Lucas Thiessen

 LinkedIn | 226-970-2402 | lucas.thiessen@uwaterloo.ca | GitHub | Personal Website

Education

University of Waterloo   **September 2020 – April 2025**
Bachelor of Applied Science in Computer Engineering

Skills

Programming Languages: C++/C, Verilog, VHDL, RISC-V, Python, Java, Kotlin, PHP, SQL, JavaScript, HTML/CSS
Hardware/Tools: UNIX/Linux, Git, Oscilloscope, Soldering, PCB Design, DMM, PuTTY, Firestore, Figma, Heroku

Experience

Software Developer | Mikobyte Solutions   **January 2024 – December 2024**
- Developed a chat feature in **C++** using the **ChatGPT API**, allowing tenants to obtain detailed, context-aware answers to building-related questions
- 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 and optimized algorithmic solutions in **C++** to meet client requirements and performance constraints

Software Engineer | AlertDriving   **January 2023 – April 2023**
- Automated user account creation by enabling bulk employee uploads via Excel and sending setup emails
- Developed over 20 features and bug fixes using **PHP**, **JavaScript**, and **SQL,** enhancing application performance
- Implemented comprehensive unit tests with **PHPUnit** for features in a driver training system, ensuring robustness and reliability

Back-End Software Developer | Year Zero Studios   **May 2022 – August 2022**
- Developed a quiz-building application using **React** 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**
- Maintained an asset management website for the University of Waterloo, resolving over 30 issues
- Implemented mobile views on an asset management website using **PHP** and **JavaScript,** improving accessibility

Projects

CargoBuddy: Advanced Autonomous Cargo Delivery System   **May 2024 – Present**
- Developed an autonomous robotic system for transporting items in storage facilities, enhancing efficiency
- Optimized path planning algorithms in **C++** on a **Raspberry Pi**, utilizing an internal map for efficient navigation
- Engineered precise navigation using a particle filter algorithm, integrating data from **ultrasonic distance sensors** and **LiDAR** to enhance localization accuracy
- Designed a custom **PCB** to optimize the robotic system's functionality and streamline hardware integration

RTL 5-Stage Pipelined Processor   **September 2023 – December 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 processor efficiency
- Executed functional and timing simulations with **Verilator** and **Vivado**, resolving critical design issues

Altera Cyclone FPGA Operating System   **May 2023 – August 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