Ambrogio Maria Bernardelli

Curriculum Vitae et Studiorum

Research Positions

`01/2025-present` Postdoctoral researcher, University of Pavia, Department of Mathematics, for the project *Stochastic optimization for electrical energy storage systems and renewable energy sources.*

Education

Ph.D. in Computational Mathematics and Decision Sciences
University of Pavia and Università della Svizzera Italiana

Cycle: XXXVII.
Dates: 01/2022 – 12/2024.
Thesis title: *Methods for Combinatorial Optimization and Their Applications.*
Supervisor: Prof. Stefano Gualandi.

M.Sc. in Mathematics
University of Pavia

Dates: 10/2019 – 09/2021.
Thesis title: *Aspetti Algebrici e Combinatori della Teoria degli Operad* (Algebraic and Combinatorial Aspects of Operad Theory).
Supervisor: Prof. Alberto Canonaco.
Grade: 110/110 cum laude.

B.Sc. in Mathematics
University of Pavia

Dates: 10/2016 – 09/2019.
Thesis title: *Rappresentazioni Lineari di Gruppi Finiti* (Linear Representations of Finite Groups).
Supervisor: Prof. Alberto Canonaco.
Grade: 110/110 cum laude.

Conferences Participation

Conferences and workshops where my works have been presented. Invited talks are labeled with †.

`07/2024` IPCO 2024, Wrocław, Poland. Poster.

`07/2024` ISMP 2024 (presented by Simone Milanesi), Montréal, Canada†.

`06/2024` EURO 2024 (presented by Simone Milanesi), Copenhagen, Denmark†.

`06/2024` The HEXAGON Workshop on power grids, Bergamo, Italy†.

`05/2024` ISCO 2024, San Cristóbal de La Laguna, Spain.

`10/2023` 2023 INFORMS Annual Meeting (presented by Stefano Gualandi), Phoenix, Arizona†.

`06/2023` LION17, Nice, France. The work *The BeMi Stardust: a Structured Ensemble of Binarized Neural Network* presented here got accepted for the conference proceedings.

`02/2023` 7th AIROYoung Workshop (presented by Simone Milanesi), Milano, Italy.

`02/2023` 7th AIROYoung Workshop, Milano, Italy.

01/2023 The Mathematics of Machine Learning (presented by Simone Milanesi), Pisa, Italy.

11/2022 Matematica per l'Intelligenza Artificiale e il Machine Learning - Giovani ricercatori, Torino, Italy.

09/2022 YAMC 2022, Arenzano, Italy.

07/2022 ICCOPT / MOPTA 2022, Lehigh University, Bethlehem, Pennsylvania. The work *Scheduling elective surgeries under uncertainty: a multi-objective stochastic approach* presented here got the second place out of 13 submissions at the 14th AIMMS-MOPTA Optimization Modeling Competition.

Publications

Journal Articles

[J2] Bernardelli, A. M., Gualandi, S., Milanesi, S., Lau, H. C., Yorke-Smith, N. (2024). Multiobjective Linear Ensembles for Robust and Sparse Training of Few-Bit Neural Network. INFORMS Journal on Computing.

[J1] Bernardelli, A.M., Bonasera, L., Duma, D., Vercesi, E. (2024). Multi-objective stochastic scheduling of inpatient and outpatient surgeries. Flex Serv Manuf J.

Conference Proceedings

[P1] Bernardelli, A.M., Gualandi, S., Lau, H.C., Milanesi, S. (2023). The BeMi Stardust: A Structured Ensemble of Binarized Neural Networks. In: Sellmann, M., Tierney, K. (eds) Learning and Intelligent Optimization. LION 2023. Lecture Notes in Computer Science, vol 14286. Springer, Cham.

Preprints

[A1] Bernardelli, A. M., Vercesi, E., Gualandi, S., Mastrolilli, M., Gambardella, L. M. (2024). On the integrality gap of the Complete Metric Steiner Tree Problem via a novel formulation. arXiv preprint arXiv:2405.13773. Currently under revision at SIAM Journal on Optimization.

Awards

04/2023 Grant awarded by the TAILOR Connectivity Fund for a one-month visiting period at TU Delft, Delft, The Netherlands.

07/2022 2nd place out of 13 submissions at the 14th AIMMS-MOPTA Optimization Modeling Competition.

09/2019 Department scholarship for the Master's degree program in Mathematics.

Visiting Periods

09/2023-02/2024 I spent six months in USI (Università della Svizzera italiana), Lugano, Switzerland, as part of my Ph.D. joint program, working on integrality gap problems with Professor Luca Maria Gambardella.

04/2023 I spent one month in TU Delft, Delft, The Netherlands, as a guest of STAR Lab, working on AI and optimization with Dr. Neil Yorke-Smith.

Conference Organization

05/2025 I was one of the organizers of the COMPMAT Spring Workshop 2025, that was held at University of Pavia on May 23, 2025.

02/2025 I was part of the organizing committee of the 9th AIROYoung Workshop, that was held at University of Pavia from the 26th to the 28th of February, 2025.

2022-2024 I was a co-organizer of Caffè Beltrami, a cycle of seminars aimed at introducing different areas of research in mathematics to Bachelor's and Master's students.

Teaching Activities

Teaching

2024/2025 511180 – Algorithms for Optimization ([LM-16] Finance), University of Pavia, 22 hours. Co-teaching with Prof. Daniele Boffi, who held the other 22 hours of the course.

Supervising

2023/2024 *The Cloven Travelling Salesman: a new Approach to the ATSP Integrality Gap Estimation*, Alessandro Sosso, Master's Thesis in Mathematics at University of Pavia, co-supervised with Prof. Stefano Gualandi.

2022/2023 *On the exactness of Jabr-like models and distributionally robust stochastic optimal power flow*, Gabor Riccardi, Master's Thesis in Mathematics at University of Pavia, co-supervised with Prof. Stefano Gualandi.

2022/2023 *Analisi di architetture per Binarized Neural Networks*, Andrea Panno, Bachelor's Thesis in Bioengineering at University of Pavia, co-supervised with Prof. Stefano Gualandi and Simone Milanesi.

Tutoring

2021/2022 Tutoring activity for the course *Geometria e Algebra* that was held by prof. Francesco Bonsante for the Bachelor's degree program *Bioingegneria* at University of Pavia. 40 hours.

2021/2022 Tutoring activity for first-year students attending the Bachelor's degree program in Mathematics at the University of Pavia. 40 hours.

Personal Informations

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Research group website: compopt.it

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