Connor Lawless

CONTACT

Cornell University
Operations Research & Information Engineering
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https://conlaw.github.io

RESEARCH INTERESTS

My research interests lie at the intersection of *computational integer programming and interpretable and fair machine learning.*

EDUCATION

Cornell University — *Ithaca, NY*
Ph.D. in Operations Research and Information Engineering — *May 2024, expected*
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

Enabling Interactive Decision Support via Large Language Models and Constraint Programming
Connor Lawless, Jakob Schoeffer, Kael Rowan, Shilad Sen, Jina Suh, Bahar Sarrafzadeh
Submitted to ACM Conference on Human Factors in Computing Systems (CHI).

Cluster Explanations via Polyhedral Descriptions: A Scalable Column Generation Framework
Connor Lawless, Oktay Günlük
In preparation for Operations Research

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

PUBLICATIONS

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

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)

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

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*

Fair Minimum Representation Clustering
- NYC Joint PhD Colloquium — *May 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*
- 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

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, Summer Analyst *June-August 2017, 2018*

GetSmarter, Data Science Intern *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, Professor of Practice,
Operations Research and Information Engineering,
Cornell University, ong5@cornell.edu

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

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