Khalil Ahmad Qamar

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Education

University of Waterloo — September 2023 – Present
Mechatronics Engineering Co-op, Honors Bachelor's of Science | ***GPA: 3.8*** — *Waterloo, ON*

Technical Skills

Software: Python, C++, C, SQL, Linux, Unix, Bash, Git, JavaScript, Java, Google Colab, Google BigQuery, Jinja ,Bootstrap, HTML5
Frameworks/Tools: Flask, Django, PyTorch, NumPy, Pandas, Matplotlib, OpenCV, AWS, React, FastAPI, PostgreSQL
Protocols/Technologies: HTTP, I2C, SPI, UART, TCP/IP, SCP/SFTP, STM32, Arduino, Altium

Experience

Computer Vision Research Intern — August 2025 – December 2025
Unity Health Toronto, St. Michael's Hospital — *Toronto, ON*

- Trained an ultrasound Machine Learning model on COCO-style datasets of ICU patients for diaphragm segmentation in Google Colab, developed a prompt encoding, training, and inference pipeline, saving 100+ manual hours/week.
- Built ground truth mask conversion and data annotation tools using Python, Pytorch and OpenCV to convert raw B-mode ultrasound frames into bounding-box prompts for supervised fine-tuning.
- Implemented a full inference and evaluation workflow in MMDetection/MMEngine to run prompt-conditioned segmentation and compute IoU, Dice, and mAP for model benchmarking.
- Created NumPy/Pandas/Matplotlib utilities to enhance B-mode image quality and support training data analysis.
- Accelerated the lab's shift toward scalable AI-assisted ultrasound analysis used for future clinical research workflows.

Software Engineer Intern — January 2025 – April 2025
Untether AI — *Toronto, ON*

- Built an end-to-end Python ETL pipeline for AI Accelerator data logs, automating 40+ hours/week of manual collection.
- Drove analytics for test performance against 200+ tests and total chip yield while supporting 10+ legacy log formats.
- Automated retrieval, processing, and synchronization of 2,000+ firmware logs using Linux SCP/SFTP server protocols.
- Automated log parsing and metric computation using Pandas, NumPy, and Matplotlib, delivered through an analysis GUI.
- Developed an XML schema library for 100+ chip tests, enabling dynamic test data validation and reducing data corruption.

Software Reliability Engineer Intern — April 2024 – August 2024
IKO Industries Ltd. — *Brampton, ON*

- Cut Plant spare parts standardization time by 30% through developing a search engine using Node.js, JavaScript, and Git.
- Derived usage analytics, metrics and insights across 35+ plants and 1,000+ daily searches using SQL pipelines in BigQuery.
- Automated 25+ manual data-entry tasks, reducing input errors by 80% and improving spare parts efficiency by 80%.

Midnight Sun Firmware team member — August 2024 – January 2026
Midnight Sun — *Waterloo, ON*

- Collaborating on STM32 embedded C/C++ firmware development for driver controls and power systems.
- Designed power balancing algorithms for battery efficiency and performance using I2C, SPI, and UART protocols.

Projects

Real-Time Voice Assistant | GitHub · Demo | *Python, LiveKit, FastAPI, OpenAI, CSS, HTML* — May 2025 – June 2025

- Built a real-time conversational AI Assistant using LiveKit for low-latency and OpenAI + ElevenLabs for duplex speech.
- Designed a multi-user backend with Flask/FastAPI and SQLite persistence, integrating LLM-driven intent handling and dynamic response generation to enable natural, real-time conversational flow across multiple users on business websites.

NoteAnchor | GitHub · Demo | *Python, Flask, SQLite, CSS, HTML* — April 2025

- Built a full-stack NoteTaking app with secure CRUD operations and user authentication via Flask-Login and SQLAlchemy.
- Created a fluid user experience with modular and responsive front-end pages using Jinja2/Bootstrap.

Hercules – Autonomous Robot | GitHub | *C, Infrared Sensor, LIDAR, Gyroscopic Sensor* — November 2023

- Built a C-based autonomous garbage collection robot with multi-sensor object detection and pick-and-place loops.
- Achieved 95% obstacle avoidance and ±5 cm delivery precision with a 5 millisecond response time of avoidance.