

Shreyas N Embedded Firmware Developer

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👤 PROFILE

Embedded Firmware Engineer with experience in developing and optimizing firmware for ARM Cortex-M microcontrollers and embedded Linux systems. Proficient in C, C++, and Python with a strong focus on hardware-software integration and protocol implementation. Skilled in debugging, low-level driver development, and mentoring junior engineers. Seeking to leverage expertise in firmware development and system optimization in a challenging role at a leading technology company.

🧰 PROFESSIONAL EXPERIENCE

Embedded Firmware Developer 09/2023 – present | Mysuru, India
AIMLWare Systems Private Limited

- Developed and optimized firmware from scratch for ARM Cortex-M0+ microcontrollers, improving system performance by 40%
- Designed and implemented hardware communication protocols (I2C, SPI, UART, USB, RS485) and software protocols (MQTT, HTTP), enhancing inter-device communication and sensor data handling
- Developed low-level drivers for the ILI9488 display and DS3231 RTC using C, ensuring seamless hardware integration and reliable system operation
- Utilized C, C++, and Python for firmware development, focusing on efficient memory management and robust system performance
- Designed Captive Portal UIs using HTML, improving user interface and device interaction
- Conducted comprehensive testing and validation, identifying and resolving critical issues, resulting in improved system stability
- Provided mentorship to junior engineers, promoting best practices in embedded firmware development

Intern Bengaluru, India
Aqmenz Automation Pvt. Ltd.

- Utilized machine learning techniques to analyze the Titanic dataset and predict survival outcomes based on various passenger attributes
- Documented the project methodology, results, and conclusions in a clear and concise manner

🎓 EDUCATION

Bachelor of Engineering 2019 – 2023 | Mysuru
Vidyavardhaka College of Engineering
8.57 CGPA

Class XII 2017 – 2019 | Mysuru
Marimallappa's PU College
92%

🧠 SKILLS

Technical: C • C++ • Python • Git • CMake • SDK • Driver development | **Communication Protocols:** UART • USB • I2C • SPI • MQTT • HTTP | **Tools/Operating Systems:** VS Code • Thonny • Linux • RTOS | **Debugging and Testing:** Picoprobe • OpenOCD/GDB | **Soft Skills:** Good communication • Problem solving • Teamwork

PROJECTS

Irrigation Control System

- Developed robust firmware for a customized irrigation control system using C, integrating multiple hardware components for optimal functionality
- Developed low-level drivers and APIs for the ILI9488 display with SPI communication and DS3231 RTC with I2C communication using C, ensuring seamless hardware integration
- Implemented time-critical controls by processing input from level sensors via ADC and measuring flow using a flow sensor, ensuring precise irrigation control
- Utilized RTOS with multicore functionality to handle real-time applications efficiently, implementing interrupts to manage user applications and ensure responsive system behavior
- Utilized USB protocol by creating multiple endpoints to achieve duplex communication with gateway

Portable Power Analyzer

- Developed and optimized firmware for power analysis using the Quectel M2M SoC with Python, improving system efficiency and data processing capabilities
- Built low-level Modbus RS485 to UART conversion functions for seamless communication with slave devices, enabling accurate power data collection
- Implemented HTTP protocol for reliable data posting to servers, ensuring timely and secure data transmission and developed a custom algorithm to analyze collected data and generate alerts for critical warnings, enhancing system monitoring through dashboards
- Efficiently managed file system memory, ensuring stable system performance

Kannada Speech Emotion Recognition Using Ensembling Techniques

- Developed, pre-trained and tested a machine learning model for efficient recognition of emotions in speech signals
- Completed the task of ensembling models (RNN, DBN, CNN) and achieved a high accuracy rate with real-time speech signals
- Published a paper in the IRE Journals, an International Open Access, Peer-reviewed, Refereed Journal

Automated Blind's Stick

- Developed an IoT-based model using ATmega328P microcontroller and various sensors
- Successfully detected obstacles and potholes on the road, providing alerts for visually impaired people through buzzer and voice message alerts
- Received a patent from Patent Office India for this project

CERTIFICATES

Patent from Patent Office of India: Automated Blind's Stick | Application ID: 202341031451

International Journal Publication (IRE JOURNALS): Kannada Speech Emotion Recognition Using Ensembling Techniques | Paper ID: 1704436