Diego Escalante

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Education

Bachelor of Applied Science in Electrical Engineering — Minor in Artificial Intelligence
University of Toronto Class of 2026 +PEY Co-op — *Dean's List*

Relevant Courses

Digital Systems, Programming in C/C++, **Operating Systems**, Probability, Computer Organization, Software Design, Circuit Analysis, **Computer Networks**, **Data Structures and Algorithms**.

Skills

Programming: **Python**, **C/C++**, Bash, Git, Docker, **Verilog**, MATLAB, Javascript/HTML/CSS.

Hardware: Altium, Digital Design, **STM32 Programming**, Quartus Prime, Power Devices.

Experience

Ground Station Programmer — Nov. 2024 – Present
University of Toronto Aerospace Team (UTAT) — *Toronto, ON*

- Collaborated with the firmware team to achieve communication through the SRS4 transceiver.
- Lead Python and C++ development for the Rot2Prog rotator drivers.
- Currently coding a python script to convert TLEs into coordinates to track satellites with the ground station.

Firefox Contributor — Sep. 2024 – Present
University of Toronto Open Source Society (UTOSS) — *Toronto, ON*

- Fixed three bugs in Firefox's codebase using C++, with all contributions accepted by Mozilla.
- Supported cross-platform development environment setup for team members using Linux, MacOS, and Windows.
- Currently developing a custom Firefox extension for better music support with the Spotify Dev API.

Summer Research Fellow — May. 2024 – Aug. 2024
University of Toronto — *Toronto, ON*

- Taught microprocessor programming and CAD design to 30+ engineering students.
- Created activities to teach second year engineering students the basics of the I2C protocol and UART.
- Optimized a power IGBT driver board with Altium, using newer components to increase efficiency by 2-3%

Projects

Haiku Generator (AI Model) — Sept. 2024 – Dec. 2024

- Developed a poetry generator using a GRU-based model in PyTorch, achieving near-human haiku quality (average score 4.3/5 vs. 4.5/5 for real poems).
- Train a language model on 500,000+ lines of poetry from the Poetry Foundation, building a vocabulary of 109,976 distinct words.
- Process data using the CMU Pronouncing dictionary, NLTK, and the NumPy Python libraries.

unfairUndyne — Feb. 2024 – Apr. 2024
Project Link

- Created a custom C library to support 60fps animations and 8KHz audio on a 120MHz soft processor, optimizing performance by using interrupts.
- Coordinated with teammates using Git and best coding practices, maintaining a clean, modular codebase.
- Authored thorough, consistent documentation for all major functions in the finalized code directory to ensure clarity and maintainability.

Home Server — Jul. 2024 – Present

- Host a Debian-based system accessible remotely via Secure Shell (SSH) or Virtual Network Computing (VNC) for efficient system management.
- Develop a responsive personal website with the React framework, Javascript, HTML, and CSS. Deployed the website with Cloudflare and Nginx running on a Docker environment.
- Optimized workflow by offloading Python scripts, including PyTorch models and web scrapers, to the server, achieving 2-3x faster execution.