

# Shamanthi S. Rajagopal

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## EDUCATION

### University of Waterloo

BASc, Computer Engineering (Honours Co-op)

Waterloo, ON

Sep 2023 – Present

- Leadership Activities: Engineering Ambassador, Engineering Society Director, Women in Engineering Director.

## EXPERIENCE

### Business Intelligence Intern

Sep 2024 – Dec 2024

Canadian Space Agency

Longueuil, QC

- Implemented a teleworking compliance tracker for **1,000+** employees, using advanced **data analysis** and data preparation techniques to cleanse and structure large datasets within an **Oracle DB**.
- Optimized SQL queries and **PL-SQL** stored procedures for efficient data processing, reducing backend processing time by **40%**, and increasing data accuracy by **60%** in a large-scale enterprise environment.
- Modeled interactive Power BI dashboards for **data visualization**, providing actionable insights that boosted conference room booking efficiency by **30%** which showcased key findings for strategic decision-making.
- Drafted an **AI-based** recommendation system for conference room booking, enhancing resource allocation efficiency by **35%** through analysis of room usage **patterns** and meeting requirements.

### Software Developer Intern

Jan 2024 – Apr 2024

PinkByte Inc

Concord, ON

- Developed and maintained a global server-client integration application with over **2000+** lines of code for real-time retrieval of customer database information and **SQL server** details for 24/7 operation.
- Increased performance of existing server app by **75%**, optimizing **UI/UX**, error handling and alert system using **Python**, **MS SQL** queries, and GPIO with Raspberry Pi to promptly notify about server shutdowns.
- Established web development techniques for partner company's dynamic website with **PHP** and **SQL**, and modified front-end design to improve better user engagement by **85%** (Mazzzing Inc).
- Constructed an **SQL Node.js server** hosted on **IIS** to create a public REST API and web page to successfully troubleshoot the company's **1 year long** website malfunction.

### Design Team Firmware Engineer

Sep 2023 – Present

Electrium & Orbital Space Design Teams - University of Waterloo

Waterloo, ON

- Developed **C++** firmware for motor controllers (**VESC**), optimizing speed and torque algorithms, achieving a **25%** top speed boost, **40%** better battery life, and improved skateboard stability.
- Optimized **RTOS** tasks in **C++** for a satellite microprocessor, cutting errors by **30%** with advanced fault detection and integrating data and communication interfaces for efficiency.

## PROJECTS

### NeuroGuard - Hack The North | Python, OpenCV, TensorFlow, LLM, Mediapipe, Flask, Axios

Sep 2024

- Designed a **full-stack** app with video recognition and alert system to aid Alzheimer's patients with emergencies.
- Integrated **ML** tools for motion analysis, improving fall detection by **45%** and automating caregiver communication with a GPT-4 chatbot, boosting efficiency.
- Built the system with a **Flask** backend and **React** frontend, using Axios for real-time data flow and video streaming, improving responsiveness by **20%**.

### SeniorMinder | STM32 Microcontroller, C/C++, Arduino, UART

Sep 2023 – Dec 2023

- Led a team of 2 in constructing and implementing an elderly medicine alarm clock with a user-friendly design.
- Incorporated functional electrical circuit integrated with microcontrollers, **C/C++** firmware, and **STM32 APIs**.
- Implemented features like **LED light & 90 dB** buzzer sound to aid the elderly with **hearing/vision** disabilities.

## TECHNICAL SKILLS

**Languages:** Python, JavaScript, TypeScript, C/C++, Java, HTML/CSS, PHP, SQL, MATLAB

**Frameworks/Libraries:** React, React Native, Next.js, Node.js, Express.js, Three.js, Pandas, Flask, Bootstrap

**Tools:** MS SQL Servers, Oracle DB, AI APIs, REST APIs, Git, Bash, AWS, Spring Boot, VSCode

**Certifications:** IBM Machine Learning, Core French - **Hobbies:** Basketball, Sketching, Music, Minecraft, Legos