

# SAFWAN HOSSAIN

✉ [safhossain@protonmail.com](mailto:safhossain@protonmail.com)  [github.com/safhossain](https://github.com/safhossain)  [safwan-hossain-962a04310](https://www.linkedin.com/in/safwan-hossain-962a04310)

## Education

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**Bachelor of Engineering (B.Eng.), Computer Engineering**

June, 2025

*Toronto Metropolitan University (formerly Ryerson University)*

**Graduate Certificate (OCGC), Applied A.I. Solutions Development**

September, 2025 – Present

*George Brown Polytechnic*

## Technical Skills

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**Programming and Scripting:** Python, JavaScript/TypeScript, Kotlin (mobile development); C, Java, C#, .NET; VHDL  
**AI Tooling:** Cursor, Claude Code; LLM/agent orchestration; Context management, LLM security/privacy compliance  
**Frameworks and Libraries:** React, Vue, Django, Express.js, Java EE, Pandas, NumPy, TensorFlow, PyTorch, Scikit-learn  
**IT Infrastructure and Tooling:** Windows, WSL2, Linux; VMs, Docker; AWS; Git/GitHub; Pytest, JUnit, Jest  
**Networking:** REST, Sockets/WebSockets, RPC, AMQP (RabbitMQ); TCP/IP/DNS/TLS/NAT/Routing Fundamentals  
**Databases and Visualization:** PostgreSQL, MySQL, MongoDB; Tableau  
**Embedded Systems:** ESP8266/32, Teensy, Raspberry Pi Pico, Arduino; Raspberry Pi; ARM Cortex-M, Keil uVision

## Experience

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**RS Design Construction & Consultancy Inc**

October, 2024 – Present

*Full-stack Developer*

- Built and deployed an on-prem internal web app (React + Node/Express + PostgreSQL) centralizing projects, permits, clients, and attachments; used cookie-based auth.
- Designed a Postgres schema and a Python/Pandas ETL for migrating messy Excel workbooks to standardized CSVs to centralized DB; handled multi-format data with robust system of staged parsers and rule-based validation, falling back to LLM-assisted normalization for edge cases.
- Implemented indexed search and per-project attachment tagging, cutting average document retrieval time and improving first-try success for staff, reducing email back-and-forth between architects and PMs.
- Improved data integrity and recoverability by adding optimistic concurrency (row version checks), compliance guardrails, and regular DB backups, reducing conflicting edits and bad records across the team.

**Toronto MetRobotics**

October, 2023 – June, 2025

*Controls Systems Engineer/Full-stack Developer*

- Received the highest Systems Acceptance Review score in University's history at 97%, propelling TMU into the **Top 30** among 102 teams around the world to compete in University Rover Challenge. Improved university's ranking to **15th**.
- Implemented "differential driving" mechanism, optimizing controller usage and enabling additional motor primitives.
- Developed a React frontend (MUI+Tailwind) with a Python/WebSocket backend to communicate telemetry+commands
- Developed firmware and an auto-started Linux data-ingestion pipeline to boot up sensor capture and onboard processing

**Toronto Metropolitan University - Retail Department**

Sep, 2022 – May, 2023

*Events Coordinator and Web Content Manager*

- Developed a comprehensive procedural documentation that served as a time-saving framework for administration
- Established corporate relationships with *Best Buy* and *Lululemon* to provide professional experiences for TMU students.

## Projects

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**Landmine Detection Rover  | C, JS, Python, MongoDB, RabbitMQ, Docker, ESP32/8266, Raspberry Pi, Teensy**

- Ranked #3 within discipline at University-wide Capstone competition.
- Remote-controlled landmine-detection rover with real-time telemetry. Implemented rover's software+hardware architecture, network communications, PCB design, module procurement, and webapp backend.

**"EduTrack" - Academic Roadmap Tool  | CheerioJS, Axios, ExpressJS, React**

- Developed a web application that creates a road map for students to see what future courses are available to them based on their completed prerequisites.
- Automated data retrieval by implementing web scraping techniques to extract information from university pages, significantly reducing manual input from both the developer-side and the end user.

## Certifications

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**AWS Certified Solutions Architect - Associate (2026)**