Narendran Srinivasan

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BRIEF

Experienced Electronics and Instrumentation Engineer with 2 years of expertise in embedded systems, specializing in IoT, automotive, and avionics applications. Skilled in developing optimized real-time solutions, I am seeking a full-time role to drive innovation and contribute to advancements in the embedded systems industry.

EXPERIENCE

Chara Technologies - Bengaluru, India

Embedded System Engineer — *April 2024 - Present*

- Engineered GPRS connectivity between vehicle and cloud to ensure continuous communication and data transfer.
- Developed a Flutter-based Android application utilizing BLE for real-time 2W rider statistics analysis.
- Directed the implementation of End of Line Testing (EOLT) procedures for motor validation, resulting in streamlined quality checks that reduced testing time by 30%, enhancing production efficiency.
- Designed an innovative intermediate device that bridges cloud and vehicle motor control units, enabling wireless rider data collection, OTA updates, and parameter monitoring/flashing.
- Currently developing a cluster-integrated ECU with a negative LCD for 2W/3W vehicles.
- Developed I2C, SPI, and UART drivers at the bare-metal level on STM32 microcontrollers for optimized communication with peripherals.

IoT Engineer — *June 2023 - March 2024*

- Enhanced data logger for greater efficiency and optimized memory usage.
- Developed a CAN-based PyQt5 GUI for motor control unit tuning and monitoring.
- Crafted a robust universal UART bootloader utilized across four distinct MCU architectures, enabling seamless integration and decreasing development cycle by approximately two weeks on average.
- Implemented BLE-based Wi-Fi provisioning and custom parameter configuration using ESP-IDF.
- Developed memory-efficient and fast filter algorithms like moving average and IIR.

IoT Internship — *February 2023 - May 2023*

- Established long-term peer-to-peer connectivity between ESP32 and AWS IoT Core using MQTT, while migrating to the ESP-IDF framework and maintaining stable cloud connectivity.
- Implemented interrupt-based UART reception in ESP-IDF to receive motor controller data, pre-processed it using a standardized protocol, and packaged it into JSON packets for AWS IoT Core. Developed an RTOS-based system for managing parallel cloud and local SD card logging, utilizing ESP32's dual-core processor.
- Designed and implemented a real-time vehicle parameters monitoring system using AWS and Grafana, and established APN-based Wi-Fi provisioning..

Zynomi Private Limited - Bengaluru, India — *October 2022 – February 2023*

R&D Internship

- Established robust long-range connectivity using the RFM95 LoRa device for industrial applications and developed a subscription-based water purifier system utilizing Wi-Fi and LoRa protocols.
- Designed, assembled, and tested a 2-layer PCB, and implemented LoRa gateway connectivity with the SenRa Gateway for enhanced network reliability and system monitoring.
- Engineered a 5V Battery Management System (BMS) from a 230VAC supply, optimizing power management for industrial IoT devices.

SOFT SKILLS

• Communication • Teamwork • Adaptability • Problem solving • Leadership • Critical thinking • Time management

EDUCATION

The Birla Institute of Technology & Science - Pilani, India (WILP) *June 2024 - Present*
Master of Technology - Embedded Systems

- Specialized coursework in integrated Real-time Systems with FPGA on microcontrollers for avionics.

Government College of Technology - Coimbatore, India *August 2019 - April 2023*
Bachelor of Engineering - Electronics and Instrumentation *CGPA: 8.54*

- Concentration in Electronics and Instrumentation Principle.
- Involved in the Society of automotive engineers club - as an Electrical validation member ,Founding member of IEEE GCT and Smart India Hackathon finalist of 2022

TECHNICAL SKILLS

Programming Languages	C, Assembly, Python, Verilog, Dart
Additional Programming Skills	DSA, RTOS, Software design patterns, LVGL, Qt, UML
Microcontrollers	PIC, TI-C2000, NXP LPC2378, STM32 (F4/F0/G0), ESP32 (S2, S3)
IDE	Code Composer Studio, ESP-IDF, STM32 CubeIDE, IAR, Pycharm, Keil uVision
Wired Communication	SPI, I2C, UART, CAN, LIN, USB, RS485/RS232, MODBUS
Wireless Communication	Wi-Fi, BLE, LoRa, GPRS, GPS, GSM, Zigbee, IR
Application layer protocol	HTTP, MQTT, COAP, LwM2M
Peripherals	PWM, NVIC, DAC, FLASH, RTC, DMA, Bootloader, FOTA, TIMER
Microcontroller interface	SWD, JTAG
Debugging tools:	Oscilloscope, Signal Generator, Multimeter, Logic Analyzer
Software Stacks/tools	PyQt, CNN, Flutter, Tkinter, MySQL, Docker.
Cloud platforms	AWS, Azure
Simulation & design tools	MATLAB, Altium Designer, Kicad, Vivado, LTSpice, Proteus, SquareLine Studio, GUI Guider, Figma.
Version Control tools	Git, Bitbucket
Documentation	Confluence, Doxygen, Google workspace, Notion

PUBLICATIONS

- **Design and Development of Temperature Controlled Intelligent Portable Reefer Container for Delivery Optimisation in Logistics and Supply Chain Management** - 2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC), Pg.58-63,IEEE.

- **ECG AND PULSE OXYGEN LEVEL MONITORING AND ARRHYTHMIA CLASSIFICATION USING CNN** - International Journal of Engineering Applied Sciences and Technology, Vol 6, Issue 8, Pg. 171 - 176, IJEAST.