

OBJECTIVE

- To obtain an entry-level opportunity in the field of embedded systems where I can leverage my technical knowledge, problem-solving skills, and analytical abilities to contribute to innovative projects and support the growth and success of the organization.
- **Technical Skills:** C Programming | Embedded C | PIC | STM32 | UART | I2C | SPI | CAN |Linux (Basic) | Data structures| C++
- **Education:**
 - **B.Tech (ECE), 20243**| Vemu Institute of Technology Chittoor , **8.3**
 - **XII, 2019** | Board of Intermediate Education Andhra Pradesh, **9.8**
 - **X, 2017** | Board of Secondary Education Andhra Pradesh, **7.3**
- **Training Undergone: Embedded Trainee| Radar Technologies, Bangalore**
 - Gained experience with the LPC2129 Microcontroller, including Programming, Interfacing & Debugging.
 - **Communication Protocols:** Hands-on experience with I2C, SPI, UART, CAN and LIN Protocols.
 - **C Programming:** Developed a strong foundation in C Programming for Embedded Systems.

SUMMARY

- **Proficient in Embedded Software Development** Skilled in designing, developing, testing, and debugging system software for embedded devices, from requirements to deployment.
- **Hardware Integration Expertise:** Hands-on experience with schematic design using OrCAD, and effective interfacing with hardware development teams.
- **Power Electronics Knowledge:** Understanding of power electronics principles and applications, crucial for diverse embedded system applications.
- **Commitment to Quality and Efficiency:** Dedicated to enhancing system stability and scalability, with a strong grasp of embedded software quality processes and a proactive approach to problem-solving.
- **Thrive in fast-paced & dynamic environments, effectively communicating with team members** to ensure smooth development processes, while taking ownership of assigned tasks and delivering high-quality work to meet project deadlines.

SKILLS

Embedded Systems Development	Hardware-Software Interface	Quality Assurance	Bare Metal Programming
Microcontrollers & Power Electronics	Communication Protocols	Schematic Analysis	
Communication & Interpersonal Skills	Resilient & Ambitious	Attention to Detail	

EXPERIENCE & INTERNSHIPS

QUAD POWER SYSTEMS
Junior Embedded Software Engineer

since may 2024

- Designed and developed embedded C firmware for a “Talk Back System” using STM32 microcontroller, managing real-time input from 100 physical buttons via the I2C protocol to facilitate user interaction.
- Gained hands-on experience with various communication protocols such as UART, I2C, SPI, and RS-485 (MAX485) for device interfacing and data exchange across modules.
- Interfaced with different types of LCD displays for real-time feedback and system interaction, implementing custom drivers where required for seamless integration.
- Working with the STM32 microcontroller and Worked extensively with FreeRTOS, including the creation and scheduling of tasks, use of message queues, and implementation of inter-task communication to ensure efficient multitasking and real-time system responsiveness.
- Contributed to schematic design and developed a strong understanding of hardware interfacing, circuit design, and power electronics concepts to support overall system development.
- Implemented robust button state detection and debouncing, ensuring reliable input processing in a real-time environment.
- Enhancing embedded software engineering skills with a focus on the microcontroller. Configuring timers and ADC converters to optimize performance and functionality.

- Gained insights into Fundamental of Embedded Systems, maintenance & quality control, applied electronic communication skills.
- Contributed to enhancing operational efficiency and safety protocols, deepened knowledge of electronics in engineering.

PROJECTS Undertaken

Title: IoT-Enabled Remote Control and Security for Agricultural Motors in Precise Farming.

Tools used: GSM module, microcontroller

Description: Designed and developed an IoT-based remote control system for agricultural motors using a single GSM module. The project involved creating the hardware components for sensor integration and programming the microcontroller to enable efficient control and monitoring.

Title: Data Validation for CAN Frames

Description: Focused on verifying the reliability of data transmitted over the CAN bus, which facilitates communication between various control units in a system. The objective was to ensure the accuracy of the data exchanged between the units and to detect and eliminate any errors.

Role: Used following methods to detect errors in the data:

- **Frame Timeout Check:** Ensured regular data transmission by recording a 'Frame Timeout Error' if data wasn't sent within the expected time using a timer.
- **DLC Check:** Verified the correct byte count in the data frame, logging a 'DLC Mismatch Error'.
- **Signal Fault Detection:** Monitored signal values to ensure they remained within safe limits, recording a 'Signal Fault Error' for out-of-range signals.
- **Checksum Validation:** Compared sender and receiver checksums to detect data corruption, logging a 'Checksum Error' if they didn't match.

Synopsis These checks allowed the system to detect and correct errors in the data. Only data that passed all checks was accepted, ensured reliable communication between the control units.

Title: Line-follower Robot

Tools used: IR sensors, ultrasonic sensors, Bluetooth module, Arduino

Description: Developed a Line Follower Robot utilizing IR and ultrasonic sensors along with a Bluetooth module, showcased expertise in hardware integration, Arduino programming, Bluetooth communication and control logic development

Title: Lora Gateway Communication System

Tools used: Arduino Nano, LCD display, Node MCU, Lora Module, Sensors

Description: Developed a long-range wireless communication system based on LoRa WAN protocol to monitor environmental conditions in remote areas. Implemented a master-slave architecture, where multiple sensor nodes (slaves) collect data such as soil moisture levels and fire alerts, transmitting it over long distances to a central gateway (master). The Node MCU processes incoming data and displays it on an LCD screen. This low-power, long-range solution is ideal for smart agriculture and forest monitoring applications, enabling real-time, internet-independent data collection and communication in off-grid locations..

CERTIFICATES & ACHIVEMENTS

- Completed Advanced Diploma in Embedded Systems at Radar Technical Center, Bangalore.
- Completed Python course from APSSDC.
- Completed C programming Course
- Participation on RISE(Research_Innovative_Startup_Expo)

Languages Known: English , Telugu and Kannada(beginner).