

Gabriele Dragotto

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Education

Ph.D. in Mathematics | Polytechnique Montréal

Montréal, Canada

Canada Excellence Research Chair in Data Science for Real-time Decision-Making, Gerad and CIRRELT

Jan 2019 – Feb 2022

Thesis: “Mathematical Programming Games” - Nominated for the Best Thesis Award
Advisor: Dr. [Andrea Lodi](#)

B.Sc in Engineering and Management | Politecnico di Torino

Torino, Italy

Department of Management and Production Engineering

Sep 2015 – Mar 2018

Thesis: “Introducing Fairness and Diversification in WTA and ATP Tennis Tournaments Generation”
Scholarship: *Giovani Talenti* (top 2% university-wide)
Graduated ahead (a semester) of the standard schedule
Erasmus Scholarship: [Tampere University of Technology](#), Finland

Research Interests

My research deepens our understanding of *multi-agent decision-making in systems where selfish and mutually-interacting agents solve complex optimization problems* (e.g., non-convex problems). I combine rigorous optimization tools with algorithmic game theory to *design data-driven algorithms and theoretical insights to guide the agents toward efficient and socially-beneficial outcomes*.

Research Areas: Optimization, Mixed Integer Programming, (Algorithmic) Game Theory, Machine Learning

Experience

Postdoctoral Research Associate | Princeton University

Princeton (NJ), U.S.

Department of Operations Research and Financial Engineering

Sep 2022 – Pres.

Associated with the Department of Electrical and Computer Engineering
Funded by the [Metropolis Project](#)
Supervisors: Dr. [Bartolomeo Stellato](#) and Dr. [Jaime Fisac](#)

Researcher | Polytechnique Montréal

Montréal, Canada

Canada Excellence Research Chair in Data Science for Real-time Decision Making

Mar 2022 – July 2022

Co P.I. of “Game-Theoretic Security Posture Modelling for Cloud Applications” with Ericsson Canada Inc.
Industrial funding awarded: 50.000 \$CAD

Assistant Researcher | Politecnico di Torino

Torino, Italy

Department of Management and Industrial Engineering

Apr 2018 – Dec 2019

Project: “Models and Algorithms of Mathematical Programming and Artificial Intelligence for problems of Combinatorial Design”
Supervisors: Dr. [Federico Della Croce](#) and Dr. [Fabio Salassa](#)

Innovation Engineer | CEAN S.p.A.

Trofarello, Italy

CEAN Color

Sep 2015 – Mar 2018

Project Manager: Salesforce CRM, ERP systems, Asana Performance Evaluation
Founder of [Cean Color](#), a creative department now employing 10+ people
Organizer of the [Google Startup Weekend Retail Torino 2016](#)
Creator of [CEAN360](#) for iOS

Summer Intern | CEAN S.p.A.

Trofarello, Italy

CEAN IT

Summer 2013, 2014

Data Collection Manager - Small and medium-sized stores

Awards, Prizes, and Grants

- Game Theoretic Security Posture Modelling for Cloud Applications (co-P.I. \$50.000 CAD) *Ericsson Canada Inc.* Mar 2022
- Best Thesis Award Nomination 2022 for “Mathematical Programming Games” *Polytechnique Montréal (ongoing competition)* Feb 2022
- Doctoral Excellence Scholarship *CIRRELT (Canada)* 2021-2022
- Best Presentation Award - “When Nash meets Stackelberg” *AIRO Young - the young chapter of the Italian Operations Research Society* Feb 2021
- Poster Finalist, Travel Award - “When Nash meets Stackelberg” *Mixed Integer Programming Workshop* May 2020
- Erasmus Scholarship *Politecnico di Torino and Tampere University of Technology* 2017
- “Giovani Talenti” Scholarship *Politecnico di Torino* 2015-2018

Publications

Working Manuscripts

- Gabriele Dragotto and Amine Boukhtouta. “The Critical Node Game: Resilient Network Design via Integer Programming Games”. In: *Working paper* (2021)

Pre-prints and Submitted Manuscripts

- Gabriele Dragotto and Rosario Scatamacchia. “The ZERO Regrets Algorithm: Optimizing over Pure Nash Equilibria via Integer Programming”. In: *arXiv abs/2111.06382* (2021). URL: <https://arxiv.org/abs/2111.06382>
- Margarida Carvalho, Gabriele Dragotto, Andrea Lodi, and Sriram Sankaranarayanan. “The Cut and Play Algorithm: Computing Nash Equilibria via Outer Approximations”. In: *arXiv abs/2111.05726* (2021). URL: <https://arxiv.org/abs/2111.05726>
- Gabriele Dragotto, Sriram Sankaranarayanan, Margarida Carvalho, and Andrea Lodi. “ZERO: Playing Mathematical Programming Games”. In: *arXiv abs/2111.07932* (2021). URL: <https://arxiv.org/abs/2111.07932>
- Margarida Carvalho, Gabriele Dragotto, Felipe Feijoo, Andrea Lodi, and Sriram Sankaranarayanan. “When Nash Meets Stackelberg”. In: *arXiv abs/1910.06452* (2019). URL: <https://arxiv.org/abs/1910.06452>

Journal Articles

- Federico Della Croce, Gabriele Dragotto, and Rosario Scatamacchia. “On fairness and diversification in WTA and ATP tennis tournaments generation”. en. In: *Annals of Operations Research* 316.2 (Sept. 2022), pp. 1107–1119. ISSN: 0254-5330, 1572-9338. URL: <https://link.springer.com/10.1007/s10479-020-03517-8>
- Fabio Salassa, Gabriele Dragotto, Tommaso Traetta, Marco Buratti, and Federico Della Croce. “Merging Combinatorial Design and Optimization: the Oberwolfach Problem”. In: *Australasian Journal of Combinatorics* 79.1 (2021), pp. 141–166. URL: https://ajc.maths.uq.edu.au/pdf/79/ajc_v79_p141.pdf

Selected Talks

- Dagstuhl Seminar “Optimization at the Second Level” | *Schloss Dagstuhl, Germany* *Integer Programming Games (and Robust Optimization)* Nov 2022
- INFORMS 2022 | *Indianapolis, U.S.* *Mathematical Programming Games* Oct 2022
- Princeton Optimization Seminar and ECE Korhammer Seminar Series | *Princeton University, U.S.* *Mathematical Programming Games* May 2022
- EURO 2021 | *University of West Attica, Greece* *On Mixed-Integer Programming Equilibria* Jul 2021
- AIRO Young 2021 | *Università Federico II (Virtual), Italy* *When Nash Meets Stackelberg* Feb 2021
- Mixed-Integer Programming Workshop 2020 | *Rutgers University (Virtual, Oral Poster)* *When Nash Meets Stackelberg* May 2020
- Aussois Combinatorial Optimization Workshop 2020 | *Aussois, France (Oral Pitch)* *When Nash Meets Stackelberg* Jan 2020

- Optimization Days 2019 | HEC Montréal, Canada
The Oberwolfach Problem May 2019
- EURO 2018 | Universitat de València, Spain
On fairness and diversification in WTA and ATP tennis tournaments generation Jul 2018

Teaching

MTH6404 | Polytechnique Montréal Montréal, Canada
Department of Mathematics and Industrial Engineering - 35 Students Winter 2021

Design of quizzes, exams, counseling, and grading

Economics, Branding, and Strategic Management | IIS Majorana Moncalieri, Italy
High-school Course - 35 Students Spring 2016, 2017

Elective High-school course: a primer on selected topics, joint with CEAN S.p.A.
Lectures available [lectures](#)

Supervision

- Matthew Dwight Houston (B.Sc.) | Polytechnique Montréal, Canada Summer 2021
Project: A multi-leader multi-follower model for vaccine trades in the pandemic

Service

Societies Mathematical Optimization Society (MOS), Institute for Operations Research and Management Science (INFORMS), Society of Industrial and Applied Mathematics (SIAM)

Review INFORMS Journal on Computing, AAAI 2023, Automatica, Information Systems and Operational Research, Annals of Operations Research

Conferences [DS4DM Coffee Talks](#), Funder and Organizer (2021-2022)
[MAPSP 2022](#) - The 15th Workshop on Models and Algorithms for Planning and Scheduling, Organizing Committee
[DS4DM Workshop 2022](#) - Workshop on Data-Science for Real-time Decision-making, Organizing Committee

Languages and Coding

Languages Italian (native), English (fluent), German (Elementary), and French (Elementary)

Coding Bash, C++, CSS, HTML, Javascript, Java, Julia, Lua, Python, PHP, SQL

Activities

Volunteering TEDxTorino co-presenter (Jan 2018), Area_G Onlus [video-maker](#)

High-school Service Introduced the Student Union Fund (raised more than 5000€), introduced and set up common student lounges, organizer of fundraising [events](#), founder of [M1 Online](#) (Student e-newspaper), developer of the iOS and Android App, school website's developer, and ERP software developer

OpenSource Education My notes and scribes are available [online](#)

Press

- La Stampa, National Frontpage | [“Politecnico finds the Tennis’ algorithm”](#) Apr 2018
- MATEPrism, Bocconi University, Italy | [“The Mathematics of Tennis”](#) Apr 2018
- La Repubblica, D, Italy | [“20 Successful 20 Years Old”](#) May 2016