

# Nick Allison

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## Education

**BSc. Electrical Engineering; BSc. Computer Science;  
Minor in Computer Engineering, GPA: 3.93/4.00,**

Sep 2020 – Apr 2026

*University of Calgary*

## Skills

### Hardware:

Digital Design, SystemVerilog, Synopsys Tools (VCS & Verdi), Verilator, Embedded Systems, Electromagnetics Analysis, Circuit Analysis, LTSpice

### Software:

C++, C, Rust, GDB, Python, Java, Linux, Git / ClearCase, Bash, CMake, Make, Valgrind, ROS Noetic, Machine Learning

## Experience

### Qualcomm, SoC Design Intern [🔗](#)

May 2023 – Aug 2024 | Markham, Ontario

- Hardware Design
  - Implemented, connected, and debugged new module instantiations.
  - Created a script to list every wire and child module within a module.
- CMake Implementation
  - Proposed and led a transition to use CMake as the build system from the prior Make based system.
  - Achieved a best case speed increase by 85% resulting in a compilation time of 10 minutes instead of 65 minutes.
- Power Optimized Design
  - Implemented clock gating on DMA module for the display team.
  - Debugging 8-bit fixed point vs. 16-bit floating point power discrepancy.

### MapaRobo, Robotics Engineering Intern

May 2022 – Aug 2022 | Calgary, Alberta

- Overhauled landscaping robot's localization and navigation. Solved issues with inaccurate conditions with GPS and IMU signals and kept location accuracy to within 0.02m and 3 degrees.
- Created a custom sensor fusion algorithm based on a Kalman filter in C++, as well as created a custom local path planning algorithm. Lowered accuracy degradation from 10 degrees/minute to 0 degrees/minute.
- Refined perception system to recognize objects at a 2x distance. Lowered false positive rate by 90%.
- Designed and created a convolutional neural network with Pytorch to recognize adverse conditions with a 300% increase in performance from the previous system.

### University of Calgary, Mentor - Peer Assisted Study Sessions

Sep 2024 – present | Calgary, Alberta

- Mentored incoming PASS Leaders by providing teaching and class facilitation techniques.
- Managed, observed & provided feedback to improve their sessions.

### University of Calgary, Leader - Peer Assisted Study Sessions

Jan 2021 – Apr 2023 | Calgary, Alberta

- Taught first-year engineering students introductory Circuits & Electromagnetism.
- Improved grades of regular attendees by an average of 1 letter grade.
- Spoke publicly to 40 - 200 attendees and worked as a team with another PASS leader.

## Teams & Clubs

### Software Team Lead, AC Robotics - Canis Quadruped Team

Jul 2022 – Apr 2023 | Calgary, Alberta

- Managed a team of 4+ software engineering students.
- Created forwards and inverse kinematics models for robot legs and body in C++.
- Implemented a walking gait model for locomotion using an IMU and PID control for orientation and balance.

## Projects

### Robot Hand, Helping Hands [🔗](#)

Jan 2023 – Apr 2023

- Led a team of 6 people to create and program a robot hand to translate speech into sign language.
- Used ROS and C++ to program and control the robot, and natural language processing to transcribe the speech.

### Signal Generator [🔗](#)

Dec 2022

- Created a signal generator with an FPGA. Simulated and tested with Verilator.
- Used a linear interpolation core to run at frequencies from 1Hz to 1MHz at 1Hz steps.
- Used an R2R Ladder Digital-Analog-Converter to generate the sine wave.