Zulaikha Zakiullah

Canadian Citizen | Eligible for TN Visa for US

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Technical Skills

Languages: C/C++, Python, Java, JavaScript, TypeScript, MATLAB, C#, Ruby, VHDL, Verilog, HTML/CSS, SQL
Tools: VS Code, Eclipse, KiCAD, Altium Designer, LTspice, Cadence, Vector CANalyzer, AutoCAD
Technologies/Frameworks: Linux, Jenkins, Git, STM32, ESP32, FreeRTOS, UART, I2C, SPI, JTAG

Relevant Experience

Waterloo Silicon Bioelectronics Laboratory **Sep 2023 – Apr 2024**
Hardware Designer *Waterloo, ON*

- Led the electrical testing of the team's custom-designed IC used for noninvasive continuous glucose/ketone monitoring
- Designed programs using **Verilog** and **Python** to control the chip's operating mode via FPGA (XEM7310)
- Performed various checks using electrical equipment, such as an oscilloscope, to validate the 3 main circuit blocks of the chip: the potentiostat, digital-to-analog converter (DAC), analog-to-digital converter (ADC)
- Developed sampling algorithms using **Python** and **Matplotlib** to process and visualize data sent from the ADC

Onsemi **Jan 2023 – Apr 2023**
Hardware & Systems Developer *Waterloo, ON*

- Worked on feature support and hardware validation of the company's RSL15, an ultra-low power wireless microcontroller unit (MCU) designed for connecting smart devices in industrial and medical applications, such as hearing aids
- Automated multiple previously manual tests of RSL15 using **Python** and **C**, speeding up overall testing procedure
- Designed and tested a proof of concept temperature control module using Microchip microcontroller and **C**, implementing **UART** and **I2C** for communication
- Validated schematics of new module presented by team and suggested changes to make design more reliable

Ford Motor Company **Jan 2021 – Apr 2021**
Software Developer *Waterloo, ON*

- Integrated multiple custom packages using **Java** and **Android** for newest vehicle infotainment systems, including one to load specific app restrictions depending on its location, to ensure all vehicles adhere to driving standards set per country
- Developed various APIs using **Java** under the distraction management team, including an API to enable or disable controls on infotainment system based on vehicle's geographic location
- Created unit tests using **Java** and **JUnit** for infotainment system test suite to increase code coverage to **over 90%**

Projects & Teams

SoleQuest: Smart Insole for Lower Limb Rehabilitation **Mar 2023 – Mar 2024**

- Built a cost-effective smart insole for lower limb rehabilitation, featuring an insole containing sensors to measure plantar distribution and a custom mobile application to track the user's rehabilitation progress as well as receive the insole data via Bluetooth in real time and display the data as a visual for the user
- Led the design of schematics and layout of PCB for insole using **KiCad**, with features including: **SWD** interface for microcontroller, 3V regulated battery supply, and **RF** antenna for Bluetooth communication
- Developed firmware for **STM32WB** microcontroller using **C**, configuring features including 12-bit **ADC** conversion via DMA to process pressure sensor data, **SPI** communication, and **Bluetooth** communication to send data to a custom mobile application (also developed by our team)
- Wrote custom **SPI** interface using **C** to enable communication between microcontroller and ICM-20948 IMU using information from datasheets, and processed IMU data using a **Madgwick filter**

Waterloo Formula Electric **Sep 2019 – Dec 2023**
Firmware Developer *Waterloo, ON*

- Formula Hybrid Competition Results: **2nd overall** in 2021, 5th overall in 2022 and 2023, out of 30+ teams
- Worked on the firmware sub-team to write clean code using **C** for **STM32** microcontrollers used in custom PCBs designed for team's electric vehicle
- Redesigned vehicle dashboard using **C++** and **Qt** library to read messages from CAN bus and display relevant information to driver, improving overall dashboard performance by **over 200%**, tested using **Vector CANalyzer**
- Contributed to team's hardware-in-the-loop (HIL) software library using **Python** to allow for easy simulation using **HIL**

Education

University of Waterloo **Sep 2019 – Apr 2024**
BASc in Electrical Engineering with Life Sciences Option – cGPA: 90% *Waterloo, ON*