Waaberi Ibrahim

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Education

University of Ottawa — Ottawa, ON, Canada
BASc in Software Engineering, Co-op — *GPA: 3.9/4.0 | Expected Graduation: May 2029*

Experience

Software Engineer Intern — May 2026 – Dec. 2026
Statistics Canada — *Ottawa, ON*

- Built a **Python conversion pipeline** and authoring agent that generate editable web courses from legacy packages and design documents, migrating **7 courses** and eliminating manual layout work and authoring license costs
- Enabled a **12-person team** to query training documents in natural language by building and deploying a **RAG assistant** with document ingestion, retrieval, and a chat interface
- Built a **Gatsby/React** AI training site with **6 scored practice games** and answer feedback, used by **130+ employees**
- Built a **React** attendance tool that processes Teams/Excel records in the browser for **hundreds of attendees**, saving an **estimated 1 hour** of manual reconciliation per multiweek course

Undergraduate Research Assistant — May 2026 – Aug. 2026
Computational Analysis and Acceleration Research Group, University of Ottawa — *Ottawa, ON*

- Built a **React/Hono** console for vital-sign and fall monitoring with a **20-second inactivity threshold**, exposing disconnected sensors that previously remained marked online
- Made **MQTT** ingestion idempotent with deterministic event IDs and **PostgreSQL** constraints, preventing retransmitted sensor messages from creating duplicate readings or alerts

Software Developer — May 2026 – Present
uOttaHack — *Ottawa, ON*

- Cut gzipped JavaScript by **74%** by migrating the applicant-tracking frontend from **AngularJS/Gulp to React/Vite**
- Rebuilt a **TypeScript/PostgreSQL** admissions backend with auditable decisions; local load tests with **1,000 synthetic applications** measured review-query latency **below 75 ms p95**
- Sped up local development by replacing **960 ms Gulp rebuilds** with **33 ms Vite hot updates**

Webmaster — Jan. 2026 – Present
IEEE uOttawa Student Branch — *Ottawa, ON*

- Implemented **English/French localization** across **Next.js** routes and **Payload CMS** content for IEEE's website, serving **5,000+ visits** and **40,000+ impressions per month**
- Enabled executives to manage their own content without administrator access through a **Payload CMS plugin** enforcing **role-based permissions** and per-content write restrictions

Projects

Quark – Driver Safety Assistant | Devpost | GitHub
C++, QNX 8, TensorFlow Lite, Raspberry Pi — ***3rd Place – cuHacking7 QNX Challenge, 2026***

- Built a **4-process C++** driver-monitoring prototype on **QNX/Raspberry Pi**, using **IPC and real-time scheduling** to prioritize on-device drowsiness/distraction alerts over LLM inference
- Implemented a **2-second heartbeat watchdog** to block LLM conversations on monitor failure, validating stale-message rejection after restarts with **C++ fault tests**

Synacor VM Emulator | *Python, Computer Architecture* | GitHub

- Built a **15-bit Python VM** from Synacor's specification, implementing **22 opcodes** and passing its binary self-tests
- Implemented **instruction/stack tracing** and tested runtime guards against invalid memory reads/writes and stack underflow, confirming each fault halts execution with diagnostic errors

Sentinel – Trading Behavior Analysis | Demo | GitHub
Python, FastAPI, React, XGBoost, Docker — ***3rd Place – National Bank of Canada Hackathon, 2026***

- Engineered **26 behavioral features**, including rolling win rates and position-size changes after losses, to train an **XGBoost** classifier for trading biases that scored **91% accuracy**, evaluated on the organizers' **hidden test data**
- Built a **FastAPI what-if simulator** for **10,000-trade histories**, helping users investigate trading biases by comparing recorded returns with scenarios that exclude selected trades

Technical Skills

Languages: C, C++, Python, Go, Java, C#, TypeScript, JavaScript, SQL, R, Bash
Frameworks & Data: React, Next.js, Node.js, FastAPI, PyTorch, TensorFlow Lite, OpenCV, PostgreSQL, Redis
Tools & Platforms: Git, Docker, Linux, QNX, Azure, GitHub Actions, CMake, GDB, pytest, Playwright