Davis Toth

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Education

BASc in Engineering Physics | *The University of British Columbia* Expected Graduation 2026

- Dean's Honour List, Men's Ultimate Frisbee Team (Captain and Finance Executive)

Work Experience

Physical Design Engineer | *Microchip Technology Inc.* May 2024 – Present

- Executed place-and-route flow on multiple 3nm technology blocks using Cadence EDA tools
  - Performed functional and physical verification, static timing analysis, and electromigration and IR drop analysis on the layout, debugging violations to ensure compliance for signoff
- Developed a quality assurance flow for third-party IP, leveraging an internal tool to run sanity checks and physical verification across multiple technology nodes
  - Decreased runtime by 30% with a Bash script to automate extracting test results from the tool
  - Implemented the QA flow on NASA's High Performance Space Computing project
  - Documented and presented the flow to teams around the world for use on future projects
- Taped-out an all-layer revision of a 6nm chip, auditing the layout to ensure readiness for fabrication

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

- Developed a computational fluid dynamics model of a data centre to optimize for energy efficiency by simulating velocity and temperature gradients of airflow
- Modelled the 1,000-sq. ft. data centre in SolidWorks integrating over 250 servers for analysis
- Simulated server heat production given its energy consumption and physical/thermal properties

Technical Projects

DE0-CV FPGA Board Digital Clock | *Assembly language* Jul – Sep 2024

- Developed 8051 Assembly code to turn the DE0-CV into a millisecond accurate digital clock
- Implemented user interface features, including time and date setting and display toggling

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

- Developed robot navigation algorithm utilizing computer vision, image processing, PID control and ROS for autonomous operation through a virtual Gazebo course
- Trained a convolutional neural network to interpret signs with alphanumeric characters

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

- Engineered a fully autonomous robot from scratch capable of navigating the racetrack, picking up item boxes while avoiding "fake" ones with magnets, and mounting/dismounting on a zipline
- Designed the robot chassis in OnShape and constructed it with laser-cut and 3D-printed materials
- Implemented a collision avoidance system integrating a sonar sensor into the robot hardware and PID motor control software

Technical Skills

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