

Sanjai S

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📍 Erode, Tamil Nadu

Summary

Embedded Systems Engineer with 1+ years of experience in firmware development on ESP32 and ST microcontrollers across real-world applications. Strong knowledge in peripheral configuration, interrupt handling, and sensor integration, implementing and debugging communication protocols such as UART, SPI, I2C, and CAN.

Education

B. E in Electronics and Communication Engineering
University College of Engineering, BIT Campus, Anna University, Tiruchirappalli
08/2019 – 07/2023 | Tiruchirappalli
Completed with a CGPA of 8.05

Languages

Tamil
Native or Bilingual Proficiency

English
Full Professional Proficiency

Kannada
Limited Working Proficiency

Skills

C /C++
Problem Solving
Microcontrollers (ESP32, STM)
AWS basics
Pub/Sub architecture (MQTT)
Communication Protocols (UART/SPI/I2C/CAN)
Git basics
Data Structures
Socket Programming (TCP/IP, UDP)
Networking basic
Bash Scripting

Interests

Reading books
Listening to classical music
Writing stories
Cycling

Work Experience

Firmware Engineer

Waltr (Kre38Labs)
01/2025 – 03/2026 | Bangalore, Karnataka

- Well trained in ESP32 and worked briefly with ST microcontrollers.
- Worked in IDEs such as Arduino, ESP-IDF, CubeMX and Cube IDE and peripherals such as SimCom LTE module and mmWave sensors (Acconeer).
- Contributed in energy conserving algorithms and BLE configurations across the devices.
- Troubleshooted and resolved complex firmware issues, reducing downtime and improving system reliability
- Did some improvisory modifications to the firmware OTA update feature
- Contributed to implement customized sleepmode based on device needs across all products within the company.

Projects

Water Flow Monitor

- Contributed largely to the radar variant of the water flow monitor with extra features from legacy version
- Designed the feature to customize the parameters based on the tank specs and other factors needed for site situations.
- Developed a feature to reduce losing values due to external factors such as poor internet connection, less power. etc
- Developed a BLE feature to connect across mobile to securely send the credentials.
- Developed a self power ON feature to prevent the device relying upon mechanical switches and to avoid shorts due to switch failure.

Presence Detector

- Developed a presence detector where specified actions will be taken based upon the presence of a living thing using a 60 GHz radar sensor working in pulse coherent mode.
- Optimized and tested with greater accuracy and working range up to 6m and minimized false detections
- Works as an environment comprising a detector and an acting device such as a switch or an actuator.

Car Parking Detector

- Developed a car parking detector with the use of 60GHz mmWave sensor to detect the car being parked or not.
- Integrated the radar with device connected to cloud API so that it can be observed from a mobile application.
- Set for frequent updation efficiently, reducing the internet and power usage to greater extent.

Certifications

- Emertxe Certified Embedded Professional** — 02/2024 - 10/2024 Completed with 8 projects (Image Steganography using LSB Encoding and Decoding, MP3 Tag Reader, Address Book, Source to HTML Converter, Inverted Search, Arbitrary Precision Calculator, Car Black Box, Minishell)

Accomplishments

Accomplishments

- Successfully migrated a legacy Arduino firmware system to a modern ESP-IDF platform, ensuring seamless operation and enhancing system functionality
- Optimized the formula for finding the distance between water level and sensor, increasing the precision by decreasing error margins upto 0.1%
- Successfully contributed to the team to develop a firmware solution that enabled remote system monitoring and diagnostics, reducing maintenance costs and improving system availability.