

## Education & Certifications

- **MSC Physics, University of Ottawa, awaiting graduation**
  - Design and construction of free-space optics experiments for quantum communications.
  - Studying, writing, and presenting scientific research in the field of quantum cryptography.
  - Experience working with standard and niche optics equipment – lasers, waveplates, EOMs, adaptive optics, spatial light modulators.
  - Management of multiple projects at a time, both individual and collaborative.
  - Conducted lab tours for fellow researchers, politicians, and industry partners.
- **B Eng. Engineering Physics with COOP, McMaster University, 2022**
  - Course work: optics, laser physics, quantum information, quantum computation, control systems, circuit design, programming microcontrollers, data acquisition and analysis.
  - 12 months of systems engineering industry experience through coop program.
- **Certified LabVIEW Associate Developer (CLAD) (2018-2020)**
- **Delf B2 French**

## Skills & Abilities

- 5+ years of experience with system automation and test using LabVIEW 20xx, NXG, FPGA, cRIO
- Experience with programming and physics simulation in Python, MatLAB, and more.
- Experience with written and spoken scientific communication and documentation for technical and non-technical audiences.
- Ability to independently prioritize work responsibilities and accomplish goals within deadlines.

## Work Experience

- **CBIT Engineering, Systems Engineer** **2018-2024**
  - Developed, documented, and patented algorithms for in-situ nerve mapping during minimally invasive orthopedic and neuro-surgical devices using accelerometers and bio-electrical stimulus.
  - Designed, built, and deployed automated end of line test equipment in electronic manufacturing environments.
  - Studied NI's LabVIEW Core, Advanced, and FPGA courses. Passed NI's CLAD test.
- **Dialco Medical Inc, Engineering Testing Intern** **May–August 2021**
  - Understood and translated electrical standards given by IEC and ISO for medical devices to non-technical co-workers.
  - Created automated tests of custom dialysis hardware to ensure proper performance within IEC and ISO specification.
- **University of Ottawa, Research Assistant Coop** **May 2020–July 2021**
  - Developed custom applications for experiments in UOttawa graphene laboratory using LabVIEW.
  - Prototyped and deployed automation solutions for experiments using programmable electrical test instrumentation for digital and analog data acquisition.
  - Weekly meetings for ongoing software support and bug fixes for multiple projects.

- **Fresh Consulting, Robotics Engineering Coop** **May-August 2019**
  - Independently managed the full development of a prototype VR-enabled, wirelessly controlled robotics platform using Linux, ROS, and Python.

## **Publications**

- Predicting atmospheric turbulence for secure quantum communications in free space, arXiv:2406.14768, under review
- Fast Adaptive Optics for High-Dimensional Quantum Communications in Turbulent Channels, arXiv:2311.13041, under review
- Arrays of functionalized graphene chemiresistors for selective sensing of volatile organic compounds, ACS Applied Electronic Materials
- Graphene field effect transistors: A sensitive platform for detecting sarin, ACS Applied Materials & Interfaces
- UV illumination as a method to improve the performance of gas sensors based on graphene field-effect transistors, ACS sensors

## **Patents**

- Intraoperative neural monitoring system utilizing wavelet-based event detection, US Patent 11,980,474
- Intraoperative neural monitoring method, US Patent 11,980,476
- Intraoperative neural monitoring method utilizing wavelet-based event detection, US Patent 11,850,057
- Intraoperative neural monitoring method with statistical confidence determination, US Patent 11,850,040

## **Conferences, Presentations, and Awards**

- QUINT Workshop Research Progress Report Presentation
- Max Planck - University of Ottawa Centre for Extreme and Quantum Photonics Research Progress Report Presentation
- 2024 International Conference on Optical Angular Momentum Oral Presentation
  - Best Presentation Award
- 2024 Photonics North Oral Presentation
  - Finalist - Best Presentation
- 2024 Quantum Days Poster Presentation
  - Best Poster Award
- 2024 ARAQNE Consortium Poster Presentation
- 2023 Italian Quantum Information Science Conference Poster Presentation