

Thomas Hart

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Skills

Languages: C++, C, Java, Python, Verilog, Rust, VHDL, ARM Assembly, SQL, HTML, CSS, JavaScript

Frameworks/Libraries: Langchain, Android SDK, AOSP, React.js, Django

Tools: Linux, Git, CMake, Oscilloscope

Hardware: STM32, FPGA, Arduino, Raspberry Pi

Experience

Data Engineer · RxFood · Toronto, ON Jan 2025 – Present

- Working on the data engineering team to build various data analysis projects using **Python** and **SQL**.

Founder · AI Docs · Vancouver, BC Jan 2024 – June 2024

- Leveraged **prompt engineering** and **fine-tuning** techniques on **LLMs** using **Python** and **Langchain** to create a tool that automatically writes documentation for codebases, enabling faster and more streamlined development.
- Won the **Overbeeke Family Entrepreneurship Excellence Award (\$5,000)** from the University of Waterloo's enterprise co-op pitch competition out of **30+** students, recognizing the tool's impact on development efficiency.

Undergraduate Research Assistant · University of Waterloo · Waterloo, ON May 2023 – Aug 2023

- Collaborated with a team of researchers supervised by Professor Arie Gurfinkel to perform **formal verification** of **Rust** code using the **SeaHorn** verification framework, enhancing code reliability.
- Reduced verification time by **50%** by using alternatives to common data structures in the **Rust** standard library.
- Demonstrated **SeaHorn**'s effectiveness by writing verification jobs to find errors in legacy versions of **Rust** crates.

Software Engineer · Peraso Technologies · Toronto, ON Sept 2022 – Dec 2022

- Developed a custom **XML** parsing and generation tool in **C++** to streamline **EEPROM** programming, achieving **95%** faster input speed compared to manually entry.
- Optimized the **CLI firmware** for **5G radio devices** and removed redundant command outputs, resulting in **20%** faster runtime, and elimination of all input errors.

Autonomous Vehicle Android Developer · Ford Motor Company · Remote Jan 2022 – Apr 2022

- Leveraged hidden **AOSP Java** classes to implement a critical feature for the map application in an **in-vehicle infotainment system**, demonstrating technical agility and understanding of **OOP** concepts.
- Migrated legacy code to the latest **Android**, allowing for long-term compatibility with future development.

Projects

RISC-V Processor (Verilog)

- Developed a 5-stage pipelined **RISC-V** processor in **Verilog**, with data-forwarding and stalling to avoid hazards.
- Designed and verified memory modules and control logic, enabling efficient handling of different data sizes.

Finance Translator (Python, Django, HTML, CSS)



- Developed a web application using **Django** to simplify complex financial text using **NLP** through the **Cohere API**.
- Implemented a **trie-based search algorithm** to identify keywords in the text and provide relevant links.

Arduino Stock Ticker Display (Arduino, C++, Python)



- Developed a real-time stock ticker display using an **Arduino Uno WiFi** and connected **LCD display**.
- Made periodic calls to the **Yahoo Finance API**, allowing users to track **live stock prices** for their portfolio.

Education

University of Waterloo · BAsC in Computer Engineering · GPA: 3.71 Sept 2021 – Apr 2026

- Relevant Courses:** Algorithms and Data Structures (C++), Systems Programming and Concurrency (C), Real-Time Operating Systems (C, ARM), Compilers (Java), Computer Architecture (Verilog)