

# MINHAZUR RAKIN

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## EDUCATION

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### McMaster University

Bachelors of Computer Engineering

Hamilton, Ontario

Sep. 2023 – Apr. 2027

## EXPERIENCE

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### Embedded Systems Intern

Heather Glen Village

May. 2025 – Aug. 2025

Mississauga, Ontario

- Built firmware to control 12+ industrial devices via Modbus RTU over RS-485, extending communication range to **1.2 km** and reducing packet loss by **40%**
- Wrote I<sup>2</sup>C and UART drivers for ESP32 microcontrollers to stream sensor data with latency under **50 ms**
- Optimized Heating Ventilation and Air Condition HVAC control routines, cutting temperature stabilization lag by **30%** in prototype residential units
- Scripted a deployment pipeline that automated **90%** of flashing and validation, reducing technician setup time from 45 minutes to under 5 minutes

### Web Developer

IEEE McMaster Student Branch

Dec. 2024 – Present

Hamilton, Ontario

- Built dynamic interface with Next.JS, increasing usability and achieving a **90%** satisfaction rate in surveys
- Deployed full-stack application on local Raspberry Pi cluster using Docker and Kubernetes, eliminating monthly hosting costs by a **100%** reduction
- Engineered secure authentication with Prisma, Postgres, OAuth, and Bcrypt—streamlining logins and reducing password reset volume

### Software Team Lead

McMaster Aerial Robotics Team

Jan. 2025 – Present

Hamilton, Ontario

- Built object detection system using OpenCV and TensorFlow to enable autonomous drone navigation
- Led PCB design workshops in Altium, improving team hardware debugging speed and reducing integration errors
- Developed and maintained team website with Next.JS and facilitated the migration to AWS

### Frontend Developer

Baitul Jannah Islamic Center (BJIC)

Jun. 2024 – Sept. 2024

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

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### Crypto Escrow System | React, Node.JS, Stellar SDK, Postgres, Docker, AWS, Vercel

- Developed a full-stack escrow payment system enabling secure transfers using Stellar smart contracts
- Built the frontend with React and deployed on Vercel; containerized backend with Docker and deployed REST APIs on Amazon Web Services AWS EC2

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

- Engineered a microcontroller-based scanning system to create 3D point clouds using Time of Flight (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

### 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

## TECHNICAL SKILLS

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**Languages:** JavaScript, Java, Python, C, C++, C#, Sass, SQL, Bash

**Frameworks:** Next.JS, React, Express, Tailwind, Matplotlib, Pandas, NumPy, TensorFlow, OpenCV, MediaPipe

**Libraries:** Prisma, Redux, Axios, Lodash, Chart.js

**Developer Tools:** Git, Node.JS, PostgreSQL, Docker, Linux, Arduino, Prometheus, Grafana, MQTT