JUSTIN DUMOUCHELLE

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ACADEMIC POSITIONS

University of Calgary   2025+
Assistant Professor, Department of Mathematics & Statistics

EDUCATION

University of Toronto   2021 - 2025
PhD in Operations Research & Machine Learning
Advisor: Elias Khalil

Polytechnique Montréal   2019 - 2021
MASc in Applied Mathematics
Advisors: Andrea Lodi, Emma Frejinger

University of Waterloo   2013 - 2018
BMath (double major) in Computer Science, Combinatorics and Optimization

RESEARCH INTERESTS

Methodology: Operations research, data-driven optimization, discrete optimization, optimization under uncertainty, machine learning
Applications: Transportation, logistics, energy, healthcare

PUBLICATIONS

Revisions

[1] **J. Dumouchelle**, E. Julien, J. Kurtz, and E. B. Khalil. Deep Learning for Two-Stage Robust Integer Optimization. Major Revision in *Operations Research*, 2025.
  - Extends [3] with benchmarks, methodology, computational improvements, and theory
  - [**Paper**] [**Website**]

Conference Papers

[2] **J. Dumouchelle**, E. Julien, J. Kurtz, and E. B. Khalil. Neur2BiLO: Neural Bilevel Optimization. *Advances in Neural Information Processing Systems*, 2024.
  - [**Paper**] [**Code**] [**Website**]

[3] **J. Dumouchelle**, E. Julien, J. Kurtz, and E. B. Khalil. Neur2RO: Neural Two-Stage Robust Optimization. *International Conference on Learning Representations*, 2024.
  - [**Paper**] [**Code**] [**Website**]

[4] **J. Dumouchelle***, R. Patel*, E. B. Khalil, and M. Bodur. Neur2SP: Neural Two-Stage Stochastic Programming. *Advances in Neural Information Processing Systems*, 2022.
  - [**Paper**] [**Code**] [**Website**]

[5] M. Gasse, S. Bowly, Q. Cappart, J. Charfreitag, L. Charlin, D. Chételat, A. Chmiela, **J. Dumouchelle**, ..., and M. Kun. The machine learning for combinatorial optimization competition (ML4CO): Results and insights. *Proceedings of the NeurIPS* 2021 *Competitions and Demonstrations Track*, in *Proceedings of Machine Learning Research (PMLR)*, 2022.
  - [**Paper**] [**Website**]

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* denotes equal contribution

Journal Papers

[6] **J. Dumouchelle**, E. Frejinger, and A. Lodi. Reinforcement Learning for Freight Booking Control Problems. *Journal of Revenue and Pricing Management*, 2024.
- [**Paper**] [**Code**]

Workshop Papers

[7] A. Prouvost, **J. Dumouchelle**, L. Scavuzzo, M. Gasse, D. Chételat, and A. Lodi. Ecole: A gym-like library for machine learning in combinatorial optimization solvers. *Learning Meets Combinatorial Algorithms at NeurIPS2020*, 2020.
- [**Paper**] [**Code**] [**Website**]

INDUSTRY EXPERIENCE

Borealis AI (now RBC Borealis)   July 2018 - August 2019
Machine Leaning Research Intern   *Montréal, QC*
- Applied machine learning for finance. Projects related to time series forecasting and NLP.

TEACHING EXPERIENCE

University of Toronto
Course Instructor
- Data Structures and Algorithms (MIE245), Winter 2025

University of Toronto
Teaching Assistant
- Data Structures and Algorithms (MIE245), Tutorial TA, Winter 2024
  Average Rating: n/a

- Algorithms and Numerical Methods (MIE335), Tutorial TA, Winter 2023
  Average Rating: 4.97/5.0
  Nominated for departmental teaching assistant award

University of Waterloo
Private Tutor
- Algorithm Design and Analysis (CS 466/666), Fall 2018
- Data Structures and Algorithms (MTE 140), Winter 2018

TALKS & PRESENTATIONS

Invited Talks

- INFORMS Optimization Society Conference, March 2026
- INFORMS Annual Meeting, October 2025
- Annual Meeting of Alberta Statisticians, September 2025
- Northwestern University - Department of Electrical Engineering, July 2025
- CORS Annual Conference, June 2025
- INFORMS Computing Society Conference, March 2025
- INFORMS Annual Meeting, October 2024
- International Symposium on Mathematical Programming (ISMP), July 2024
- Data Science for Decision Making Coffee Talks, University of Montréal, March 2024

- AI Seminar, University of Toronto, February 2024

- Robust Optimization Webinar (ROW), December 2023 [**Video**]

- INFORMS Annual Meeting, October 2023

Contributed Talks

- Optimization Days, May 2025

- Mechanical & Industrial Engineering Research Symposium, September 2024

- International Conference on Stochastic Programming (ICSP), July 2023

Poster Presentations

- Princeton Workshop on Optimization, Learning, and Control, June 2024

- AAAI Leanopt Workshop, February 2024

- INFORMS Poster Competition, October 2023

- Mixed Integer Programming Workshop, May 2023

- Vector Institute Research Symposium, May 2023

Guest Lectures

- Machine Learning Applications for Supply Chain Management, MIT, April 2023

AWARDS

- 2025 Meritorious Reviewer Award for INFORMS Journal on Computing (IJOC)

- 2025 Canadian Operational Research Society (CORS) Student Paper Competition - **Finalist** (top 5 of 48 submissions), Paper: *Deep Learning for Two-Stage Integer Robust Optimization*

- Ontario Graduate Scholarship ($15,000) × 2, 2023-2025

- 2024 Top Reviewer at NeurIPS 2024 (top 8% of reviewers, awarded free registration)

- 2023 INFORMS Annual Meeting Poster Competition - **1st place** (People's Choice Track) among hundreds of submissions. Poster: *A Unified Machine Learning Framework for Optimization Under Uncertainty*

ACADEMIC SERVICE

- Editor for OR/MS Tomorrow, 2024-2025

- Reviewing. For each venue, the number in brackets indicates the number of articles reviewed.
  - Conferences: NeurIPS (12), ICLR (8), ICML (7), AISTATS (3)
  - Journals: INFORMS Journal of Computing (6), INFORMS Journal of Data Science (1), Transactions on Machine Learning Research (5), IEEE Transactions on Pattern Analysis and Machine Intelligence (3), IEEE Transactions on Network Science and Engineering (3), Journal of Revenue and Pricing Management (1)
  - Workshops: Sampling and Optimization in Discrete Spaces (SODS) workshop at ICML (3)

- Judge: OR/MS Tomorrow Mini-Poster Competition 2024 and 2025

- Organizer: NeurIPS 2021 Competition on Machine Learning for Combinatorial Optimization

- Session Chair: ISMP 2024, CORS 2025, CORS 2026