Erin Hu

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EDUCATION

BASc, Computer Engineering, *University of Waterloo* 2024 – 2029

Algorithms (C++), Computers (RISC-V), Systems Programming (C), Prototyping (C, STM32), Circuits (Oscilloscopes)

- Ignition Hacks Sponsorship Director , UW Climbing Club

EXPERIENCE

GPU Driver Intern, *Lynx Software* 09/2026 – Present | Waterloo, ON

- Tested safety-critical **OpenGL** and **Vulkan** APIs for targets for compatibility with Intel IrisXe and AMD E9171 GPU cores
- Implemented 15 **modular test cases** for context, surface, and buffer management with EGL API for CoreSuite 2.0
- Refactored hardware-agnostic, safety-critical, and DO-178C-certified tests for the US Army's FLRAA aircraft program
- Programmed 12 **black-box tests** in **C**, ensuring **determinism** on a **real-time** test harness with resource constraints

Systems Software Engineering Intern, *Aptiv / Wind River Systems* 01/2026 – 04/2026 | Kanata, ON

- Restructured thread priority and event signaling in **C** to avoid race condition in virtual machine manager
- Ensured regulatory **DO-178C** compliance standards for **safety-critical** airborne systems by documenting architecture specifications for 16+ Helix Virtualization Platform **hypervisor** and **VxWorks** modules in Polarion
- Resolved 18 customer-reported discrepancies from Jira between VxWorks Board Support Package (**BSP**) integration guide documentation for PowerPC-based hardware by tracing kernel logic and APIs in Bitbucket code
- Performed root cause analysis using assertions, stubs, and execution logs for **automated unit tests**

Satellite Firmware Developer, *UW Orbital* 05/2025 – 12/2025 | Waterloo, ON

- Programmed modular INA230 sensor driver in **C** to measure shunt/bus voltage and current for RM46L852 MCU
- Authored 14 **unit tests** using **C++** and Google Test (**GTest**); added and validated mock I2C register data bytes
- Developed C and **FreeRTOS** module to parse binary files of sun position data from NASA JPL's Horizons API
- Implemented a deterministic, statically-allocated thermal management task for LM75BD sensor telemetry data

Autonomous Robotics Software Developer, *WATonomous* 11/2024 – 04/2025 | Waterloo, ON

- Integrated publisher/subscriber scripts in **C++** and **ROS2** inside **Docker** containers in a **Linux** (**WSL**) environment
- Implemented real-time emergency braking for autonomous racecar in F1Tenth Gym simulator
- Used **LiDAR** distance and speed odometry data to calculate time to collision and control vehicle linear velocity

PROJECTS

Voltage and Temperature Monitor

- Designed a real-time, multithreaded voltage monitor system using **C, FreeRTOS, and STM32** ARM Cortex MCU
- Implemented a **mutex** between voltage (**ADC sampling**) and status LED (**GPIO PWM**) tasks for thread-safety
- Programmed modular **BMP180 I2C** temperature sensor driver for register calibration and bit manipulation
- Logged diagnostics with error-reporting macros and debugged using breakpoints in STM32CubeIDE
- Minimized latency using inter-process communication between button **ISR** and **UART queue** handler

LED Lamp

- Assembled circuitry, designed schematics, and programmed an **STM32** in **C** to enable buttons to control LEDs
- Performed **Agile SDLC**, tracked workflow on a **Trello** Kanban board, and wrote a project proposal for design

Boundary-Detecting Robot

- Programmed **GPIO** peripherals in **Python** on **Raspberry Pi** to autonomously avoid environmental boundaries
- Controlled DC motors with L293D IC for responsive actuator feedback loops with photoresistors sensors

Security Alarm System

- Programmed an **Arduino** in **C++** to enable LED blinking and buzzer sounds until the correct passcode is inputted
- Implemented alert outputs for idle state and 10-second authentication window for successful or failed attempts

SKILLS

Programming/Tools: C, C++, FreeRTOS, Assembly (RISC-V), Git, Pytest, Docker, WSL, PuTTY, Oscilloscopes
Hardware: ARM Cortex-M4 (STM32), Arduino, Raspberry Pi, UART, ADC, GPIO, PWM, Sensors
Interests: Robotics, Embedded Systems, Microcontrollers, Avionics, Safety-Critical Systems