

Thomas Hart

✉ thomas.hart@uwaterloo.ca | ☎ 778-387-0195 | 🌐 thomashart.tech | in thomashart17 | 🐙 thomashart17

Skills

Languages: C++, C, Python, Java, Verilog, Rust, ARM Assembly, PostgreSQL, MySQL, TypeScript, JavaScript

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

Tools: Linux, Git, CMake, Tableau, Metabase, DBT

Hardware: STM32, FPGA, Arduino, Raspberry Pi, Oscilloscope

Experience

Software Engineer · *Radox* · Antrim, Northern Ireland September 2025 – Present

- Architected a **Python Panel** biochip viewing application using **distributed computing** with **Dask** to eliminate concurrent user stalling issues and improve system scalability for multiple simultaneous users.
- Implemented a **Prefect** server with reverse proxy through **NGINX** to efficiently distribute and schedule critical services, streamlining workflow automation and improving system reliability and scalability.

Data Engineer · *RxFood* · Toronto, ON Jan 2025 – Apr 2025

- Built a custom reporting engine using **Python** and **PostgreSQL** to automatically generate patient outcome reports for clinicians, **saving 2–3 hours** of manual work per report and improving long-term scalability.
- Added **interactive graphs and visualizations** to the clinician portal using **React.js** and **TypeScript**, improving usability and enabling actionable insights into patient health trends for **600+** clinicians.

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, and eliminating logic errors.
- Achieved a **50%** reduction in verification time by using alternatives to common data structures in the **Rust** standard library, while maintaining accuracy by writing verification jobs to find errors in legacy versions of popular **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 manual entry and saving valuable engineering time and resources.
- Optimized the **CLI firmware** for **5G radio devices** and refactored redundant command outputs, resulting in **20%** faster runtime, **10%** less memory usage, more clear and concise output, and the 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** version and to a newer build system, allowing for long-term compatibility with future development and a **25%** reduction in build time.

Projects

Pre-Trade Risk Management System (In Progress) (Hardcaml, FPGA)

- Building an **FPGA**-accelerated pre-trade risk management system using **Hardcaml** for a final year design project.
- Implementing **over 20 risk checks** at line-rate to enable safer **high-frequency and low-latency trading**.

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.

Education

University of Waterloo · BSc in Computer Engineering · 3.72 GPA Sept 2021 – Apr 2026

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