Davis Toth

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Education

BASc in Engineering Physics | *University of British Columbia* Expected Graduation 2027

- Wesbrook Scholar, Dean's Honour List, Men's Ultimate Frisbee Team — Captain

Work Experience

R&D Engineering Intern | *MKS Photon Control Inc.* May - Aug 2025

- Built a multithreaded Python GUI application to streamline instrument control and data logging, improving test system usability for engineers
- Designed and implemented a modular, scalable software architecture, integrating device APIs (serial, TCP/IP) and JSON-based state management, cutting future feature development time by $\sim 50\%$
- Enhanced hardware usability by designing mounts/adapters for optical components in SolidWorks

Hardware Engineering Intern | *Microchip Technology Inc.* May - Dec 2024

- Delivered tape-out-ready 3nm layouts using Cadence EDA tools to perform place-and-route, static timing analysis, and signoff verification (DRC, LVS, EM/IR)
- Developed and automated a QA flow for third-party IP with Bash scripting, cutting verification runtime by 30% and deploying it on NASA's High Performance Space Computing project
- Taped-out a 6nm chip revision, auditing and resolving 50+ violations to ensure fabrication readiness

Research Assistant | *Capilano University & Hynes Group* Jan - Apr 2023

- Built a CFD model of a 1,000 sq.ft. data centre housing 250+ servers using SolidWorks and Ansys Fluent
- Modeled server heat output in MATLAB to analyze airflow and optimize air-conditioning energy use

Projects

AC Ionic Thruster | *Python, high voltage* Sep 2024 - Feb 2025

- Developed a Python simulation to model ion thruster performance, relating input voltage and electrode spacing to thrust using fundamental physics equations
- Designed a high-voltage test system with automated data collection and layered safety features, including mechanical safeguards and custom safety circuitry

FPGA Digital Clock | *Assembly Language* Jul - Sep 2024

- Developed 8051 Assembly to implement a milli-second accurate clock with adjustable display interface

Simulated Robot Detective Competition | *Python, Linux, ML/AI* Jan - Apr 2024

- Developed a state machine navigation architecture for autonomous pathfinding utilizing computer vision, image processing, PID control and ROS
- Trained a convolutional neural network to interpret alphanumeric characters with 90% accuracy

Mario Kart Themed Robot Competition | *rapid prototyping, CAD, C* May - Aug 2023

- Designed and fabricated the chassis of an autonomous robot with 3D-printed and laser-cut parts
- Integrated collision avoidance logic into the PID driving algorithm using sonar sensors, reducing navigation errors by 67%

Technical Skills

Programming: Python, MATLAB, Bash, C, Java, Assembly, VHDL, Verilog
Prototyping: 3D-printing, Laser Cutting, Soldering, Oscilloscopes, Circuit Debugging
Other Tools: Linux, Git, SolidWorks, OnShape, Subversion, Innovus, Ansys Fluent