Connor Lawless

Contact

Stanford University
Management Science & Engineering
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Research Interests

Human-centered artificial intelligence via computational optimization, human-computer interaction, and machine learning.

Academic Positions

Stanford University — *Palo Alto CA*
Stanford HAI Postdoctoral Fellow — *July 2024 - Current*
- Advisors: Madeleine Udell and Ellen Vitercik

Education

Cornell University — *Ithaca, NY*
Ph.D. in Operations Research and Information Engineering — *May 2024*
M.S. in Operations Research and Information Engineering — *December 2022*
- PhD Advisor: Oktay Günlük
- Thesis: Integer Programming Approaches for Trustworthy Machine Learning

University of Toronto — *Toronto, ON*
B.A.Sc. in Industrial Engineering, *High Honors* — *April 2019*

Working Papers

OptiMUS-0.3: Using Large Language Models to Model and Solve Optimization Problems at Scale
Ali AhmadiTeshnizi, Wenzhi Gao, Herman Brunborg, Shayan Talaei, **Connor Lawless**, Madeleine Udell
Major Revision at Management Science

Fair Minimum Representation Clustering via Integer Programming
Connor Lawless, Oktay Günlük
Reject and Resubmit at Operations Research (supersedes CPAIOR version)

"It Was a Magical Box": Understanding Practitioner Workflows and Needs in Optimization
Connor Lawless, Jakob Schoeffer, Madeleine Udell
Submitted to ACM CHI 2026

LLMs for Cold-Start Cutting Plane Separator Configuration
Connor Lawless, Yingxi Li, Anders Wikum, Madeleine Udell, Ellen Vitercik
Under review at INFORMS Journal on Computing (supersedes CPAIOR version)

Journal Publications

"I Want it That Way": Enabling Interactive Decision Support via Large Language Models and Constraint Programming
Connor Lawless, Jakob Schoeffer, Lindy Le, Kael Rowan, Shilad Sen, Cristina St. Hill, Jina Suh, Bahar Sarrafzadeh
ACM Transacations on Intelligent & Interactive Systems (ACM TIIS), 2024

Interpretable and Fair Decision Rules via Column Generation
Connor Lawless, Sanjeeb Dash, Oktay Günlük, Dennis Wei
Journal of Machine Learning Research (JMLR), 2023

Conference Publications

Understanding Fixed Predictions via Confined Regions
Connor Lawless, Lily Weng, Berk Ustun, Madeleine Udell
International Conference on Machine Learning (ICML), 2025

EquivaMap: Leveraging LLMs for Automatic Equivalence Checking of Optimization Formulations
Haotian Zhai, **Connor Lawless**, Leqi Liu, Ellen Vitercik
International Conference on Machine Learning (ICML), 2025

LLMs for Cold-Start Cutting Plane Separator Configuration
Connor Lawless, Yingxi Li, Anders Wikum, Madeleine Udell, Ellen Vitercik
International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR), 2025

Fair Minimum Representation Clustering
Connor Lawless, Oktay Günlük
International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR), 2024

Cluster Explanation via Polyhedral Description
Connor Lawless, Oktay Günlük
International Conference on Machine Learning (ICML), 2023

Interpretable Clustering via Multi-Polytope Machines
Connor Lawless, Jayant Kalagnanam, Lam Nguyen, Dzung T. Phan, Chandra Reddy
AAAI Conference on Artifical Intelligence (AAAI), 2022

Workshop and Technical Reports

LLMs for Optimization: Modeling, Solving, and Validating with Generative AI
Connor Lawless, Leonard Bouisseaux, Ellen Vitercik, Madeleine Udell
Tutorial in AAAI Conference on Artifical Intelligence (AAAI), 2026

Two-Stage Approach to Routing with Driver Preferences via Heatmaps
Connor Lawless, Sotiris Ntanavaras, Anders Wikum
Proceedings of the Amazon-MIT Last Mile Vehicle Routing Challenge (2022)

Fair and Interpretable Decision Rules for Binary Classification
Connor Lawless, Oktay Günlük
NeurIPS Workshop on Optimization in Machine Learning (2020)
IJCAI Workshop on AI for Social Good (2021)

Patents

Trade Platform with Reinforcement Learning
Hasham Burhani, Shary Mudassir, Xiao Qi Shi, **Connor Lawless**
US Patent, Granted in 2023

Interpretable Clustering via Multi-Polytope Machines
Dzung T. Phan, **Connor Lawless** , Jayant R. Kalagnanam, Lam M. Nguyen, Chandra K. Reddy
Patent Application in US (2021)

Leveraging generative language models for interactive constraint satisfaction
Jina Suh, Bahar Sarrafzadeh, Cristina Daescu, Shilad Sen, **Connor Lawless**, Jakob Schoeffer
Patent Application in US (2025)

Academic Presentations

Democratizing Optimization via Generative AI
– RAIN Seminar, Stanford *October 2025*

LLMs for Optimization: Modeling, Solving, and Validating with Generative AI
– Guest Lecture, University of Southern California *September 2025*
– AAAI Tutorial, Singapore *January 2026*

Understanding Fixed Predictions via Confined Regions
– INFORMS Workshop on Data Science, Atlanta GA *October 2025*

– INFORMS, Atlanta GA *October 2025*

LLMs for Cold-Start Cutting Plane Configuration
– AAAI Bridge on AI and OR (Poster), Philadelphia PA *February 2025*
– INFORMs Computing Society Conference, Toronto ON *March 2025*
– ICCOPT, Los Angeles CA *July 2025*
– CPAIOR, Melbourne Australia *November 2025*

Enabling Interactive Decision Support via Large Language Models and Constraint Programming
– Microsoft Office of Applied Research Seminar *August 2023*
– Cornell ORIE PhD Colloquium, Ithaca NY *September 2023*
– CCC Joint AI-OR Workshop, Washington DC *March 2024*
– INFORMS, Seattle WA *October 2024*
– AAAI Bridge on AI and OR, Philadelphia PA *February 2025*
– IUI (Invited Talk), Cagliari Italy *March 2025*

Fair Minimum Representation Clustering
– NYC Joint PhD Colloquium *May 2023*
– CPAIOR 2024, Uppsala Sweden *May 2024*
– European Conference on Operational Research, Copenhagen Denmark *July 2024*
– AAAI Bridge on AI and OR (Poster), Philadelphia PA *February 2025*

Cluster Explanation via Polyhedral Description
– Cornell ORIE PhD Colloquium, Ithaca NY *September 2022*
– Making Sense of Explainable ML, Lorentz Center at the University of Leiden *October 2022*
– Fidelity AI Center Seminar, Remote *April 2023*
– Thematic Einstein Seminar on Optimization and ML, Berlin Germany *April 2023*
– NYC Operations Day (Poster), NYC NY *April 2023*
– SIAM Optimization Conference, Seattle WA *May 2023*
– International Federation of Operations Research Society Meeting, Santiago Chile *July 2023*
– ICML (Poster), Honolulu HI *July 2023*
– INFORMS Annual Meeting, Phoenix AZ *October 2023*
– Stevens Institute of Technology, Hoboken NJ *October 2023*
– University of Maryland: Smith School of Business, College Park MD *December 2023*
– University of Ottawa: Telfer School of Business, Ottawa ON *December 2023*
– USC: Marshall School of Business, Los Angeles CA *January 2024*
– University of Washington: Industrial and Systems Engineering, Seattle WA *February 2024*
– Amazon Modeling and Optimization Group *February 2024*
– Stanford University: Udell Group Meeting, Stanford CA *February 2024*
– Mitsubishi Electric Research Lab, Boston MA *March 2024*

Interpretable Clustering via Multi-Polytope Machines
– IBM Research Applied AI Seminar, Remote *August 2021*
– Cornell ORIE PhD Colloquium, Ithaca NY *October 2021*
– INFORMs Optimization Society, Greenville SC *March 2022*
– European Conference on Operational Research, Espoo Finland *July 2022*

Fair and Interpretable Decision Rules for Binary Classification
– ORACL Workshop, Cornell University *June 2019*
– AI for Social Good Workshop, IJCAI (Remote) *January 2021*
– Machine Learning NeEDs Mathematical Optimization Seminar Series *February 2021*
– European Conference on Operational Research (Remote) *July 2021*
– INFORMs, Anaheim CA *October 2021*

Teaching Experience

Instructor	ORIE 5270: Big Data Technologies, *Spring 2023 - Cornell* Teaching Effectiveness: 4.45/5 (Dept. Avg.: 3.99)
Instructor	ORIE 6125: Computational Methods in OR, *Spring 2023 - Cornell* Teaching Effectiveness: 4.63/5 (Dept. Avg.: 3.99)
Instructor	Data Analytics *2021-2022 - iXperience* Teacher Rating: 4.9/5 (Fall '21), 5/5 (Spring '22)
Teaching Assistant	ORIE 5135: Computational IP, *Spring 2022 - Cornell*
Teaching Assistant	ORIE 4740: Learning with Big Messy Data, *Fall 2021 - Cornell*
Instructor	Data Science Bootcamp *2020 - 2021 iXperience* Teacher Rating: 4.9/5 (Summer '20), 4.9/5 (Winter '21)
Guest Lecturer	ORIE 6140: Mathematical Modeling for OR, *Fall 2020 - Cornell*
Teaching Assistant	ORIE 3300: Optimization I, *Fall 2019 - Cornell*
Guest Lecturer	ENGRI 1101: Engineer Applications of OR, *Fall 2019 - Cornell*

Honors

University of Iowa Future Business Analytics Professor Workshop Selected Attendee	*2025*
Outstanding Graduate Instructor, Cornell ORIE	*2023*
EEAMO Doctoral Consortium Selected Attendee	*2023*
Michigan Institute for Data Science Future Leaders Summit Selected Attendee	*2023*
Outstanding Reviewer, AISTATS	*2023*
FAccT Doctoral Consortium Selected Attendee	*2022*
Ontario Professional Engineers Foundation for Education Gold Medal, University of Toronto	*2019*
W.S. Wilson Medal, University of Toronto	*2019*
Dean's List, University of Toronto	*2014-2019*
Edward L. Donegan Scholarship ($100K), University of Toronto	*2014-2019*
Ben Bernholtz Memorial Prize in Operations Research, University of Toronto	*2016*

Advising and Student Collaborators

Anders Wikum, 2020-, Cornell ORIE Undergraduate and Stanford MS&E PhD Student.

Yingxi Li, 2024-, Stanford MS&E PhD Student.

Haotian Zhai, 2024-2025, UT Austin EE PhD Student.

Jillian Chang, 2025, Stanford Undergraduate.

Sophia Jiang, 2025, Stanford Undergraduate.

Josh De Leeuw, 2024, Cornell ORIE Undergraduate.

Michael Luo, 2024, Cornell ORIE Undergraduate.

Henry Robbins, 2020, Cornell ORIE Undergraduate.

Service

In Stanford:

- Co-organizer ISL Seminar *(2024-2025)*

In Cornell:

- *Mentoring*: Graduate Student Mentor with Operations Research Graduate Association *(2020-2023)*
- *Operations Research Graduate Association*: Co-President *(2021-2022)*, Visit Weekend Coordinator *(2020 - 2021)*, Mentorship Director *(2022 - 2023)*, URM PhD Application Support Program Officer *(2023 - 2024)*

In Conferences:

- *Session Chair*: INFORMS Annual Meeting, EURO Annual Meeting, IFORS Triennial Meeting
- *Referee*: AISTATS, FAccT, ICML, AAAI, NeurIPS, UIST

In Journals:

- *Referee*: Journal of Machine Learning Research, Operations Research, INFORMS Journal of Computing, INFORMS Journal on Optimization, INFORMS Journal on Data Science, Computers and Operations Research, INFORMS TutORials

Industry Experience

Microsoft Research, Research Intern *May - August 2023*
Project Title: "Enabling Interactive Decision Support via Large Language Models and Constraint Programming"

IBM Research, Research Intern *May - August 2021*
Project Title: "Interpretable Clustering via Multi-Polytope Machines"

Cornell University, COVID-19 Class Scheduling Team *June - September 2020*
Led the implementation of the primary optimization models to schedule all classes at Cornell during COVID-19.

Royal Bank of Canada, A.I. Scientist *September 2017 - June 2018*
Project Title: "Deep Reinforcement Learning for Trade Execution"

BlackRock, Software Engineer *June-August 2017, 2018*

GetSmarter, Software Engineer *June-August 2016*

Relevant Skills

Languages: English - Native
French, German, Spanish - Beginner

Programming: Python, R, Java, SQL, MATLAB, C, Gurobi
LaTeX, ReactJS, HTML, Windows/Unix Environment

Development: Git, SVN

Professional Memberships

Institute for Operations Research and the Management Sciences (INFORMS)
Queer in AI
Out in STEM

References

Oktay Günlük, Gary C. Butler Family Professor,
H. Milton Stewart School of Industrial and Systems Engineering,
Georgia Tech, oktay.gunluk@isye.gatech.edu

Andrea Lodi, Andrew H. and Ann R. Tisch Professor,
Operations Research and Information Engineering,
Cornell University, andrea.lodi@cornell.edu

David Shmoys, Laibe/Acheson Professor of Business Management & Leadership Studies,
Operations Research and Information Engineering,
Cornell University, david.shmoys@cornell.edu

Madeleine Udell, Assistant Professor,
Management Science & Engineering,
Stanford University, udell@stanford.edu

Ellen Vitercik, Assistant Professor,
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