Connor Lawless

Contact

Stanford University
Management Science & Engineering
475 Via Ortega, Stanford, CA 94305

lawlessc@stanford.edu
https://conlaw.github.io

Research Interests

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

Academic Positions

Stanford University — *Palo Alto CA*
Postdoctoral Associate, Management Science & Engineering — *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

Understanding Fixed Predictions via Confined Regions
Connor Lawless, Lily Weng, Berk Ustun, Madeleine Udell
Under review at ICML 2025

EquivaMap: Leveraging LLMs for Automatic Equivalence Checking of Optimization Formulations
Haotian Zhai, **Connor Lawless**, Leqi Liu, Ellen Vitercik
Under review at ICML 2025

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

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
Under review at Management Science

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 (2024)

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

Conference Publications

LLMs for Cold-Start Cutting Plane Separator Configuration
Connor Lawless, Yingxi Li, Anders Wikum, Madeleine Udell, Ellen Vitercik
CPAIOR (2025)

Fair Minimum Representation Clustering
Connor Lawless, Oktay Günlük
CPAIOR (2024)

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

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

Workshop and Technical Reports

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)

Academic Presentations

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*

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*

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

- 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*

Service

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

In Journals:

- *Referee*: Journal of Machine Learning Research, INFORMS Journal of Computing, Operations Research, Computers and Operations Research

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