

Sk Sahil

+91-8617580624 • sk.sahil.ece@gmail.com • 

PROFESSIONAL SUMMARY

Embedded Software Engineer with over 3 years of experience developing robust firmware in **C/C++** for **bare-metal** and **RTOS-based** systems. Skilled in working with **STM32**, **PIC**, and **Renesas** microcontrollers, building **device drivers**, and integrating software with custom hardware. Delivered **production-ready firmware** and **FOTA updates** across multiple customer platforms, while collaborating with **hardware** and **manufacturing teams** to improve system reliability and reduce production time. Comfortable with **UART**, **SPI**, **I2C**, **CAN**, and **TCP/UDP** protocols. Familiar with **embedded Linux** and **kernel-level** optimization, with a strong interest in **system architecture** and building scalable, efficient solutions for next-generation embedded products.

SKILLS

Programming Languages: C, C++, Shell Script

MCUs: STM32, PIC, Renesas

Embedded Expertise: Bare-metal, RTOS (FreeRTOS), Device Drivers, Bootloader, FOTA, Embedded Linux, Linux Kernel

Protocols: UART, SPI, I2C, CAN, TCP/IP, UDP/IP

Debugging Tools: JTAG, GDB, Logic Analyzer, CRO, Oscilloscope

Dev Tools: Git, GitHub, GCC Toolchain, VS Code

Concepts: Power optimization, Memory efficiency, Schematic reading

PROFESSIONAL EXPERIENCE

Iskraemeco India Pvt. Ltd.

Senior Engineer - Firmware Development

Sept 2024 – Present

- Designed and optimized firmware for embedded systems, enhancing **code reliability and maintainability** by introducing **unit testing** and **static analysis**, reducing production issues by **30%**.
- Improved **memory efficiency** by 25% through advanced **buffer management**, **EEPROM usage**, and **low-level memory optimization**, ensuring high-performance operation under constrained environments.
- Enhanced **FOTA update logic**, cutting unnecessary flash writes by 40% and improving device uptime, enabling seamless field upgrades for large-scale deployments.
- Collaborated with cross-functional teams to refine **hardware/software integration**, supporting real-time debugging, system bring-up, and performance tuning on custom silicon.
- Leading development of **scalable, low-power embedded platforms** with a focus on **RTOS**, **driver development**, and aligning with future trends in **IoT** and **consumer electronics**.

Associate Firmware Engineer

Mar 2023 – Sept 2024

- Developed and optimized firmware for **single and three-phase smart electric meters** based on CRS, ensuring compliance with functional and regulatory standards.
- Resolved critical **field issues** by conducting on-site root cause analysis, improving product reliability and customer satisfaction.
- Improved **magnetic tamper detection logic** for enhanced security and accurate detection under external magnetic interference.
- Reduced **firmware memory footprint by 467 bytes (.text section)**, improving efficiency and enabling future feature integration.
- Collaborate with QA and hardware teams to test and validate firmware, covering **metrology**, **RTC**, **EEPROM**, and communication protocols (**HDLC**, **TCP**).

Emertxe Information Technologies

Internship

Apr 2022 – Feb 2023

- Worked on embedded systems and bare-metal firmware development for microcontrollers.
- Implemented communication protocols: **UART**, **I2C**, **SPI**, **CAN**, **TCP/UDP**.
- Gained exposure to **Embedded Linux**, including **kernel internals**, **system calls**, and **boot sequence**.
- Interfaced with peripherals like **GPIO**, **ADC**, **PWM**, **EEPROM**, **Timers**, and **Interrupts**.
- Designed and built a **Car Collision Detector** project, showcasing real-time hardware-software integration.

PROJECT

• Mini Shell

Technologies: System Call, IPC, Linux Internal

• Car Black Box

Technologies: Protocol's (UART, I2C), interrupt (ISR), EEPROM, ADC, Digital Keypad.

TOOLS: MPLABXIDE, XC8 Compiler, PIC16F877A Microcontroller Board, Serial Terminal(cutecom).

EDUCATION

University Institute of Technology

Bachelor of Engineering in Electronics and Communication Engineering

2017 – 2021

BURDWAN, WEST BENGAL