# Kai Asaoka

Contact: kaiasaoka@gmail.com | LinkedIn | Personal Profile: kaiasaoka.github.io

## 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*

- 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 data analysis and collection processes.
- Self-directed optical fiber-based three-photon quantum interference experiments. Designed experimental procedures, processed optical data signals, and tuned system using optical filtration, fulfilling all research objectives.

**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.