpose of the recruitment process, in accordance to the Regulation of the European Parliament 679/2016, regarding the protection of natural persons and free movement of such data.