



# Gianluca Covini

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

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## 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 LeadingOnes 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 Freidling.

### 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

PythonNumPyPyTorchJuliaMatlab

R

Optimization Software

PyomoGurobiCPLEX

Research Workflow

GitLinuxBasic HPCMultiprocessing

# Languages

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

<sup>0</sup>I 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.