

CELESTE GROUX

Ithaca, NY | [Email](#) | [Website](#) | [LinkedIn](#)

EDUCATION

- **Cornell University**, Ithaca, NY, USA
PhD in Operations Research and Information Engineering, Expected May 2028 | NSERC PGS-D Fellow, GPA: 3.94/4.
- **McGill University**, Montreal, QC, Canada
B.Sc. Honours Applied Mathematics, Minor in Computer Science, 2022

GRADUATE RESEARCH EXPERIENCE

Graduate Student Researcher

May 2024 – Present

Cornell University – Ithaca, NY, USA / PopWheels – New York, NY, USA

PopWheels Industry Collaboration – Battery Swapping Operations

- Conduct applied operations research in collaboration with NYC startup PopWheels to support operational decision-making for an e-bike battery-swapping system.
- Develop stochastic and optimization-based models to analyze service capacity, reliability, and resource allocation.
- Design and implement simulation frameworks to evaluate operational policies and quantify performance trade-offs.
- Meet regularly with company stakeholders to align models with evolving operational constraints and decision priorities.
- Translate modeling results into actionable recommendations to inform system design and operational strategy.

Adaptive experimental design

- Developing multi-stage adaptive allocation algorithms for experiments with unknown variability across multiple treatments and objectives.
- Deriving finite-sample performance guarantees and lower bounds to characterize the quality of proposed allocation methods.

UNDERGRADUATE RESEARCH EXPERIENCE

Undergraduate Research Assistant – Combinatorial Optimization

May 2022 – August 2022

Technische Hochschule Ingolstadt – Ingolstadt, Germany

- Analysis of combinatorial optimization strategy using computational social choice theory
- Developed Copeland and Pareto constraints in modelling software MiniZinc
- Formed iterative search algorithm in python integrating MiniZinc Copeland scores and Pareto constraints
- Awarded Mitacs scholarship for competitive DAAD RISE program from pool of 1365 applicants and 320 acceptances

Undergraduate Research Assistant – Machine Learning

May 2021 – August 2021

McGill University – Montreal, QC, Canada

- Analysis of Montreal Ville Marie parking data using python as part of project to minimize social costs of parking
- Developed 2 step method that reduced error for parking occupancy prediction using time series clustering and neural networks
- Tested model updating strategies from research papers such as weighted ensemble learning and replacement
- Updated Bokeh interactive visualization to include new methodology and added confidence interval data table

RESEARCH PRESENTATIONS

“Models for Decision-Making in an NYC E-Bike Battery Swapping Service.” Canadian Operational Research Society (CORS) Conference, Kingston, Canada, June 2026. *Oral presentation.*

“Modelling an NYC E-Bike Battery Swapping Service.” AISES in Canada Conference, Toronto, Canada, March 2026. *Oral presentation.*

“Modelling an NYC E-Bike Battery Swapping Service.” Young Researchers Workshop, Cornell University, Ithaca, NY, USA, 2025. *Poster.*

“Managing Operations in an NYC Electric Bike Battery Swapping Service.” NYC Operations Day, New York University, New York, NY, USA, 2025. *Oral and poster presentations.*

“Improving Temporal Graph Network Messaging.” INFORMS Annual Meeting, Indianapolis, IN, USA 2022. *Poster.*

“Graph Representation Learning.” AISES in Canada Gathering, Vancouver, Canada, 2021. *Research presentation.*

TEACHING EXPERIENCE

Teaching Assistant – Math 2940 Linear Algebra for Engineers

January 2024 – May 2024

Cornell University – Ithaca, NY, USA

- Led 3 weekly recitation sections emphasizing conceptual understanding and problem-solving strategies.
- Designed concise lecture recaps and facilitated interactive in-class practice.
- Recognized in student evaluations for clarity, approachability, and supportive instruction.
- Responsibilities also included grading assignments and exams as well as holding weekly office hours.

PROFESSIONAL EXPERIENCE

Performance Measurement Analyst

May 2023 – August 2023

Canadian National Railway (CN) – Montreal, QC, Canada

- Supported IT service performance analysis within the Service Performance Operations team.
- Met with stakeholders to understand an IT process and propose KPI-driven updates to improve efficiency and data collection.
- Designed and presented a Power BI dashboard to track process performance, incorporating feedback from senior leadership.
- Contributed to the design of ServiceNow dashboards by prioritizing key information and effective visual presentation.

Cloud Operations and Infrastructure Intern

May – August 2020

TC Energy – Calgary, AB, Canada

- Automated server-patching workflows using PowerShell and SCCM, generating more than \$10k in annual savings while supporting cloud and virtual infrastructure across AWS, Nutanix, and vCenter.
- Lead Active Directory Audit project to improve security and replaced user accounts in over 800 server groups

Office Clerk

January – August 2019

Canada Revenue Agency – Montreal, QC, Canada

- Organized data using Excel to extract useful information for the Income Tax Assistance – Volunteer Program
- Translated documents from French to English while respecting deadlines
- Assisted team members in contacting volunteers, arranging promotional material, and event organization

Project Lead Material Property Inventory

June 2018 – January 2019

Canada Revenue Agency – Montreal, QC, Canada

- Led a furniture inventory and barcode-labeling project for the Montreal Tax Service Office, inventorying 5,000+ assets.
- Developed a more efficient data-entry and labeling process, documented it for future staff, and presented the approach to employees from other CRA offices.

AWARDS & FELLOWSHIPS

- **NSERC Postgraduate Scholarships – Doctoral (PGS-D), 2024-2027**
Competitive national doctoral fellowship awarded to by the Natural Sciences and Engineering Research Council of Canada.
- **Graduate Dean's Scholar, Cornell University, 2023**
University distinction recognizing academic excellence and leadership.
- **Hydro Quebec Science Award, 2019-2022**
Renewable merit entrance scholarship for Quebec students pursuing a Bachelor of Science.
- **RBC Indigenous Student Award - The Corinne Mount Pleasant-Jetté Leadership Award, 2019-2022**
National scholarship awarded to 10 Indigenous students across Canada. The Mount Pleasant-Jetté distinction recognizes one recipient for leadership and impact as a change agent for Indigenous communities.

SELECTED LEADERSHIP, SERVICE & MENTORING

President | Cornell Indigenous Graduate Student Association, 2025 – 2026

- Led a graduate student organization focused on community-building and peer support, managing a three-member committee and biweekly programming for 25+ graduate students.
- Led development of a grant proposal and budget that secured the maximum available award of \$50,000 for an annual campus pow wow.
- Coordinated university partners, event planning, communications, and organizational administration.

Interim Co-President | Cornell Operations Research Graduate Association, Summer 2026

- Secured 2× the prior year's budget and completed 2026–27 planning, re-registration, and other key start-of-year requirements.

Application Support Program Co-Coordinator | Cornell Operations Research Graduate Association, 2024 -2025

Coordinated volunteer matching, communications, and outreach for a program supporting prospective ORIE PhD applicants, and provided application feedback and guidance.

Application Support Program Officer | Cornell Operations Research Graduate Association, 2024-2025

Coordinated matches between PhD student volunteers and prospective applicants seeking application support, promoted the program, and served as a point of contact throughout the process.

Indigenous Post-Secondary Student Mentor | Pick Your Path, McGill University, 2021–2023

Met weekly or biweekly with an Indigenous student mentee to provide guidance on post-secondary education.

Canadian National Student Representative | American Indian Science and Engineering Society (AISES), 2020-2022

- Represented Canadian students at AISES events and in discussions with organizational leadership, including participation on the Board of Directors and Canadian Indigenous Advisory Council.
- Created the AISES in Canada Student Chats series to build student connections during pandemic and supported students and universities establishing new Canadian chapters.
- Contributed to programming and outreach for AISES conferences and other national initiatives.

STEM Outreach Volunteer | Kahnawake Survival School, 2019–2022

Supported science fairs through mentoring and judging and led design-cycle workshops for students.

SELECTED TECHNICAL PROJECTS

- **Pricing Shared Rechargeable Resources Over Time (Python)**
 - Modeled incentive mechanisms for a shared rechargeable-resource system with time-varying demand and customer value.
 - Used simulation to find pricing policies that maximize social welfare and revenue.
- **Geographic Partisan Swing Models (Python)**
 - Developed and compared diffusion, spatial averaging, and regression models using precinct-level election data
 - Demonstrated strong spatial correlation in voting shifts, highlighting limitations of uniform-swing assumptions.
- **Choice Modelling for Slot Machine Optimization (Python, R)**
 - Implemented and compared multinomial logit, nested logit, and Markov chain choice models on operational casino data to characterize customer preferences and inform assortment design and revenue optimization decisions.
- **Improving Messaging in Temporal Graph Neural Networks (Python)**
 - Evaluated modifications to temporal GNN message-passing methods for link-prediction tasks in a graduate-level research project.
 - Received 1st place in Western University IDSTEM Conference 2022 Poster Competition

TECHNICAL SKILLS

Programming: Python, R, SQL

Methods: Mathematical optimization, discrete-event simulation, stochastic modelling, simulation optimization, statistical analysis

SELECTED GRADUATE COURSEWORK

Mathematical Programming, Applied Stochastic Processes, Statistical Principles, Robust and Stochastic Optimization, Simulation, Causal Inference, Optimization for Revenue Management, Algorithmic Game Theory, Transportation Systems and Networks