

# Connor Lawless

---

CONTACT	Cornell University Operations Research & Information Engineering 294 Rhodes Hall, Ithaca, NY 14853	(234) 244-7572 cal379@cornell.edu conlaw.github.io
RESEARCH INTERESTS	Operations research, mathematical programming, statistical learning, integer programming, fair machine learning, interpretable ai	
EDUCATION	<b>Cornell University</b> <b>Ph.D. in Operations Research (4.0 GPA)</b> <i>Thesis Topic:</i> Integer programming methods for trustworthy machine learning Advisor: Professor Oktay Günlük	<i>August 2019 - Present</i> <i>Ithaca, NY</i>
	<b>University of Toronto</b> <b>B.Asc. in Industrial Engineering (4.0 GPA)</b> <i>Undergraduate Thesis:</i> The Multi-Armed Investor: Modelling investment decisions through the lens of a multi-armed bandit problem (advised by Prof. Chi-Guhn Lee)	<i>September 2014 - June 2019</i> <i>Toronto, ON</i>
PAPERS	<b>C. Lawless</b> , O. Günlük. Fair Minimum Representation Clustering. <i>Under review.</i> <b>C. Lawless</b> , S. Dash, O. Günlük, D. Wei. Interpretable and Fair Decision Rules via Column Generation. <i>Journal of Machine Learning Research</i> , 2023. <b>C. Lawless</b> , O. Günlük. Cluster Explanation via Polyhedral Description. <i>ICML 2023</i> . <b>C. Lawless</b> , J. Kalagnanam, L. Nguyen, D. Phan, C. Reddy. Interpretable Clustering via Multi-Polytope Machines. <i>AAAI 2022</i> . <b>C. Lawless</b> , S. Ntanavaras, A. Wikum. A Two-Stage Approach to Routing with Driver Preferences via Heatmaps. <i>Proceedings of the Amazon-MIT Last Mile Vehicle Routing Challenge</i> , 2022. <b>C. Lawless</b> , O. Günlük. Fair and Interpretable Decision Rules for Binary Classification. <i>Optimization for Machine Learning Workshop, Neurips 2020</i> .	
PATENTS	H. Burhani et al. Trade platform with reinforcement learning. <i>US Patent Application</i> 16426196	
ACADEMIC PRESENTATIONS	<b>Fair Minimum Representation Cluster</b> – NYC Joint PhD Colloquium	<i>May 2023</i>
	<b>Cluster Explanation via Polyhedral Description</b> – Cornell ORIE PhD Colloquium, Ithaca NY – Making Sense of Explainable ML, Lorentz Center at the University of Leiden – Fidelity AI Center Seminar, Remote – Thematic Einstein Seminar on Optimization and ML, Berlin Germany – NYC Operations Day (Poster), NYC NY – SIAM Optimization Conference, Seattle WA – International Federation of Operations Research Society Meeting, Santiago Chile	<i>September 2022</i> <i>October 2022</i> <i>April 2023</i> <i>April 2023</i> <i>April 2023</i> <i>May 2023</i> <i>July 2023</i>
	<b>Interpretable Clustering via Multi-Polytope Machines</b> – IBM Research Applied AI Seminar, Remote – Cornell ORIE PhD Colloquium, Ithaca NY – INFORMs Optimization Society, Greenville SC – European Conference on Operational Research, Espoo Finland	<i>August 2021</i> <i>October 2021</i> <i>March 2022</i> <i>July 2022</i>
	<b>Fair and Interpretable Decision Rules for Binary Classification</b> – ORACL Workshop, Cornell University – AI for Social Good Workshop, IJCAI (Remote)	<i>June 2019</i> <i>January 2021</i>



**Summer Analyst** *June 2018 - August 2018*  
**BlackRock** *London, UK*

- Developed a new micro service to disentangle a database dependency from the existing trade management server; reduced downtime of critical system that processed over 1M orders daily.
- Designed and implemented a new group finder and collaboration tool to improve employee moral; project was awarded first place at the internal intern hackathon (out of 10 teams).

**AI Scientist** *September 2017 - June 2018*  
**Royal Bank of Canada** *Toronto, ON*

- Worked on a team of 3 to build the first reinforcement learning based trade execution algorithm in Canada (patent pending); the algorithm is currently in production and has traded over \$1 billion dollars notionally across Canada and the US between 2017 and 2019.
- Built a custom user interface using React JS and Python to track the algorithm's performance; the interface exposed critical errors in the algorithm, reducing development time, and was distributed to the electronic traders, building trust and increasing the algorithm's adoption rate on the trading floor.
- Presented key milestones to senior management, including the head of RBC Global Markets, and wrote speaking points circulated to the CEO.

**Summer Analyst** *June 2017 - August 2017*  
**BlackRock** *Seattle, WA*

- Developed a new tool to visualize and analyze customer reporting distribution metrics; currently being rolled out globally on the Aladdin platform to BlackRock's 13,000 employees.
- Rewrote an existing stored procedure to fetch customer profiles; reduced querying time of common use case from 5 minutes to 15 seconds
- Added functionality to sync CRM contacts to sales personnel's phones as part of an internal team intern hackathon; advanced to the national finals (4 out 30 teams) and presented our product to the global head of product management.

**Data Science Intern** *June 2016 - August 2016*  
**GetSmarter** *Cape Town, SA*

- Developed a ridge regression model to discover that GetSmarter was spending 15% more than they needed on academic advisor support; presented the results to the Director of Education and CFO.
- Integrated data from GetSmarter's database, phone call logs, and CRM system to create the company's first data pipeline for statistical modelling.

LEADERSHIP  
EXPERIENCE

**Co-President** *March 2021- Present*  
**Operations Research Graduate Association** *Ithaca, NY*

- Coordinating departmental initiatives for the Cornell ORIE PhD student body.
- Previously served as the activities planner in 2020.

**Managing Director, Start-up** *April 2020 - February 2019*  
**You're Next Career Network** *Toronto, ON*

- Led a team of 10 to run Canada's largest Startup Career Fair with 90 startups, and 3000+ students (revenue = \$40,000+)
- Pioneered Entrepreneurship Week, a week-long case competition to expose students to entrepreneurship, that connected 8 startup mentors to 100+ students

**Archivist** *March 2015 - March 2016*  
**University of Toronto Engineering Society** *Toronto, ON*

- Led a team of 15 to manage the faculty's historical artifacts; expanded the portfolio to include community outreach, an online services team, and a documentary filmmaking team comprising over 80 volunteers.
- Awarded Project Director of the Year, an award given to the three engineering society project directors deemed to have done the best job with their respective positions over the 2015-16 year out of 22 project directors.

RELEVANT  
SKILLS

**Languages:**

English - Proficient  
French, German - Intermediate

**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