

Athrav Seruwam

☎ 647-960-0095 | ✉ aseruwam@uwaterloo.ca | in [LinkedIn](#) | [GitHub](#) | [Portfolio](#)

EDUCATION

University of Waterloo

Candidate for BAsC, Mechatronics Engineering

Waterloo, ON

Sept. 2025 – Apr. 2030 (Expected)

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, C/C++, SQL

Frameworks & Tools: React, Next.js, FastAPI, Node.js, Docker, PostgreSQL, WebSockets, Playwright, Git

Cloud & AI: AWS (ECS, CloudFront, RDS, S3, Bedrock), Gemini API, OpenAI API

Embedded: CAN/LIN, Hardware-in-the-Loop (HIL) testing, ECU firmware, sensor integration

EXPERIENCE

Software Engineer Intern

Jan. 2026 – Apr. 2026

Quotograph

Waterloo, ON

- Developed AWS Bedrock-powered permit analysis features for approval prediction, PDF export, and admin workflows; delivery contributed to a **\$200K/year** enterprise contract
- Implemented a cross-service Stripe billing system with subscription tiers, referral attribution, and checkout flows
- Built a referral system across Next.js and FastAPI services with signup code handling, credit allocation, invite emails, expiry handling, and rollback for failed multi-step writes
- Designed PostgreSQL-backed form schemas, APIs, and inspection state machines for AI Safety Forms as the **sole developer** across 3 commercial SaaS products
- Deployed PermitX on AWS using ECS, CloudFront, RDS, S3, Bedrock, and CI/CD deployment pipelines; engineered a multi-step document approval workflow with configurable branding and PDF generation
- Shipped dual-model YOLO inference routing for construction takeoff analysis, selecting specialized models based on document content type

Firmware Developer

Sept. 2025 – Dec. 2025

University of Waterloo Formula Electric

Waterloo, ON

- Developed C/C++ firmware modules for CAN/LIN communication across multiple ECUs, implementing sensor data parsing and subsystem message routing
- Built a C++ based signal simulation and HIL testing framework for automated control board validation, reducing per-board validation time by **35%** and detecting overcurrent and bus-timeout faults without manual intervention

PROJECTS

Dextera 🤖 | *ESP32, Next.js, TypeScript, WebSockets, Node.js*

ConHacks – 2nd Place | 2025

- Built a smart-glove rehabilitation platform for stroke and hand-injury recovery, streaming 5 flex-sensor inputs from an ESP32 to a Next.js clinician dashboard
- Implemented session tracking with per-session rep counts, accuracy scores, and flex-range trends to support remote therapist monitoring and week-over-week recovery analysis
- Implemented patient-specific calibration that maps raw ESP32 ADC readings into 0–100 finger-bend scores and classifies gestures for rehab games

Clarus 🤖 | *Next.js, TypeScript, Tailwind CSS, Playwright, OpenAI API*

2025

- Built an AI academic planner that syncs D2L/Brightspace data through a Playwright-authenticated connector and uses the OpenAI API to generate daily action plans and per-course study briefs
- Developed a TypeScript ingestion pipeline that parses syllabi, due dates, and grade weights into structured context for personalized deadline prioritization
- Implemented a secure connector flow that captures encrypted Playwright storage state and queries D2L JSON APIs without persisting passwords

Doceo 🤖 | *Next.js, FastAPI, Gemini API, TTS, Canvas API*

2025

- Built an AI STEM tutor generating fully animated whiteboard lessons with synchronized Gemini TTS narration in **10–30 seconds**; implemented a stateful interrupt handler allowing students to redirect lesson context mid-stream
- Architected a Next.js/FastAPI pipeline with a custom Canvas animation engine, chunked TTS streaming, and real-time LaTeX equation rendering
- Implemented FastAPI session and stream endpoints for Gemini lesson generation, audio serving, and cached TTS playback