Kai Asaoka

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SKILLS

- **Mechanical:** SolidWorks, Onshape, AutoCAD, 3D Printing, Laser/Waterjet Cutting, Technical Drawings.
- **Software:** Python Scripting, VHDL, Assembly, Java, C, Git, Linux, MATLAB, Experimental Data Analysis.
- **Hardware:** FPGA, Microcontrollers (Arduino, STM32), Digital Logic, Circuit Analysis, Soldering, Oscilloscopes.
- **Robotics:** Computer Vision (OpenCV, SIFT, Masking), Machine Learning (PyTorch, Keras, TensorFlow), Robotics Control (ROS), Simulation and Reinforcement Learning (Q-Learning, Gazebo), Controls (PID), PLC.
- **Optics:** Waveguides, Amplifiers, Attenuators, Filters, Polarizers, Time Interval Analyzers, Signal Processing.

EXPERIENCE

Quantum Communication Researcher (Co-op) **May 2024 – Dec. 2024**
Nippon Telegraph and Telephone Corporation (NTT) *Atsugi, Kanagawa, Japan*

- Self-directed optical fiber-based three-photon quantum interference experiments to calculate degree of interference using HOM dip visibility and JSI purity measurements, increasing fidelity of time-bin entangled qubits in GHZ state.
- Developed automated experimental procedures using self-written Python libraries using PyVISA and PySerial to shorten experiment run time from ~12 hours to ~2 hours by optimizing analysis and data collection processes.

Industrial Engineer - Continuous Improvement (Co-op) **Jan. 2023 – Apr. 2023**
VIA Rail Canada *Vancouver, BC*

- Designed and led implementation of seven projects using Kaizen, 5S, Six Sigma, Lean Manufacturing and Visual Management to improve average workplace task completion time by 10% in industrial facility.
- Proposed projects and provided stakeholder consultation and technical documentation to upper management, communicated with suppliers to procure equipment, organized facility-wide training initiatives to implement projects.

PROJECTS

Machine Learning and Computer Vision Competition **Sep. 2023 – Dec. 2023**
UBC Engineering Physics – ENPH 353 *Vancouver, BC*

- Implemented self-driving and image recognition of a simulated vehicle in Gazebo on Linux using OpenCV, PyTorch, Keras, TensorFlow, and ROS in Python, collaborated on Git, and scored max points placing fourth out of eighteen teams.

Autonomous Robot Competition **Apr. 2023 – Aug. 2023**
UBC Engineering Physics – ENPH 253 *Vancouver, BC*

- Led mechanical design within team of four, designed and fabricated self-driving all-terrain robot from scratch.
- Designed Ackermann steering geometry and chassis in CAD, fabricated using 3D printers, laser and waterjet cutters.
- Designed and soldered IR amplifier/detector circuit for use with STM32.

Powertrain Division Member **Sep. 2023 – May 2024**
UBC Supermileage Student Design Team *Vancouver, BC*

- Developed portable ECU tuning system to implement ultra-wideband O2 sensor for gasoline-powered prototype vehicle.

Stewart Blusson Quantum Matter Institute (QMI) **Feb. 2019 – Apr. 2019**
Flexible Capacitive Sensor Development Mentee *Vancouver, BC*

- Designed and fabricated flexible capacitive sensor using AutoCAD and SolidWorks, tested using MATLAB and Arduino.

EDUCATION

University of British Columbia **Sep. 2021 – May 2026**
BASc, Engineering Physics *Vancouver, BC*

- Studying Engineering Physics: UBC's most competitive and academically challenging engineering specialization, combining aspects of electrical and mechanical engineering, advanced physics, and mathematics.
- Awarded Dean's Honor List, Trek Excellence Scholarship in 2023 for GPA in the top 5% of faculty.