
Yoganathan Venkatesan

Senior Embedded Developer

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[Yoganathan Portfolio](#)

Technical Skills :

- ❖ Hands-on experience in Firmware development, Bootloader, UEFI DXE driver, FreeRTOS, Microcontroller driver development.
- ❖ Having knowledge on Linux networking and Linux kernel Internals.
- ❖ Experience in Agile Framework methodology.
- ❖ Familiar with x86/x64 and ARM processors, STM32(ARM Cortex Processor), Renesas(8/16 bit CPU core), MSP430, ESP32, ESP8266, Raspberry PI, BeagleBone.
- ❖ Extensive experience in LoRaWAN, and networking protocols like FOTA, DHCP, ARP.
- ❖ Excellent analytical, developing and debugging firmware for peripherals such as DAC, TIMER, ADC, RTC, WDT, PWM, DSADC, and Low Power Modes.
- ❖ Robust Development and debugging of device driver and application program for communications using UART, I2C, SPI, 1-Wire and knowledge about CAN protocol and its working functionality.
- ❖ Proficient to understand the datasheet and hardware schematics.
- ❖ Ability to understand and debug the analog and digital electronics circuit design.
- ❖ High-level hardware and software debugging using oscilloscopes, Volt/Ohm meter, and function generator.
- ❖ Programming Languages: C, C++, Bash Shell Scripting, Python(Basic).
- ❖ Having In-depth knowledge of the complete boot process of the system.
- ❖ Understanding and implementing Linear Data Structures.
- ❖ Exposure to debugging tools like lauterbach, SWD, JTAG and DediProg.
- ❖ Experience in Version management systems tools like GIT, SVN.

Awards and Achievements:

- ❖ Participated in and successfully completed the certification for Embedded Software Engineer from the National Skill Development Corporation (**NSDC**).
- ❖ Received **4 times Start of the sprint award** in Dell Technologies.
- ❖ Received **Techie award** in Outdid Unified LLP.
- ❖ Completed Mastering Microcontroller and **Embedded Driver Development, Linux Driver programming** and **FreeRTOS** Courses in Udemy Course.
- ❖ Successfully completed the HackerRank Problem solving skills certification test and earned my certificate.

Experience :

- ★ Wipro, Bangalore(Dell Technologies)
July 2023 - present
 - Senior Software Engineer
- ★ Outdid unified LLP, Bangalore
February 2022 - June 2023
 - Senior Firmware Developer
- ★ Robert Bosch Engineering and Business Solutions, Coimbatore
July 2021 - January 2022
 - Automotive Software Developer
- ★ MS Tech Pvt.Ltd, Bangalore
June 2019 - June 2021
 - Embedded Developer

Course :

→ Embedded Systems - Linux.

Emertxe Institute for Embedded Systems - Bangalore

Modules Covered: Bash Shell scripting, Advanced C, Data Structures, MCU, C++, Linux Internals and Linux Networking.

→ Embedded Systems - Microcontroller.

Techvolt Software Pvt.Ltd - Coimbatore

Modules Covered: Basic C, Microcontroller programming.

Education :

- ★ Karpagam Institute of Technology, Coimbatore - June 2015 - April 2019
 - B.E - ELECTRONICS AND COMMUNICATION ENGINEERING
- ★ Government Boys Higher Secondary School, Uthangarai - June 2014 - April 2015
 - HSC - Biology Mathematics
- ★ Government Boys Higher Secondary School, Uthangarai - June 2012 - April 2013
 - SSLC

Projects:

1. UEFI/BIOS:

- I have worked in the BIOS Connect team, Where I can actively contribute to FOTA and automated tools(Factory) development.
- Ported UEFI DXE drivers from Intel x86/x64 processors to ARM architecture, adapting them for ARM-based systems.
- Identified and fixed security vulnerabilities by analyzing code using tools and addressed issues in the software development lifecycle.
- Collaborated closely with cross-functional teams to implement or integrate drivers into UEFI/BIOS.
- Demonstrated strong understanding of existing UEFI DXE drivers and enhancements to improve driver functionality.

2. EV-Charger for Car - (Single & Three Phase)

- Developed the application layer for OCPP, enabling communication between electric vehicle (EV) charging stations and central management systems.
- Developed a bootloader for system initialization during startup and for enabling FOTA.
- Developed APIs to integrate and transfer data to NFC, WiFi, 4G and Ethernet.
- Implemented drivers for transferring data to EEPROM, Serial Flash.
- I Independently developed the entire OCPP 1.6 Protocol.

3. OCCUPANCY SENSOR MODULE with FreeRTOS

- I have implemented separate tasks for the following purposes using FreeRTOS.
 - Battery Voltage Monitoring Task: This task periodically reads the battery voltage and takes appropriate actions based on voltage thresholds.
 - Data Collection Task: Responsible for collecting data values from sensors.
 - Data Transmission Task: Sends collected data to the server via MQTT.
 - Low Power Mode Task: Manages low power mode to optimize energy consumption during idle periods.
- I've enabled device drivers for various communication protocols and peripherals.

Average Current Consumption: 12uA.

4. THERMAL PRINTER - 3" & 2"

- Enabled communication driver's and developed application APIs to communicate and data transfer to WiFi and BLE.
- I have implemented a circular buffer to handle continuous data reception.
- I have implemented battery voltage monitoring and enabled low power mode in the system.

Current Consumption is 30uA when it's low power Mode.

5. IOT based SMART METER with LoRaWAN - (ENERGY, GAS, WATER)

- I have worked in the LoRaWAN Stack which is provided by ST and enabled device drivers for various communication protocols like UART, I2C and peripherals ADC, DAC, RTC,PWM.
- Developed an application for collecting data values from sensors and Monitoring Battery voltage.
- Collaborated with Hardware engineers for integrating Hardware components.
- Enabled Low power mode when the system is idle.

The average Current Consumption is 5uA.

Personal Details:

- Father's Name: Venkatesan
- Marital Status: Married
- Languages Known: English, Tamil, Telugu, Kannada
- Home Address:
 - ❖ Padavanoor(vill), Uthangarai, Krishnagiri, Tamil Nadu - 635304.

Career :

To work in a challenging atmosphere by exhibiting my skills with utmost sincerity and dedicated smart work for the growth of your esteemed organization along with mine.