Minhazur Rakin

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Education

McMaster University — Hamilton, Ontario
Bachelors of Computer Enginering — *Sep. 2023 – Apr. 2027*

Experience

Embedded Systems Interns — May. 2025 – Aug. 2025
Heather Glen Village — *Milton, Ontario*

- Engineering embedded software for 12+ industrial devices using Modbus RTU over RS-485, increasing communication range to 1.2 km and reducing data loss by 40%
- Implementing I^2C and UART drivers on ESP32/Arduino boards, enabling real-time data collection from 20+ sensors with latency under 50 ms
- Contributing to debugging and validating HVAC control logic, achieving 30% faster response time for temperature adjustment in prototype residential units
- Developing internal tooling that automated 90% of firmware deployment tasks, cutting technician setup time from 45 minutes to under 5 minutes

Web Developer — Dec. 2024 – Present
IEEE McMaster Student Branch — *Hamilton, Ontario*

- Built dynamic frontend user interface (UI) using Next.js enhancing user experience demonstrated through a satisfaction rate of 90% in survey
- Used Docker and Kubernetes to deploy code on a local PI cluster, reducing monthly cost by 100%
- Created authentication system using Prisma, PostgreSQL, OAuth, and Bcrypt resulting in a streamlined login process that improved user satisfaction and reduced password reset requests

Software Team Lead — Jan. 2025 – Present
McMaster Aerial Robotics Team — *Hamilton, Ontario*

- Interviewed over 100 candidates and onboard 10 suitable team members, improving project efficiency
- Developing object detection algorithim with OpenCV and Tensorflow for autonomouse navigation
- Conducted PCB design workshops using Altium, focusing on seamless integration and efficient debugging techniques
- Lead website development using Nextjs to improve team accessibility and increase funding, planning to dockerize the container and deploy it on AWS EC2 instance

Frontend Developer — Jun. 2024 – Sept. 2024
Baitul Jannah Islamic Center (BJIC) — *Scarborough, Ontario*

- Built and launched a responsive community website for BJIC with vanilla JavaScript and modular CSS, improving accessibility on mobile devices and increasing engagement by 40%

Projects

Sign Language Translator | *Python, TensorFlow, OpenCV, Next.js, MediaPipe*

- Developed a real-time ASL translation web app using MediaPipe and TensorFlow for gesture recognition, and Next.js for frontend performance.

3D Spatial Mapping System | *MSP432E401Y, VL53L1X, Stepper Motor, Python, Open3D*

- Engineered a microcontroller-based scanning system to create 3D point clouds using ToF sensors and stepper motors, with real-time data transmission via UART.
- Visualized spatial data in Python using Open3D, implementing multi-layer scans and mesh rendering for indoor environment mapping.

Technical Skills

Languages: JavaScript, Java, Python, C, C++, C#, HTML, CSS, Sass, SQL, Bash
Frameworks: Next.js, React, Express, Tailwind, Bootstrap, Matplotlib, Pandas, NumPy, TensorFlow, OpenCV, MediaPipe, Spring Boot
Libraries: Prisma, Redux, Axios, Framer Motion, Lodash, Chart.js
Developer Tools: Git, Node.js, PostgreSQL, Docker, Linux, Arduino, Prometheus, Grafana, MQTT