Harsh Amin

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Education

University of British Columbia April 2027
BSc Co-op Computer Science · Math *Vancouver, BC*
GPA: 4.00

Awards: Trek Academic Excellence Scholarship - awarded to top 5% of faculty
Extracurricular: UBC Launch Pad Design Team, Intramural Hockey, Weight Lifting Club, Entrepreneurship Club

Technical Skills and Awards

Languages: Java, Python, C/C++, Racket, R, HTML/CSS, JavaScript, TypeScript, SQL, GraphQL
Frameworks: LangChain, LlamaIndex, Agents, Ollama, React, Flask, FastAPI, Node.js/Deno, Express.js, SQLAlchemy
Developer Tools: AWS, AWS CDK, REST, OpenAPI, PostgreSQL, MongoDB, Docker, Git, Linux/Unix, Jenkins

Experience

Software Developer Intern May 2025 – Dec 2025
AWS Cloud Innovation Centre *Vancouver, BC*

- Developing **Generative AI** applications whilst leveraging AWS services and emphasizing **AI and Security** through the use of **AWS Bedrock, IAM, WAF, Shield, Cognito, Secrets Manager** and more
- Utilized Anthropic's **MCP** to build an **AI Agent** capable of maintaining context over multi-turn interactions, enabling researchers to retrieve insights from complex datasets with improved accuracy and efficiency
- Replaced unreliable local Docker workflows with an **AWS CI/CD** pipeline (**CodeBuild, CodePipeline, ECR**), standardizing containerized Lambda builds and cutting cross-environment inconsistencies by **33%**
- Worked closely with a cross-functional team of developers, management, and stakeholders to present technical solutions and document each development phase, ensuring seamless deployment and handover

Technical Lead + Developer Sep 2024 – Present
UBC Launchpad - Project: Forum AI (LLM based student question board for UBC classes) *Vancouver, BC*

- Designed the **Retrieval Augmented Generation** model and updated it to be **20%** quicker
- Co-lead a **15+** member team of developers and designers, arranging weekly syncs and tickets over 8 months
- Migrated to **FastAPI** endpoints and implemented trigger-based embedding retrieval from a **PGVector** database, resulting in a **25%** reduction in API response time
- Led the migration to the **Deno** runtime, optimizing containerized function performance and achieving a **20%+** improvement in execution speed within **Docker** environments for resource heavy functions (ex. RAG)

Technical Projects

Legal Aid Tool | *AWS CDK, LangChain, RAG, OpenAPI, Docker, Lambda, Bedrock, WAF, RDS* May 2025

- Developed an application sponsored by the UBC Allard School of Law to assist law students with client interviews
- Leveraged **AWS Bedrock** to create a case-specific chat assistant built on a **LangChain RAG** pipeline using **S3** storage for case files and **AWS Transcribe** case audio transcriptions, storing embeddings in **RDS PostgreSQL**
- Developed an **API Gateway** stack based on an **OpenAPI** specification connected to various **Lambda** functions some of which leveraged **Lambda Layers** while others were based on **Docker** images running in **ECR**

Forum AI | *PostgreSQL, React.js, Next.js, Deno, Docker, AWS, SQLAlchemy* Sep 2024

- Created a Student-Instructor Q&A forum, collaborating with faculty and enhanced by Gen AI, with **200+** users
- Incorporated a **PostgreSQL** database (**Supabase**), developing migration scripts in Python with **SQLAlchemy** and **Alembic**, designing the organizational structure for project SQL queries
- Utilized **Docker** to containerize the application with support for **OCR** using Google's **Tesseract** model

Auto Pilot | *Jetson Nano, YOLOv8, TensorRT, OpenCV, PyTorch, Jetson.GPIO* April 2025

- Developed an edge-based self-driving car software stack on a **Jetson Nano** to perform real-time object detection, lane following, and steering control using **deep learning** and **computer vision**.
- Trained and optimized a **YOLOv8** model using **PyTorch** for road sign and obstacle recognition; exported to **ONNX** and accelerated inference with **TensorRT** to achieve real-time performance on embedded hardware.
- Utilized **OpenCV** for **perspective transformations** to assist in path planning and steering control logic.