Gianluca Covini

PhD Student in Statistics & Computer Science · Optimal Transport · ML · Optimization
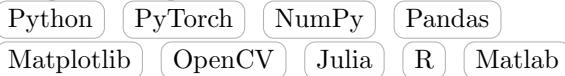
@ gianluca.covini@phd.unibocconi.it   ⚲ gianlucacovini.github.io   ⎇ gianlucacovini

Technical Skills

Programming

Python   PyTorch   NumPy   Pandas
Matplotlib   OpenCV   Julia   R   Matlab

Optimization & OR

Pyomo   Gurobi   CPLEX
Stochastic Programming   Robust Optimization

Methods

Optimal Transport   Statistical Learning
Kernel Methods   Convex Analysis
Dynamical Systems

Tools

Git   Linux   AWS
Multiprocessing   Basic HPC
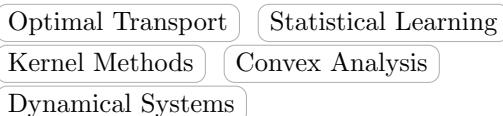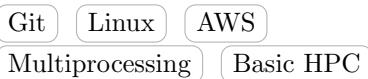
Education

PhD in Statistics & Computer Science

Bocconi University

📅 2025 – 2029   📍 Milan, Italy

Focus on optimal transport, theoretical machine learning and optimization. Relevant topics: Theoretical Computer Science, Measure Theory, Optimal Transport, Statistical Mechanics, Optimization, Probability Theory.

MSc in Mathematics (110/110 *cum laude*)

University of Pavia

📅 2022 – 2025   📍 Pavia, Italy

Thesis: *Dynamic Parameter Policies for LeadingOnes on Enhanced State Spaces* (algorithm configuration; co-supervised with Sorbonne Université/CNRS). Core courses: Functional Analysis, Advanced Probability, Finite Elements Method, Stochastic Processes, Machine Learning, Econometrics.

BSc in Mathematics (110/110 *cum laude*)

University of Pavia

📅 2019 – 2022   📍 Pavia, Italy

Main topics: Analysis, Algebra, Geometry, Probability and Mathematical Statistics, Numerical Analysis, Optimization Algorithms and Models for Data Science, Programming.

Languages

Italian (native)
English (C1, TOEFL iBT 106/120)
French (B1, DELF)

Research Experience

Researcher — Statistical Optimal Transport

University College London

📅 2024 – Present   📍 Remote

Informal collaboration on *Bayes Rule via Entropic Approximation of the Knothe–Rosenblatt Rearrangement*. Work on algorithmic optimal transport, entropic regularization and applications to Bayesian inference and statistical learning. Supervisor: Prof. Carlo Ciliberto.

Researcher — Optimization Under Uncertainty

University of Cyprus & Vrije Universiteit Amsterdam

📅 2024   📍 Remote

Research on submodular structures for distributionally robust optimization. Studied tractable formulations and structural properties of uncertainty sets for decision-making under uncertainty. Supervisors: Prof. Angelos Georghiou, Prof. Rosario Paradiso.

Statistics Summer Research Intern

Statistical Laboratory, University of Cambridge

📅 2024   📍 Cambridge, UK

Project on the statistical properties of stochastic optimization problems via simulation studies. Analysed asymptotic behaviour, variance and performance trade-offs for different optimization procedures. Supervisors: Prof. Qingyuan Zhao, Tobias Freidling.

Research Intern — Operations Research

LIP6, Sorbonne Université/CNRS

📅 2023 – 2024   📍 Paris, France

Developed dynamic parameter control policies for genetic algorithms in Python. Work led to a Master's thesis and a publication at FOGA 2025 on state-dependent parameter control.

Machine Learning Researcher

Sphaera

📅 2023 – 2024   📍 Hybrid

Developed a tracking algorithm for 5-a-side soccer using Python (NumPy, PyTorch, OpenCV, Matplotlib). Implemented data processing, model training and evaluation for a confidential computer vision pipeline.

Publications

Conference paper G. Covini, D. Antipov, C. Doerr. *Enhancing Parameter Control Policies with State Information.* FOGA 2025, Leiden, Netherlands. arXiv:2507.08368.

Certifications

TOEFL iBT 106/120 (C1)

GRE: Quantitative 168, Verbal 162

NVIDIA "Getting Started with Deep Learning" (2023)

IBM Data Science (Coursera, 2021)

Awards & Scholarships

Bocconi PhD full scholarship (2025–2029)

Multiple merit scholarships from Almo Collegio Borromeo

KAUST Applied Mathematics School scholarship

Erasmus+ Traineeship grant (LIP6, Paris)

Other Experience

IT Consultant & Head of IT
JECO Pavia

📅 2021 – 2023   📍 Pavia, Italy

Worked on data management and digitalization projects for SMEs. As Head of IT, managed team members and yearly strategy using OKR methodology.

Volunteer
Sant'Egidio — Youth for Peace

📅 2022   📍 Pavia, Italy

Recreational and educational activities with children in difficult situations; support against school dropout.

Talks & Presentations

ROADEF 2025 — French OR Society
Champs-sur-Marne, France

📅 Feb 2025

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esented Master's thesis work on dynamic parameter policies for randomized local search on LeadingOnes. Abstract published in the ROADEF 2025 Book of Abstracts.

Teaching

Teaching Assistant
University of Pavia

📅 2021 – 2025   📍 Pavia, Italy

Supported courses in Calculus (Engineering Bachelor) and Probability (Artificial Intelligence and Mathematics Bachelor programs).

Instructor — Advanced Computational Statistics
Almo Collegio Borromeo

📅 2023   📍 Pavia, Italy

Designed and taught an advanced computational statistics course in R, covering theory and applications to real-world data.

Selected Training

Festum Pi Summer School in Analysis and Machine Learning (2025)
MaLGa "Theoretical Foundations of Machine Learning" School (2025)
StatML–Bocconi Spring School, Oxford (2025)
PhD Winter School on Advanced Stochastic Optimization, NTNU (2024)
Copenhagen PhD School of Stochastic Programming (2024)
Intensive School in Data Science, ISAGS (2020)