Mankaran Rooprai

226-972-6339 | ✉ | in | GitHub | Portfolio

Education

McMaster University **Expected Graduation: Apr. 2026**

Software Engineering (B.Eng) (GPA 3.87/4.00) *Hamilton, ON*

- **Coursework:** Concurrency, Computer Architecture, OS, Databases, AWS Certified Cloud Practitioner
- **Extracurriculars:** Captain of Intramural Basketball Team, Muay Thai

Professional Experience

Tesla **May 2025 – Aug. 2025**

Software Engineering Intern - Update Systems *Palo Alto, CA*

- Delivered a **diagnostic toolchain** in **Python** to collect and report modem and network telemetry (Wi-Fi, cellular, firmware) from Tesla infotainment systems on **Jenkins CI builds**, reducing triage time by **20%** across teams.
- Achieved a **25% (40min → 32min)** reduction in OTA (Over-the-air) test runtime by designing **multi-threaded Golang logic** to simulate modem sleep-wake behavior and validating it with a **Python testing framework**.
- Engineered **automated HIL (Hardware-in-the-loop) pipelines** using shell utilities to validate modem OTA behavior, enabling pre-merge integration checks and preventing critical failures during firmware rollout.
- Redesigned system code to enhance **modularity**, boosting code quality by **30%** according to static analysis metrics, and accelerating onboarding for new engineers across **cross-functional teams** by **15%**.

IBM **Sep. 2024 – Dec. 2024**

Software Engineering Intern - EdgeAI *Toronto, ON*

- Shipped an LLM tool to generate COBOL program summaries, saving **100+ developers** several hundred hours weekly from manually reviewing code and delivering **$250K in value** on a **$3MM client contract**.
- Architected and built a **multi-threaded Python program** using **thread pooling** to analyze COBOL call graphs, automating program summary generation and cutting processing time by **75% (24min → 6min)**.
- Developed a **data extraction pipeline** for unstructured PDFs, leveraging **concurrency** with **race condition** handling to ensure data integrity, achieving **92%** accuracy and deployment across multiple IBM projects.

Questrade **May 2024 – Aug. 2024**

Backend Engineering Intern - Release Engineering *Toronto, ON*

- Launched a Slack bot using **Python Flask** to streamline workflows, enabling Artifactory package deletion and Git actions directly from Slack, cutting manual intervention by **40%**.
- Implemented role-based authentication and logging to prevent unauthorized package deletions, integrating **GitLab API** for user management and **Google Sheets API** for maintaining an auditable record of **1000+ activities**.

RBC Capital Markets **May 2023 – Aug. 2023**

Software Developer Intern - Equity Derivatives *Montreal, QC*

- Developed a **C# .NET Web API**, connecting a financial reporting service on the cloud to on-prem dependencies, enabling scalable reports delivery to **100+ RBC traders** using **Kubernetes, Docker, and Jenkins**.

Leadership & Research Experience

Google Developer Student Clubs (GDSC), Backend Team Lead | *Mobile App* GitHub

- Led backend development for a gym analytics app used by **100+ students**, managing APIs, authentication, and real-time database sync with NodeJS, Firebase, Docker, and React Native.
- Built real-time equipment usage tracking with a Firestore backend, ensuring low-latency sync across clients.

Research Assistant | *Department of Computing and Software - Dr. S. A. Gadsen*

- Published an SPIE paper on **Python** blockchain solutions for IoT, focusing on real-time sensor data storage.

Projects

FileFlow: S3 File Upload Application | *Spring Boot, ReactJS, AWS, Docker*

- Designed and implemented a **Spring Boot backend** enabling secure and scalable **AWS S3** file uploads through RESTful APIs, with containerization using **Docker** and **Kubernetes** to streamline deployment workflows.
- Provisioned and configured AWS resources with fine-grained **IAM roles** and implemented **S3 lifecycle policies** to optimize storage costs, enforce strict security standards, and ensure compliance with data retention requirements.

Island Generator GitHub | *Java, Maven, JUnit*

- Architected a **Java** software suite with services to generate and visualize 2D island map meshes.
- Designed a modular Java island visualizer, implemented **Dijkstra's algorithm** on a Graph ADT to find the shortest path from hub to cities, and validated accuracy through **JUnit testing**, while adhering to SOLID principles.

Technical Skills

Programming Languages: Python, Java, Golang, C#, SQL
Developer Tools: AWS, GCP, Docker, Kubernetes, CI/CD (GitLab, Jenkins)
Libraries/Frameworks: Spring Boot, ReactJS, NodeJS, PostgreSQL, Firebase, Flask, PyTest