CELESTE GROUX

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EDUCATION

PhD; Operations Research and Information Engineering	Fall 2024 – Present
Cornell University – Ithaca, NY, USA	GPA: 3.82/4.0
Bachelor of Science; Honours Applied Mathematics / Minor Computer Science	Fall 2019 – Fall 2022
McGill University – Montreal, QC, Canada	GPA: 3.82/4.0
DEC; Pure and Applied Science	Fall 2017 – Spring 2019
Graduated with Dean's Honours from First Choice Science (Enriched Science)	R Score: 37.9/38.0
Dawson College – Montreal, QC, Canada	

WORK EXPERIENCE

Teaching Assistant	January 2024 – May 2024
College of Engineering, Cornell University – Ithaca, NY, USA	
Performance Measurement Analyst	May 2023 – August 2023
Canadian National Railway (CN) – Montreal, QC	
Undergraduate Research Assistant – DAAD RISE & Mitacs Globalink	May 2022 – August 2022

Technische Hochschule Ingolstadt, Learning and Optimization in Manufacturing Lab – Ingolstadt, Germany
- Awarded Mitacs scholarship for competitive DAAD RISE program from pool of 1365 applicants and 320 acceptances
- 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

Undergraduate Research Assistant – NSERC USRA Award	May 2021 – August 2021

McGill University, Faculty of Management, Operations Management Area – Montreal, QC
- 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

Cloud Operations and Infrastructure Intern	May – August 2020

TC Energy – Calgary, AB
- Patched, resized, tagged, added disk space for virtual servers in AWS, Nutanix, and VCenter
- Improved the server patching process with PowerShell scripts and SCCM, leading to over $8000/year savings
- Lead Active Directory Audit project to improve security and replaced user accounts in over 800 server groups
- Resolved 69 tickets in 3 months while working remotely

Office Clerk	January – August 2019

Canada Revenue Agency – Montreal, QC
- 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
- Established an inventory and optimized the inventory process for over 5000 office furniture items
- Quickly learned to use data base software Access and P-touch Editor
- Wrote a comprehensive guide detailing optimal method found using creative shortcuts

PROJECTS

- **Improving Messaging in Temporal Graph Neural Network Algorithm** (Python)
  - Research paper on improving TGN algorithm introduced by Rossi et al. (2020) for dynamic network link prediction
  - Tested improvements to the message function, particularly to share messages to a node's neighbourhood
  - Analyzed results on bipartite Wikipedia page editing data and unipartite MIT dorm student interaction data
  - 1st place in Western University IDSTEM Conference 2022 Poster Competition (Category: Math/Comp/Engineering)
- **Analysis of Travel Time to LDS Churches in the Montreal Area Considering Language Preference** (ArcGIS, Excel)

- o Explored change in average travel time in various location reallocation scenarios for members of the LDS Church
- o Considered reallocation to nearest congregation compared to current allocation with language preference and proximity
- o Also tested alternate settings, such as removing or adding congregations to meet at the church buildings in reallocation
- o Analyzed changes in congregations statistics and presented results to regional LDS leadership
- **Dependence and Depression Levels in Residential Care Residents Throughout Canada** (R, Excel)
  - o Undergraduate Big Data Competition (2020) Manuscript analysing Canadian Residential Care Data from 2016-2019
  - o Abstract published in STEM Fellowship Journal
- **A Visual Network of Required Courses to Help Students Plan their Degree** (Python, Graphviz, Beautiful Soup, Requests)
  - o This code scraped information about a program's required courses, pre-requisites, and co-requisites from the McGill website, organized that data into a graph structure, and then visualized the ordered network
- **Exploring the Dynamics of Happiness Through Mathematical Modelling** (Matlab)

SKILLS AND COURSES

Programming & Software: Python, R, Java, Amazon Web Services, Windows PowerShell, ArcGIS, MS Access

Computer Science: Algorithms and Data Structures, ML, Geometric Data Analysis, Network Science, AI, Software Systems

Math: (Honours Level) Algebra, Analysis, Calculus, Graph Theory, Probability, Statistics, ODEs, PDEs, Non-Linear Dynamics; Complex Variables, Linear Optimization, Stochastic Processes, Numerical Analysis, Regression, Reinforcement Learning

ACTIVITIES

- **McGill Summer School in Health Data Analytics** – June 2021
  - o Some topics included are Correlated Data Models; Bayesian Inference with Markov Chain Monte Carlo; High Dimensional Data Analysis Using Penalized Regression Methods; Bayesian Adaptive Design for Clinical Trials; and Bayesian Disease Mapping
- **Artificial Intelligence and Operations Research 2-Week Crash Course** (University of Toronto ORG) - October 2020
  - o Data Prep and Machine Learning in Python with Scikit-Learn, RL, Operations Research with Gurobi in Python
- **Undergraduate Big Data Competition** – June 2020
- **McHacks at McGill** – February 2020
- **Women in AI day at the National Bank -** Fall 2019
- **Math Competitions**: Euclid 2018, COMC 2018, Waterloo Senior Math Comp. 2018 (top 25%), AMQ 2019 (top 20%)

LEADERSHIP

Canadian National Student Representative / American Indian Science and Engineering Society   June 2020 – June 2022
- Acted as primary student ambassador of the organization
- Attending events to speak about the mission, goals and objectives of AISES programs, activities and events, with corporations, federal agencies, tribal entities and other organizations
- Started 'AISES in Canada Student Chats' Series to encourage student connection during pandemic
- Supported universities and students in starting their own AISES Chapters in Canada
- Volunteered in organization of AISES National US and Canadian Conferences
- Shared Canadian student perspective as member of the Board of Directors and Canadian Indigenous Advisory Council

Junior Co – Chair / McGill Student Chapter of AISES   September 2020 – Present
- Reminded student members of activities, events, and opportunities
- Helped organize volunteer and outreach activities

Student Council Member / Montreal LDS Institute of Religion   January 2018 – July 2021
- Helped organize weekly scripture study program, free supper, and evening activities
- Lead food and registration committees for interprovincial annual winter conference for approximately 250 young adults
- Improved young adult participation to highest in several years

VP Communications / American Indian Science and Engineering Society   October 2019 – April 2020
- Managed Facebook page and prepared indigenous and STEM related content to share
- Started Instagram page and grew to 100 followers

LDS Student Representative / McGill University   September 2019 – April 2020
- Served as Latter Day Saint Student Representative for McGill Office of Religious and Spiritual Life council
- Volunteered and helped organize the McGill Interfaith Fair and other campus interfaith events

VOLUNTEERING

- Pick Your Path: Indigenous Post-Secondary Student Mentor (Summer 2021, Fall 2022 – Winter 2023)
  Met weekly or biweekly with indigenous student mentee to provide guidance regarding post-secondary education

- Kahnawake Survival School Volunteer (2019-2022)
  Volunteer in multiple capacities including science fair mentoring, science fair judging, and leading design cycle workshops
- French Tutor for Journeys Indigenous Program at Dawson College (Winter Semester 2019)
- First Peoples Week at Dawson College (2018 & 2019) – Volunteered and hosted a beadwork workshop
- Campus Activity Recreation Team at Dawson College (April 2018 – April 2019)

ENTREPRENEURSHIP

Wasko Beadwork   September 2020 - Present
- Started beaded jewelry business after beading to de-stress during the pandemic
- Improved photography skills with mirrorless camera to best present my beadwork   https://waskobeadwork.square.site/
- Set up online store and Instagram community to market and sell my work   Instagram: @waskobeadwork
- Vendor at events such as the Montreal Indigenous Winter Market, McGill Winter Farmer's Market, and McGill Faculty of Education Orange Shirt Day

AWARDS

– **Hydro Quebec Science Award**   Sept 2019 - April 2022
  A major entrance scholarship to McGill University of $5000, renewable for 2 years, to support outstanding Quebec students pursuing a Bachelor of Science. Awarded a total of $15,000
– **RBC Indigenous Student Award - The Corinne Mount Pleasant-Jetté Leadership Award**   Sept 2019 - April 2022
  A national award valued at $4000, renewable for 3 years, given to 10 indigenous students from across Canada. "The Corinne Mount Pleasant-Jetté Leadership Award" is given as a special distinction to one of the 10 students "who demonstrates leadership skills in their community and acts as a change agent for Indigenous communities." Awarded a total of $12,000
– **TC Energy Indigenous Legacy Award**   Summer 2021
  $5000 award to support indigenous students pursuing post-secondary education
– **The IPEX Women's STEM Scholarship**   Summer 2021
  $3500 scholarship for a female student passionate about pursuing a career in STEM-related field
– **Chapeau les Filles – Prix Équité**   Fall 2020
  $2000 awarded by the Fédération des travailleurs et travailleuses du Québec to female undergraduate student
– **Indigenous Student Entrance Award**   Fall 2019
  $2000 awarded by McGill University in partnership with Indspire to new incoming post-secondary student
– **Science Communication Award at Dawson Science Fest**   April 2019
  Gave a 30 minute talk on Random Number Generators and their various applications
– **Top 35 out of 200+ in 2019 AMQ Math Competition**   May 2019
  (Association mathématique du Québec) Selected to attend the AMQ Collegial Math Camp

AFFILIATIONS

Sequoyah Fellow (Lifetime Member) – American Indian Science and Engineering Society
Student Member – Institute for Operations Research and the Management Sciences
Student Member – Canadian Mathematical Society