CYRUS YOUNG

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SKILLS

Programming Languages	MATLAB, Simulink, Python, Java, C, C++, LaTeX, VHDL, 8051 Assembly
Framework	Git, GitHub, Linux, ROS, PyQt
Libraries	Numpy, SciPy, Pandas, Matplotlib, OpenCV, Scikit-learn, TensorFlow
Electrical	STM32 Bluepill, Oscilloscope, Soldering, Circuit Design/Analysis/Logic, Signal Processing

EDUCATION

University of British Columbia   Expected May 2026
BASc in Engineering Physics, 4th Year

TECHNICAL WORK EXPERIENCE

Undergraduate Research Assistant at SoC Lab/Silicon Photonics   Feb 2024-
University of British Columbia   *Vancouver, BC*

- Contributed to the construction as well as the testing of the components of a frequency discriminator circuit.
- Designed and simulated photonic circuits in Simulink to quantitatively evaluate the effect of noise on the amplitude and phase inputs on the performance of our frequency discriminator circuit.
- Contributed to techniques used to remove noise in our delay line of the frequency discriminator circuit.
- Created and optimized programs using MATLAB to measure the lineshape given the frequency noise spectral density of a laser.
- Ran MATLAB simulations and programs to research the effect of Servo Bumps on the lineshape of the laser as well as methods to mitigate said effects.
- Designed using Onshape a double-wall vessel utilizing both acoustic foam and mechanical dampeners for our Frequency Discriminator Circuit which mitigates any mechanical or acoustic noise that would effect the performance of the circuit.

Engineer at UBC Orbit   July 2021 - Feb 2024
University of British Columbia   *Vancouver, BC*

- Analyzed the de-orbit time of the satellite (a CubeSat called ALEASAT) using STK (Systems Tool Kit) simulations, taking into account the surface area and mass of the satellite as well as different models pertaining to the planets atmosphere and the Suns solar activity.
- Wrote programs in both MATLAB and Python for determining the orbital propagation of the satellite, i.e. finding how the Satellite moves through space as a function of time so that its future position could be predicted.
- Tested orbital propagation algorithms on actual satellites to test accuracy of the final program.
- Contributed to a program that monitored the vitals (such as temperature and battery life) of the satellite.
- Helped design, do theoretical calculations, test and construct the Helmholtz Cage (along with the individual Helmholtz Coils) testing apparatus for our satellite.
- Test the magnetometer and magnetorquers of the Satellite by running a current through the Helmholtz coils in order to generate a uniform magnetic field.
- Contributed to developing a mathematical model to compensate for sensor limitations of our MEMS magnetometers.

Student Researcher at TRIUMF   May 2022 - Sept 2022
TRIUMF Particle Accelerator   *Vancouver, BC*

- Ran the necessary physics simulations using Geant4Beamline program for multiple Beamline experiments running July-October 2022 in order to find the optimal experimental/detector set-up for analyzing antimuon decay into positrons in the context of Muon Spin Spectroscopy.
- Came up with an analytical solution for the trajectory of a positron in a uniform magnetic field as a method of positron tracking in a muon experiment.
- Contributed to preparing the beamline experiments.
- Co-authored conference poster presentation about determining the trajectory of a positron for the Muon Spin Spectroscopy conference in Parma, Italy August 2022.
- Used MATLAB, Java and Excel for data analysis, calculations and plotting results.

MATH 110 Teaching Assistant   Sept 2021 - Dec 2021
UBC   *Vancouver, BC*

- Helped facilitate and provide assistance in workshops/discussion sessions for MATH 110.

- Ran problem-solving sessions with supervision from instructor.
- Completed prep work for upcoming workshops/discussion sessions.

TECHNICAL PROJECT EXPERIENCE

Signal Generator PCB, University of British Columbia $\hfill$ May 2024 - June 2024

- Used KiCad to design a Circuit in which a 5V DC voltage source is produced from a 15V DC signal, and then used to control and generate an output signal.
- Created custom footprints for the components in order to match the specifications of the manufacturer.
- Soldered components onto the PCB.
- Used Oscilloscope to apply a variety of tests to ensure proper functionality of the PCB.

Simulated License Plate Detecting Robot, University of British Columbia $\hfill$ Sept 2023 - Dec 2023

- Designed an autonomous vehicle capable of navigating a predetermined terrain with roads and mountains in ROS Gazebo, with functionalities to read parked car license plates and avoid collisions.
- Implemented a Convolutional Neural Network (CNN) via TensorFlow for character recognition on license plates.
- Leveraged SIFT and OpenCV for real-time license plate detection and extraction from video feeds.
- Employed a PID algorithm via OpenCV for obstacle avoidance and navigation.

Autonomous Mario Kart Robot, University of British Columbia $\hfill$ May 2023 - Aug 2023

- Part of a team of four that created a fully-autonomous robot inspired by the game Mario Kart.
- Built most of the circuitry of the robot, including the H-Bridges, Power System and regulators, opto-isolated Servo, Hall Effect Sensor, as well as portions of the tape sensor.
- Helped program the PID software to follow tape on the race track.
- Wrote a program in which the robot slows down if the a magnetic field is detected from a bomb on the track.
- Built and co-designed the snowplough (using OnShape) at the front of our robot to deflect magnetic block bombs.

ACHIEVEMENTS

- UBC Trek scholarship, awarded to the top 5% of students per faculty.
- Thomas Beeching Scholarship, awarded by the recommendation of the UBC Faculty of Applied Science.
- FYSRE Scholarship, awarded to 2-3 students per year who are entering the faculty of Physics or Engineering Physics.
- UBC Presidential Scholars Award, awarded to students with outstanding academic and leadership achievements.

PUBLICATIONS

- "Topology Meets Time-Reversal Symmetry Breaking in FeSe$_{1-x}$Te$_x$ Superconductors". M. Roppongi, Y. Cai, K. Ogawa, S. Liu, G. Q. Zhao, M. Oudah, T. Fujii , K. Imamura, S. Fang, K. Ishihara, K. Hashimoto, K. Matsuura, Y. Mizukami, M. Pula, **C. Young**, I. Markovic, D. A. Bonn, T. Watanabe, A. Yamashita, Y. Mizuguchi, G. M. Luke, K. M. Kojima, Y. J. Uemura, and T. Shibauchi [Submitted]

- "Tracking decay positrons in a magnetic field for muon microscope applications". Citation C Young and K M Kojima 2023 J. Phys.: Conf. Ser. 2462 012013 DOI 10.1088/1742-6596/2462/1/012013 IOP Science · Apr 13, 2023