

Keevan Harold

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EDUCATION

University of Waterloo

Bachelor of Applied Science in Electrical Engineering

Waterloo, ON

Expected 2029

EXPERIENCE

Hitachi Rail

May 2026 – August 2026

Software Analyst (Co-op)

Toronto, ON

- Developed C++ functionality for an LDC Viewer that organized and displayed automated-test data from the Environment Simulator, Wayside Simulator, and WinSCLTT, with updates guided by CBTC system requirements.
- Implemented data-filtering and event-timeline features that helped engineers isolate relevant simulator outputs and investigate discrepancies between expected and observed test behavior.
- Collaborated with senior developers to debug and validate viewer updates, using Bitbucket and GitHub workflows to manage branches, commit changes, and incorporate code-review feedback.

Hitachi Rail

September 2025 – December 2025

Software Analyst (Co-op)

Toronto, ON

- Built and maintained Python-based automated test scripts to validate train-operator command behavior against CBTC system requirements.
- Worked with the hardware team to understand CBTC hardware interactions and incorporate realistic constraints into end-to-end test scenarios.
- Integrated REST API requests into test workflows using Postman to verify command execution and system responses.

Swarmio Inc

April 2024 – August 2024

Junior Data Scientist

Toronto, ON

- Supported latency optimization and edge-computing performance tests for real-time gaming applications.
- Prepared and cleaned datasets with Python, then used CreateML with an existing CoreML model to support gaming-focused machine-learning experiments.

AE Electrical LTD.

April 2023 – August 2023

Administrative Assistant

Toronto, ON

- Managed data entry, filing, computing tasks, and monthly expense records with strong attention to detail.
- Designed local-directory advertisements and researched material-sourcing options, documenting benefits and tradeoffs.

PROJECTS

4-Layer STM32 Buck-Converter PCB | *KiCad, PCB Design, Power Electronics*

- Designed and laid out a four-layer STM32 control board in KiCad with integrated 3.3 V buck-converter power regulation, organizing power and signal routing across the PCB stackup.
- Placed decoupling capacitors near IC supply pins and used continuous ground planes to provide low-impedance return paths, reduce noise, and improve power integrity.
- Routed I²C and UART interfaces and implemented an external crystal oscillator with load capacitors; configured clearance, trace-width, and via constraints for reliable routing.

RISC-V Processor | *SystemVerilog, Icarus Verilog, Make, Surfer*

- Designed a single-cycle RISC-V processor supporting register and immediate ALU operations, aligned LW/SW, conditional branches, JAL, JALR, LUI, and AUIPC.
- Developed modular RTL for the ALU, control, register file, immediate generation, branch logic, and memories; added parameterized instruction-memory loading and deterministic reset behavior.
- Built seven self-checking unit and CPU testbenches; verified arithmetic, control flow, memory access, reset, and simulation-only EBREAK halt behavior in a 14-cycle smoke test, with VCD waveform inspection in Surfer.

TECHNICAL SKILLS

Languages: SystemVerilog, VHDL, C++, Python | **Hardware:** PCB Design, KiCad, Power Electronics, FPGA Design, Digital Logic, Quartus Prime

Tools: Git, GitHub, Bitbucket, Icarus Verilog, Make, Surfer, Postman, VMware, VS Code | **ML:** CreateML, CoreML