

# Md Nafieu Hossain Alif

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## EDUCATION

### McMaster University

Bachelor of Software Engineering CO-OP | GPA: 3.8/4.0

Relevant Coursework: Data Structures & Algorithms, Database Systems, Software Architecture, Operating Systems

Hamilton, ON

Expected May 2027

## EXPERIENCE

### Software Engineer Intern

NAVBLUE (Airbus Company)

May 2024 – Present

Waterloo, ON

- Optimized critical flight operations APIs serving 50,000+ daily requests, reducing average response time by 45% (2.3s → 1.2s) through SQL optimization and Redis caching, impacting 200+ airline customers.
- Architected database migration strategy for 3 production environments handling 2M+ flight records, eliminating 6 hours of weekly downtime via automated rollback procedures.
- Built comprehensive testing framework with 95%+ code coverage using xUnit and Python Behave, cutting production bugs by 60% and enabling a CI/CD pipeline that reduced release cycle from 2 weeks to 3 days.
- Led crisis response for a Tier-1 customer experiencing 40% performance degradation; identified AWS RDS connection pooling issue and delivered a fix within 8 hours, preventing \$500K+ revenue impact.
- Designed microservice integration layer connecting 12 internal services to the Flight Ops Event Bus, reducing inter-service latency by 30% and enabling real-time sync for 100,000+ flight operations.

### Web Development Lead

Google Developer Students Club McMaster

Sep. 2023 – Present

Hamilton, ON

- Spearheaded full-stack development of the GDSC portal and hackathon platform (MERN), growing active users from 150 to 800+ students (430% increase) in 6 months.
- Implemented performance optimizations reducing page load times by 55% (4.2s → 1.9s), yielding 40% higher session duration and 25% more weekly active users (Google Analytics).
- Launched a gamified learning platform with a 5-person team, achieving 300+ positive reviews and 85% retention in the first month; adopted by 3 other GDSC chapters.
- Technical interviewer: screened **30+** candidates with **80%** hire accuracy. Mentored in Node/React best practices.

## PROJECTS

### ChatPBS – LLM-Powered Flight Operations Assistant | Python, Flask, React, PostgreSQL, PPO June 2024

- Built a production-ready LLM application for airline scheduling queries with RL-enhanced decision making; deployed on AWS with 99.5% uptime serving 20+ daily active pilots during testing.
- Fine-tuned Llama-2-70B with PPO reinforcement learning on proprietary operations data, achieving 87% accuracy in schedule optimization recommendations (vs. 34% baseline), reducing pilot conflicts by 40%.
- Implemented multi-agent RL system for dynamic resource allocation, designing scalable architecture handling 500+ concurrent queries with sub-2s responses via PostgreSQL tuning and containerized Flask APIs.
- Won 1st place at NAVBLUE Spring Hackathon; initiated integration discussions with the product team for 2025 roadmap.

### ASL Real-Time Translator | Python, OpenCV, TensorFlow, MediaPipe, DQN

Jan 2024

- Developed a computer vision system with DQN-based adaptive learning, achieving 92% accuracy for real-time ASL letter recognition using reinforcement learning to optimize feature selection from 5,000+ training samples.
- Implemented Q-learning algorithm for dynamic gesture classification, optimizing inference to 30 FPS with ~150ms latency using MediaPipe hand landmarks and OpenCV for fluid real-time interaction.
- Applied temporal difference learning to improve recognition accuracy over time; published open-source implementation with prototype evaluated by a local accessibility nonprofit in Hamilton, ON.

## TECHNICAL SKILLS

**Languages:** C#, Python, Java, JavaScript/TypeScript, SQL, C/C++

**Frameworks:** .NET Core, React, Flask, Spring Boot, TensorFlow, PyTorch

**ML/AI:** PPO, DQN, OpenCV, MediaPipe, Llama-2-70B, OpenAI Gym

**Cloud & Databases:** AWS, Azure, Docker, PostgreSQL, MySQL, MongoDB, Redis, Gitlab CI

**Tools:** Git, VS Code, TensorBoard, JetBrains Tools, Jira