

VISHNUVARDHAN KADAVERGU

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📍 Hyderabad

Professional Summary:

Experienced Embedded Software Engineer specializing in IoT frameworks and embedded firmware development. Proficient in designing, developing, and optimizing embedded systems to deliver high-performance, seamless integration across diverse applications. Skilled in leveraging advanced tools, protocols, and real-time operating systems to create scalable solutions. Adept at system-level debugging, hardware-software interfacing, and ensuring robust, efficient firmware for critical operations.

Technical Skills:

- Embedded C
- C++
- Data Structures and Algorithms
- Advanced C
- Linux shell scripting
- FreeRTOS
- IOT & Networking
- Java
- Git Repository
- Software Design Documentation

Microcontrollers & Communication Modules

- Wi-SUN (Wireless Smart Utility Network) Nodes - EFR32
- BC65 NB-IoT Cellular Module
- STM32
- ESP-32 (4/8 MB)
- PIC 16F877A

Communication Protocols and Tools

- UART/USART
- SPI
- I2C
- TCP/IP
- UDP
- HTTP(s)
- Simplicity Studio
- Visual studio
- Arduino IDE
- Stm32 Cube IDE
- ESP-32 IDF
- MPLAB X IDE
- Jira Management

Professional Experience

Aaensa Tech

04/2024 – present

Firmware Design Engineer

Gurgaon, India

Skilled in designing and developing firmware for microcontrollers, with expertise in integrating communication modules such as BC65 (NB-IoT), WI-SUN, and ESP32 (Wi-Fi) for IoT applications. Expertise in IoT frameworks, real-time operating systems, and optimizing embedded systems for performance and power efficiency. Proficient in developing and implementing firmware codes, ensuring robust functionality and seamless integration. Experienced in implementing secure boot, encryption, and secure firmware updates to safeguard devices against vulnerabilities and meet stringent compliance requirements. Adept at creating secure, efficient, and reliable embedded solutions.

Emertxe Information Technology

06/2023 - 01/2024

Embedded intern

Bangalore, India

As an embedded intern at Emertxe, I developed proficiency in Shell scripting, advanced C programming And OOP using C++, I mastered data structures and worked with embedded controllers, leveraging Peripherals like timers, counters, and interrupts, I also implemented communication protocols including I2C, SPI, CAN and UART.

Wipro Limited

Project intern

01/2023 – 04/2023

Bangalore, India

Wipro Limited – Internship – JAVA/J2EE, learnt about java enterprise edition technologies, and web development using HTML, CSS and JavaScript technologies.

Projects:

Wi-SUN MESH Network by silicon Labs

Description:

Wi-SUN Linux Border Router facilitates reliable, long-range Sub-GHz wireless communication using IPv6 mesh networking. It is specifically built for extensive outdoor IoT applications in smart cities and utilities.

The Wi-SUN Linux Border Router establishes a robust mesh network for smart street lighting, enabling remote control, environmental-based on/off switching, integration with city systems for adaptive lighting, and real-time monitoring for maintenance and energy efficiency.

Protocols: TCP/IP, UDP

Tools: Visual studio, Simplicity studio

Responsibilities:

- Implemented a Wi-SUN FAN 1.1 mesh network using a Raspberry Pi 4 Model B with WSRD and CPCD daemons, interfaced with a Silicon Labs EFR32 radio board running Wi-SUN RCP firmware, to establish a fully functional Wi-SUN Linux border router.
- Developed and tested TCP and UDP communication protocols for one-to-one, multicast, and broadcast communication between Wi-SUN nodes and the border router.
- Integrated application layer API calls to replace Command Line Interface for improved usability.

V-16 Lights

Description:

Collaborated with a team on BC65 module OpenCPU programming to develop a switch-based device for safety procedures. Implemented Attention (AT) commands to control the device and successfully retrieved Global Navigation Satellite System (GNSS) data for precise location tracking and safety enhancements.

Protocols: UART, TCP/IP

Tools: Visual studio, Quecom

Responsibilities:

- Implemented AT commands to manage device functionalities, such as remote control and status updates.
- Retrieved GNSS data for accurate location tracking using the LC76F microcontroller, enhancing safety features.
- Contributed to the design and testing of safety procedures, ensuring the device meets real-time requirements for safety enhancements.

Image Steganography using LSB Encoding and Decoding

The objective was to send a secret text file encoded inside an image of BMP file format. Encoded the length of the secret text and then encoded the data into the LSB of the image bytes. The decoding process involves decoding the length and then decoding the text bit by bit. The final output is the secret text after decoding.

Tools: Ubuntu22.04.3 LTS, Visual studio

Responsibilities:

- Developed an Image Steganography system using Least Significant Bit (LSB) encoding to securely embed a secret text file inside a BMP image.
- Implemented the decoding process to retrieve the encoded secret text, ensuring accurate bit-by-bit extraction without compromising image integrity.
- Tested the system in Ubuntu 22.04.3 LTS, ensuring reliable encoding/decoding and preserving the original image's visual appearance.

EDUCATION

Jyothishmathi Institute of technology and science
Graduation (Electrical and Electronics Engineering)
CGPA - 7.0

07/2019 – 09/2022

Jyothishmathi Institute of technology and science
Diploma (Electrical and Electronics Engineering)
CGPA - 8.3

06/2016 – 04/2019

ZPHS Utoor
SSC
CGPA - 7.8

05/2015 – 04/2016

CERTIFICATES

- Training in Embedded Systems & Linux Networking
- Industrial Training Certified by TS Transco.