

Lucas Thiessen

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Education

University of Waterloo

Bachelor of Applied Science in Computer Engineering

September 2020 – April 2025

Experience

Software Developer | Mikobyte Solutions

January 2024 – December 2024

- Developed a chat feature in **C++** using the **ChatGPT API**, enabling tenants to ask questions about their building
- Implemented custom document chunking and message content generation to improve response accuracy
- Created a user-friendly stock trading interface, enabling seamless interaction with real-time stock market data
- Designed algorithmic solutions in **C++**, optimizing performance and solving complex client problems

Software Engineer | AlertDriving

January 2023 – April 2023

- Implemented modern encryption for password storage in an **SQL** database, improving data security by 40%
- Developed over 50 features and bug fixes using **PHP**, **JavaScript**, and **SQL** enhancing application performance
- Developed comprehensive unit tests with **PHP Unit** for key features across AlertDriving's system

Back-End Software Developer | Year Zero Studios

May 2022 – August 2022

- Developed a quiz-building application using **React**, **Next.js**, and **Firestore**, improving overall user experience
- Enhanced functionality across multiple projects by implementing features using **Figma**, **Firestore**, and **Heroku**

Computing Assistant | University of Waterloo

September 2021 – December 2021

- Implemented mobile views on an asset management website using **PHP** and **JavaScript** improving accessibility
- Maintained the Faculty of Arts applications and asset management website, resolving over 30 issues

Projects

CargoBuddy: Advanced Autonomous Cargo Delivery System

2024

- Developed an autonomous robotic system for transporting items in storage facilities, enhancing efficiency
- Engineered an autonomous system using **LiDAR**, **ultrasonic sensors**, and a **Raspberry Pi**, optimizing path planning algorithms in **C++** for precise navigation

RTL 5-Stage Pipelined Processor

2023

- Designed a 5-stage pipelined processor on a **PYNQ-Z1 FPGA**, using **Verilog** and **SystemVerilog**
- Developed hazard detection and forwarding units, reducing data hazards, and optimizing pipeline efficiency
- Executed functional and timing simulations with **Verilator** and **Vivado**, resolving critical design issues

VHDL Compiler

2023

- Built a compiler for a VHDL-like language, handling lexical analysis, parsing, translation, and optimization
- Implemented multiple parsing algorithms in **Java**, such as a custom Recursive Descent Parser and **Parboiled**

Altera Cyclone FPGA Operating System

2023

- Designed and implemented a first-fit memory management system in **C**, reducing memory fragmentation
- Developed a priority-based kernel with min-heap scheduling and aging techniques, improving task run times
- Implemented inter-task communication enabling seamless coordination between tasks and devices

Skills

Programming Languages: C++/C, Java, Kotlin, Python, Verilog, VHDL, RISC-V, PHP, SQL, JavaScript, HTML/CSS

Tools: UNIX/Linux, Git, Vim, PuTTY, FPGA, Visual Studio, Android Studio, Firestore, Figma, Heroku, MongoDB Atlas

Libraries/Frameworks: Bootstrap, Express, Laravel, Next.js, Material UI, Node.js, Pygame, React, Requests