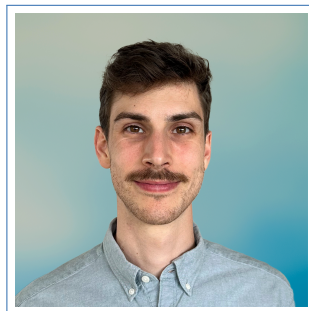


Marco Caoduro

Researcher and Lecturer
in Computer Science

✉ caoduro@lipn.univ-paris13.fr
🌐 marco.caoduro.com



Professional Experience

- Sept. 2026 – **Temporary Lecturer and Researcher (ATER)**, *LIPN, Université Sorbonne Paris Nord (USPN)*,
present Villetaneuse, France
- Dec. 2022 – **Postdoctoral Researcher**, *Sauder School of Business & Computer Science Department, University
of British Columbia*, Vancouver, Canada
Dec. 2025
Supervisors: Joseph Paat (Sauder School of Business) and Bruce Shepherd (CS Department)

Education

- Oct. 2019 – **PhD in Combinatorial Optimization**, *G-SCOP Laboratory, Université Grenoble Alpes*, France
Nov. 2022 Thesis: *Geometric challenges in combinatorial optimization: packing, hitting, and coloring rectangles*
Advisor: András Sebő (CNRS, G-SCOP) — Co-advisor: Matěj Stehlík (IRIF, Université Paris Cité)
- Oct. 2017 – **Master's Degree in Mathematics**, *Università degli Studi di Verona*, Italy, 110/110 *cum laude*
Sept. 2019 Thesis: *Dypergraph connectivity augmentation: an uncrossing approach*
Supervisors: Giuseppe Mazzuocollo and András Frank
- Feb. – Aug. **Erasmus+ Research Stay**, *Egerváry Research Group on Combinatorial Optimization, ELTE*, Bu-
2019 dapest, Hungary
- Sept. 2018 – **Erasmus+ Study Exchange**, *Facultad de Matemáticas, Universidad de Murcia*, Spain
Feb. 2019
- Oct. 2014 – **Bachelor's Degree in Applied Mathematics**, *Università degli Studi di Verona*, Italy, 110/110
Sept. 2017 *cum laude*
Thesis: *A Markov Chain approach to dependent opinions analysis with residuals treatment*
Supervisor: Luca Di Persio

Publications

Journals

- [1] Caoduro M., Sebő A., *Packing, hitting, and colouring squares*, Journal of Computational Geometry, Vol. 15, No. 1, Dec. 2024.
- [2] Ardévol Martínez V., Caoduro M., Feuilloley L., Narboni J., Pournajafi P., Raymond J.-F., *A lower bound for constant-size local certification*, Theoretical Computer Science, Vol. 971, 114068, Sept. 2023. Extended version of [6].
- [3] Caoduro M., Cslovjceksek J., Pilipczuk M., Węgrzycki K., *On the independence number of intersection graphs of axis-parallel segments*, Journal of Computational Geometry, Vol. 14, No. 1, Sept. 2023.
- [4] Caoduro M., Lichev L., *On the Boxicity of Kneser Graphs and Complements of Line Graphs*, Discrete Mathematics, Vol. 346, Issue 5, 113333, May 2023.

Conferences

- [5] Caoduro M., Sebő A., *Boxicity and Interval-Orders: Petersen and the Complements of Line Graphs*, 31st International Symposium on Graph Drawing and Network Visualization, Oct. 2023.
- [6] Ardévol Martínez V., Caoduro M., Feuilletoy L., Narboni J., Pournajafi P., Raymond J.-F., *Lower bound for constant-size local certification*, 24th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2022), Clermont-Ferrand, France, Nov. 2022. **Best Paper Award**.

Submitted Papers

- [7] Caoduro M., Neuwohner M., *Boxicity and Threshold Dimension of Zero Divisor Graphs*, arXiv:2608.27381, Aug. 2026.
- [8] Caoduro M., Evans W., Gaede T., *A polynomial algorithm to compute the boxicity and threshold dimension of complements of block graphs*, arXiv:2510.02199, Oct. 2025.
- [9] Caoduro M., Sebő A., *On the Boxicity of Line Graphs and of Their Complements*, arXiv:2501.05049, Jan. 2025. Extended version of [5].
- [10] Caoduro M., Neuwohner M., Paat J., *A characterization of unimodular hypergraphs with disjoint hyperedges*, arXiv:2411.10593, Nov. 2024.

PhD Thesis

- [11] Caoduro M., *Geometric challenges in combinatorial optimization: packing, hitting, and coloring rectangles*, PhD Thesis, Université Grenoble Alpes, Nov. 2022.

Student Supervision

- Dec. 2023 – **PIMS Virtual Experimental Mathematics Lab**, PIMS, Canada
- Apr. 2024 Supervised three undergraduate students on the project *Exploring Boxicity: Graph Representations in Multidimensional Spaces*.
- May – Sept. **Master's Internship**, Université Grenoble Alpes, IM² AG, France
- 2021 Supervised Thomas Boudier on the project *Edge-coloring problems for geometric intersection graphs*.

Talks

Boxicity and Graph Representations

- Oct. 2026 **AOC Seminar, LIPN**, Université Sorbonne Paris Nord, Villetaneuse, France
How Many Dimensions Does a Graph Need? Computing Co-Boxicity Block by Block
- June 2026 **TALGO Seminar, ENS**, École normale supérieure, Paris, France
Boxicity: How Many Dimensions Does a Graph Need?
- Mar. 2026 **Graph Theory Seminar, IRIF**, (online), Université Paris Cité, France
Boxicity: How Many Dimensions Does a Graph Need?
- Feb. 2026 **Seminar, Laboratoire Informatique de Bourgogne (LIB)**, (online), Université de Bourgogne Europe, Dijon, France
Boxicity: How Many Dimensions Does a Graph Need?
- Feb. 2026 **ACRO Seminar, Laboratoire d'Informatique et Systèmes (LIS)**, (online), Aix-Marseille Université, Marseille, France
Boxicity: How Many Dimensions Does a Graph Need?
- Mar. 2025 **Discrete Math Seminar**, University of Victoria, Canada
Boxicity: Representing Graphs with Low-Dimensional Boxes
- Sept. 2023 **West Coast Optimization Meeting (WCOM 2023)**, Simon Fraser University, Surrey, Canada
Boxicity and Interval-Orders: Petersen and the Complements of Line Graphs
- June 2023 **CanADAM 2023**, Winnipeg, Canada
On the Boxicity of the Kneser Graph $K(n, 2)$

Optimization

- Apr. 2025 **PIMS M2PI Case Studies Virtual Seminar**, *University of British Columbia*, Vancouver, Canada
Optimizing Phase Balancing in Electric Grids: A Mixed Integer Programming Approach
- Oct. 2024 **INFORMS Annual Meeting**, *Seattle, USA*
A Characterization of Unimodular Hypergraphs with Disjoint Hyperedges
- Sept. 2024 **West Coast Optimization Meeting (WCOM 2024)**, *Vancouver, Canada*
A Characterization of Unimodular Hypergraphs with Disjoint Hyperedges
- Feb. 2024 **Seminar, Institute of Applied Mathematics**, *University of British Columbia*, Vancouver, Canada
Algorithmic Challenges Surrounding Colourful Carathéodory's Theorem

Hitting and Packing

- Feb. 2023 **Seminar, Algorithms Lab**, *University of British Columbia*, Vancouver, Canada
On the Packing and Hitting Numbers of Axis-Parallel Segments
- Oct. 2022 **ACRO Seminar, Laboratoire d'Informatique et Systèmes (LIS)**, *Aix-Marseille Université*, Marseille, France
Hitting and Packing Squares
- July 2022 **11th International Colloquium on Graph Theory and Combinatorics (ICGT 2022)**, *Montpellier, France*
On the Hitting/Packing Ratio of Axis-Parallel Segments
- June 2022 **Journées de Géométrie Algorithmique 2022**, *Lyon, France*
On the Hitting/Packing Ratio of Axis-Parallel Segments
- Mar. 2022 **Discrete Mathematics Seminar, G-SCOP Laboratory**, *Université Grenoble Alpes*, Grenoble, France
Hitting and Packing Squares
- Nov. 2021 **Graph Theory Seminar, IRIF**, *Université Paris Cité*, France
Hitting and Packing Squares
- Nov. 2021 **Journées Graphes et Algorithmes 2021 (JGA 2021)**, *(online)*
Hitting and Packing Rectangles with a Bounded Aspect Ratio

Teaching Experience

Teaching Summary

Year	Course	Hours	Level	Institution	Role
Fall 2026	Imperative Programming 1	36h	BSc1	USPN	Lecturer
	Algorithm Design	36h	BSc3	USPN	Lecturer
	Introduction to Programming	30h	Prep1	Sup Galilée, USPN	Lecturer
	Graphs	18h	Eng1	Sup Galilée, USPN	Lecturer
	Computer Science Fundamentals	24h	Eng1	Sup Galilée, USPN	Lecturer
Summer 2024	Logistics and Operations Management	30h	BSc2	UBC Sauder	Course instructor
Spring 2022	Algorithms and Data Structures	18h	Eng1	ENSIMAG, Grenoble INP	Teaching assistant
Fall 2021	Graphs and Applications	18h	MSc1	PHELMA, Grenoble INP	Teaching assistant
Fall 2020	Algorithms and Programming in Python	64h	BSc1	Univ. Grenoble Alpes	Teaching assistant
Spring 2018	Operations Research	16h	BSc3	Univ. Verona	Tutor
Fall 2017	Stochastic Processes	16h	BSc3	Univ. Verona	Tutor
Total		306h			

Teacher Training

- Feb. – Mar. 2023 **Instructional Skills Workshop**, *UBC Centre for Teaching, Learning and Technology*, Canada
- 6 – 8 Dec. 2021 **Introductory Workshop to the Academic Profession**, *RES label, Université Grenoble Alpes*, Centre l'Escandille, Autrans
- Mar. – Sept. 2021 **Teacher Training Program (24 CFU)**, *Università degli Studi di Verona, Department of Human Sciences*, Italy
Courses: Teaching Methodology, Pedagogy, Anthropology, Psychology of Learning.

Workshops and Industry Projects

- May – July 2025 **PIMS Math to Power Industry 2025 (co-organizer)**, *Vancouver, Canada*
Project: *Smart Access to the BC Building Code via Retrieval-Augmented Generation*.
Industry partner: Clause Technology.
- May – July 2024 **PIMS Math to Power Industry 2024 (co-organizer)**, *Vancouver, Canada*
Project: *Fixing Phase Imbalances in an Awesense Grid: An Integer Programming Approach*.
Industry partner: Awesense.

Skills

- Academic Graph theory, Discrete geometry, Combinatorial optimization, Linear and integer programming, Algorithms, Mathematical modeling
- Computing $\text{\LaTeX}$, Python, JAX, SageMath, Matlab, Gurobi, PuLP
- Languages Italian (native), French (fluent), English (IELTS 8.0/9.0), Spanish (intermediate)

Certifications

- Deep Learning Specialization – DeepLearning.AI
- Machine Learning Specialization – DeepLearning.AI & Stanford University

References

- András Sebő** (*research reference*) – Research Director (DR), CNRS, G-SCOP Lab., France
andras.sebo@grenoble-inp.fr
- Joseph Paat** (*research reference*) – Associate Professor, Sauder School of Business, UBC, Canada
joseph.paat@sauder.ubc.ca
- Moritz Mühlenthaler** (*teaching reference*) – Associate Professor (MCF), UGA, France
moritz.muehlenthaler@grenoble-inp.fr
- Will Evans** (*supervision reference*) – Emeritus Professor, CS Department, UBC, Canada
will@cs.ubc.ca