Anas Ahmed

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Education

University of British Columbia *Sep. 2023 – May. 2028*
Bachelor of Science in Computer Science

- **Coursework:** Introduction to Data Science, Operating Systems, Software Engineering, Data Structures and Algorithms, Applied Machine Learning, Matrix Algebra. Introduction to Relational Databases

Experience

Incoming Summer Technology Analyst *May. 2026 - Aug. 2026*
Morgan Stanley

Software Developer Intern *May. 2025 – Dec. 2025*
Atlas Power Technologies

- Developed a full-stack system using **C#** and the **.NET Framework** to interface with embedded hardware via **UART communication**, enabling real-time data transmission with less than **20 ms** latency.
- Designed a data storage system using **MongoDB** and **PostgreSQL**, reducing data retrieval time.
- Implemented **TSN protocol** in **C** across two **TI AM243x** boards to transmit **JSON** structured payloads in both one-way and two-way communication at **99%** reliability.
- Disabled the BMCA in the **TSN** stack and manually configured **master** and **slave** roles for communication between **TI AM243x** boards, reducing startup time by **25%**.
- Integrated the **C++ libmodbus** library to push commands to network I/O devices via **Modbus**.

Software Engineer *Sep. 2025 – Present*
UBC SAE AeroDesign

- Achieved **95%** payload-detection accuracy and **30** FPS real-time inference by fine-tuning a pre-trained **YOLOv8** model on a custom dataset of **400** images over **50 epochs**, and integrating an **OpenCV** blue-contour algorithm to reduce false positives by **40%**.
- Enabled autonomous payload-capture on a **VTOL** aircraft by developing a **Python** script that calculates error vectors (dx, dy) at **10 Hz** and transmits corrections via telemetry radio with $\leq$**100ms** latency.
- Optimized hover stability by implementing an algorithm in **C** that uses camera extrinsics and **IMU** sensor data to normalize pixel deviations, reducing error to within $\pm$**5 cm** at **15** meters altitude.

Software Engineer *Jan. 2025 – Sep. 2025*
UBC Smart City

- Designed and implemented a **PostgreSQL database** on a **Raspberry Pi** to store and manage **2000+** sensor readings, including temperature, humidity, and timestamps.
- Created a **Python (Flask)** backend on the **Raspberry Pi** to fetch and serve sensor data to the frontend via a **RESTful API**.
- Developed a **Next.js** frontend with **React** and **CSS** to display sensor data. Integrated **Nivo.js** to create charts and graphs for tracking and analyzing streetlight data.

Technical Projects

Virtual Reality AI Assistant *LangChain, LangGraph, OpenAI Whisper, ElevenLabs* GitHub

- Engineered a voice assistant by creating a local pipeline that processes **OpenWakeWord** and **Whisper** STT locally while streaming complex reasoning tasks to cloud **LLMs** via **Python asyncio** and **WebSockets**.
- Developed a decision engine capable of **8+** tasks by implementing a **LangGraph** state machine that routes queries between **Qwen VL** for visual analysis and **GPT** for semantic reasoning based on confidence scores.

NFL Championship Classifier *Python, XGBoost, Scikit-Learn, Pandas, NumPy* GitHub

- Developed a **binary classification** model achieving a **75%** accuracy for the 2024 Super Bowl champion by creating an **XGBoost** pipeline that processed **20** seasons of historical NFL data.
- Eliminated data leakage and improved the model by implementing **cross-validation** and **GridSearchCV** hyperparameter tuning, resulting in a ranking system that consistently placed champions.

Technologies

Languages: Python, Java, JavaScript, C, C++, C#, Typescript, SQL, Assembly Language, HTML, CSS, R

Libraries: Pandas, Matplotlib, NumPy, Scikit-learn, JSON, Swing, JUnit, React, MediaPipe, MySQL, PostgreSQL, Next.js, Nivo.js, Express.js, MS Test, .NET Framework, LangChain, LangGraph, Websockets, Asyncio, Whisper

Tools: Replit, IntelliJ, VS Code, R Studio, Jupyter Notebook, Git, Jira, Visual Studio, Postman, Docker