

Asmi Gujral

Waterloo, ON | [LinkedIn](#) | [GitHub](#) | [Portfolio Website](#) | 416-579-2023 | asmi.gujral@gmail.com

SKILLS

Languages/Frameworks: Python | C/C++ | JavaScript | HTML/CSS | MSSQL

Libraries/Tools: pandas | NumPy | Matplotlib | BeautifulSoup | React | PowerShell | Git | STM32 | ESP32 | FreeRTOS

EXPERIENCE

Software Systems Analyst Intern

Waterloo, ON

OpenText

January 2024 - April 2024

- Implemented intuitive solutions using AppWorks low-code platform for software functional design, emphasizing UI and moderate complexity calculations
- Led end-to-end software development and conducted quality assurance, including advanced troubleshooting and Python API script development for optimized system data communication
- Applied advanced SQL and VBA techniques for in-depth system analysis, and executed seamless data transitions between systems, improving overall data management efficiency using PowerShell

Embedded Systems R&D Designer

Waterloo, ON

Waterloo Space Soldering Team

January 2024 - Present

- Designed the firmware architecture for the team's centrifuge project, scoping out the required firmware and hardware systems to efficiently integrate with on-board subsystems
- Administered the centrifuge's data acquisition and motor controller subsystem in C++, enabling SPI, I2C, and PWM protocols to interface with components including a gearmotor, L298N motor driver, accelerometer, and an SD module with an Arduino

Associate Platform Engineer, Co-Op

Cambridge, ON

Gore Mutual Insurance Company

May 2023 - August 2023

- Implemented and maintained database components through Intune and leveraged Azure services for optimized user performance and security, having resolved 50+ request tickets and resulting in a more streamlined asset management process
- Composed Python-based PowerShell scripts to automate routine tasks, resulting in a significant reduction of manual effort, and an increased operational efficiency by 40%

Payload Systems Developer

Waterloo, ON

University of Waterloo Orbital Student Design Team

September 2022 - September 2023

- Developed firmware with RTOS for the satellite's primary and secondary payload manager in C, using task handlers and command IDs to capture pictures with the on-board cameras
- Facilitated systems design for a weather balloon project, in order to program an Arduino to autonomously take pictures in timed intervals through a SPI bus with an ArduCAM device, as well as an SD card module

PROJECTS

[Electric Bike Motor Controller](#) | C, Nucleo STM32, DRV8301, BLDC motor, SimpleFOC

- Implemented firmware for an electric bike motor controller using Nucleo STM32, Arduino C++, and SimpleFOC, effectively driving a BLDC motor system
- Integrated advanced features into the firmware, including SPI communication protocols, to detect and rectify over-current and over-thermal errors on the motor driver (DRV8301), enhancing the system's reliability and safety

[Wireless GPIO Control Network](#) | C++, ESP32, AWS API Gateway WebSockets, TypeScript, React.js, PlatformIO

- Developed an ESP32 WebSocket client in C/C++ using PlatformIO, integrated with AWS API Gateway WebSockets and AWS Lambda using TypeScript, and enabled real-time GPIO pin control and browser-based control via a ReactJS web application
- Implemented robust error handling mechanisms in the AWS Lambda functions to ensure reliability and fault tolerance

[Remote Control & Monitoring System](#) | C++, ESP32-CAM, Telegram Bot API, PIR Sensor, DHT11 Sensor

- Configured the ESP32-CAM with various sensors to send HTTP requests for seamless communication with the Telegram API, facilitated interrupt handling to detect motion events using a PIR sensor, and ensured reliable Wi-Fi connectivity for remote access and control

[Asynchronous Data Streamer](#) | C, Nucleo STM32, FreeRTOS, SPI, UART, ADC, DHT11 Sensor, Potentiometer

- Enabled real-time data acquisition with concurrency and varying task priority using FreeRTOS for multiple sensors, utilizing ADC channels, GPIO interrupts, and integrating UART serial and SPI communication for interfacing with an SD card

EDUCATION

University of Waterloo - Honours Mechatronics Engineering

Waterloo, ON

Candidate for Bachelor of Applied Science

September 2022 - May 2027

Relevant Coursework: Microprocessors & Digital Logic, Data Structures & Algorithms, Structures & Properties of Materials