Jack Quirion

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Education

University of Ottawa — Ottawa, ON, CAN
Joint Honours Bachelor of Science in Computer Science and Mathematics (CO-OP) — *Sept. 2021 – Present*

- CGPA: 9.94/10 | Expected graduation: Dec. 2025
- MAT 4900 Undergraduate Research Project — Jan. 2025 – May 2025
  - Project title: The Directed Oberwolfach Problem—Small Cases: A Computational Approach
  - Supervisor: Dr. Mateja Šajna
- CSI 4900 Honours Project — Sept. 2025 – Dec. 2025
  - Project area: Structural/Algorithmic Graph Theory
  - Supervisor: Dr. Vida Dujmović

Experience

Game Theory Research Intern — May 2025 – Present
Institute of Science and Technology Austria (ISTA) — *Klosterneuburg, Lower Austria, AUT*

- Member of the Chatterjee Group under the supervision of Dr. Krishnendu Chatterjee
- Studying the complexity of multi-objective stochastic games with intentions of submitting a paper to a top conference/journal in the field

Tutor — Aug. 2022 – Present
Scholars Education — *Ottawa, ON, CAN*

- Provided individualized tutoring in mathematics, computer science and physics to high school students, adapting lesson plans to diverse learning styles
- Monitored student progress and collaborated with parents and staff to create strategies that improved student confidence and academic performance

AI/ML Engineering Intern — Sept. 2024 – Dec. 2024
Raven Connected Inc. — *Ottawa, ON, CAN*

- Developed and implemented event detection algorithms (e.g. refueling) for use on vehicle video telematics devices
- Built a real-time snap-to-road feature with intersection, crosswalk and speed camera detection, including data preprocessing, cloud communication with AWS and model implementation on Android device

Operations Research Intern — Jan. 2024 – May 2024
Defence Research and Development Canada — *Ottawa, ON, CAN*

- Developed a differential equations model to simulate training, mentor-mentee and attrition dynamics within fleets of the Royal Canadian Air Force (RCAF)
- Created and deployed a tool in Python based on this model for use by decision-makers in the RCAF, enabling custom scenario analysis with adjustable parameters and showcasing visualizations of key information, such as phase diagrams of personnel states through time and areas of system sustainability

Data Science Intern — May 2023 – Aug. 2023
Communications Research Centre Canada — *Ottawa, ON, CAN*

- Designed, implemented, and trained a sophisticated Multi-Agent Reinforcement Learning (MARL) model utilizing PettingZoo and RLlib to simulate bid generation strategies in a dynamic spectrum auction environment
- Conducted comprehensive analyses of the auction format and procedures leveraging the MARL model outputs, identifying key areas for enhancement and proposing actionable recommendations to improve auction effectiveness

Publications

Quirion, J., S. Okazawa, R. M. Bryce, and J. A. Henderson. "A mentored experience accumulation differential model: rapid parameter space analysis applied to Royal Canadian Air Force pilot production, absorption and retention". *2024 Winter Simulation Conference (WSC)*, Orlando, FL, USA, 2024, pp. 2026-2037, https://doi.org/10.1109/WSC63780.2024.10838854

Awards

- **Student Mobility Scholarship**, University of Ottawa 2025
- **Power Corporation of Canada International Experience Scholarship**, University of Ottawa 2025
- **Dean's Honour List**, University of Ottawa 2021-2025
- **CO-OP Student of the Year**, University of Ottawa - Faculty of Engineering 2024
- **CO-OP Student of the Year (Second place)**, University of Ottawa 2024

Technical Skills

Languages: Python, Java, SQL, MATLAB, Go, C++, C, LaTeX, HTML, CSS
Developer Tools: Git, GitHub, Anaconda, Jupyter, AWS, Android Studio, Linux
Libraries: pandas, NumPy, Matplotlib, RLlib, TensorFlow, PyTorch, scikit-learn, SciPy

Languages

English: Native, **French**: Fluent