KIRAN JOJARE

He\Him | 720-645-6212 | kijo7257@colorado.edu | https://www.linkedin.com/in/kiran-jojare-embedded-system/ | https://github.com/kiranj26

EDUCATION

Master of Science, Electrical and Computer Engineering, University of Colorado, Boulder, USA (GPA: 3.7). ***Aug 2022 - Aug 2024***
PG Diploma - Embedded System Design, Centre For Development of Advanced Computing, Pune, India (GPA: 4.00). ***Aug 2018 - Feb 2019***
Bachelor Of Technology, Electronics Engineering**,** Government College of Engineering, Chandrapur, India (GPA: 9.18). ***Jun 2015 - Aug 2018***

SKILLS

- **Language Skills:** C, C++, Assembly, Python, M-Script(MATLAB Scripting), Bash Scripting.
- **Hardware:** STM32G0x, ESP32, TI2F28xx, STMSPCx, , Renesas RH85, STM34F4x, Jetson Nano, EFR32 Blue Gecko, Beaglebone Black, Raspberry.
- **Tools and Technologies:** Code Composer Studio, SPC5-Studio, Espressif, MCU-Express, STMCube, Simplicity Studio, Simulink, MATLAB, Polyspace, System Desk, EB Tresos, CANdb++, CANalyzer, CANoe, Target-Link, Doxygen, Dhrystone, GDB, GCC, Valgrind, Objdump, OCPP.
- **Protocols & Peripherals:** SPI, I2C, UART, SCI, PWM, ADC/DAC, CAN, LIN, Bluetooth Low Energy (BLE), TCP/IP, UDP, USB, DoIP, MQTT, DMA.

EXPERIENCE

Firmware Engineer, Eaton, Peachtree City, Georgia, USA. ***Aug 2024 – Present***

- Architected and built the **Smart Breaker 2.0 droop control** feature using event-driven architecture on STM32G0 and ESP32 microcontrollers with **FreeRTOS**, **TDD**, and **UART-based line communication**; delivered a validated POC deployed in multiple **DER systems**.
- Assessed multiple open-source stacks and developed **in-house OCPP 1.6 stack** for chargers; owned the lifecycle from POC to deployment.
- Led the **Customer Success team** on post-production firmware issues, ensuring stability, field issue triaging, and root cause analysis.

Firmware Engineering Intern, Danfoss Editron, Longmont, Colorado, USA. ***Jan 2024 – Aug 2024***

- Collaboratively developed brushless DC motor controller firmware using **TI 280x DSPs** for torque and speed control, with CAN and RS232.
- Utilized DAQ-based **fault injection C code** to simulate safety-critical faults in ECU, reducing Dyno testing time by 30% using the CAN library.
- Implemented a **C-state machine** for IGBT Gate Driver diagnostics on **UCC5870Q1 Gate Driver IC** using SPI firmware modules, and **HIL Testing**.
- Utilized **PWM** on the TI TMS320F2802 ECU as a DAC to monitor and verify the conversion of PWM duty cycles into analog voltage signals

Embedded Platform Software Intern, Canoo, Torrance, California, USA. ***May 2023 - Aug 2023***

- Improved CAN Library to include **29-bit ID CAN** signal for **STM32SPC56 ECU**, enhancing compatibility for Canoo's Vehicle Platform team.
- Restructured OTA functionality on STMSPC58 MCUs for Canoo's ECU, using **seed-key exchange algorithm** and leveraging CAN and **DoIP**.
- Initiated **CAPL** integration within CANoe for CAN signal analysis using **UDS**, contributing to advanced diagnostics and optimization.

Student Firmware Engineer, University of Colorado Boulder, Boulder, USA. ***Aug 2022 - Apr 2023***

- Coordinated firmware development for the SWARM-EX Cube Satellite program, enhancing Aptina MT9 series camera modules and facilitating communication between **Pocket Beagle and dsPIC33** adopting **I2C & UART**, showcasing expertise in C firmware.

Senior Engineer, ZF Friedrichshafen AG, Hyderabad, India. ***Jun 2021 - Jul 2022***

- Engineered Cubi-X vehicle motion firmware on **NXP S32K3 MCU**, incorporating an Actuator Control Subsystem state machine via **Embedded C and Simulink**, while achieving **100%** ISO 26262 compliance for bolstered motion control safety (ASIL-D and ASIL-C).
- Integrated **Microcontroller Abstraction Layer (MCAL)** within the **AUTOSAR** architecture of NXP S32K3 MCU for advanced diagnostic communication feature, enabling efficient fault detection and reporting in-vehicle systems, in compliance with AUTOSAR standards.
- Streamlined reliable firmware using C/C++ & Simulink, following **MISRA C, J-MAAB** standards, and AUTOSAR guidelines for 6 Cubi-X features.

Embedded Software Engineer, KPIT Technologies, Pune, India. ***Mar 2019 - May 2021***

- Created ECM features for Cummins, overseeing full SDLC; achieved a **15%** reduction in MCDC software issues, enhancing system reliability.
- Utilized embedded C/C++ firmware modules employing **RH850 – F1H/F1K MCUs**. Leveraged **RTWEC** resulting in efficient coding standards.
- Executed NOx sensor's **RTOS** embedded firmware for RH850 MCU leveraging C, Simulink/Stateflow & PID based Control System in MATLAB.

PROJECTS

Low Power Gesture-Controlled Classroom Using BLE and OTA with EFR32 Blue Gecko ***Aug 2023 - Dec 2023***

- Implemented a **client-server architecture** on EFR32 Blue Gecko boards using **C-based state machines**, integrating **BLE GATT services**, **OTA update mechanisms**, and real-time **gesture (I2C)** and **PIR (ADC/PWM)** sensor data handling via HAL drivers.
- Strategically **achieved 32uA power consumption** in optimized low-power mode, utilizing power management techniques and sleep modes.

USB Based Communication between STM32F4F4 and AT89C51 Microcontrollers ***Dec 2022 - May 2023***

- Constructed firmware for **USB communication** between an **STM32F411E-Discovery board** and an **AT89C51** microcontroller.
- Integrated a GT-521F32 fingerprint sensor with the STM32F4 microcontroller, implementing **USB to TTL converters** for seamless data transfer of fingerprint sensor from STM32F411E to the AT89C51 microcontroller. Executed firmware on the AT89C51 to display it on OLED using **SDCC**.

Concurrent Containers Using Open MP C++ Programming Model ***Sep 2022 - Jan 2023***

- Resolved high-performance **thread-safe data structures**, like SGL Stack/Queue, M&S Queue, and Trieber Stack, achieving a **20% increase** in concurrency efficiency through the use of advanced techniques like **elimination and flat combining**.
- Utilized **OpenMP and C/C++** to execute optimization, increasing L1 Cache Hit Rate by 15% and improving Branch Pred Hit Rate by 25%.

Smart Distributed Control System for Excavators via FreeRTOS ***Aug 2022 - Dec 2020***

- Built a FreeRTOS-based distributed control system with PWM-controlled servo motors and ADC joystick input, using a **Shared Clock scheduling algorithm** to sync Beaglebone Black and STM32F407VG, improving efficiency by 30% and precision by 25%.