Sai Krishna Reddy Gujjula

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Skills

Protocols: USB, RS232, RS485, UART, I2C, SPI, WiFi, TCP/IP, MQTT, TLS, GSM, Ethernet
Embedded: ARM Cortex-M, ST Micro STM32, ESP32/ESP8266, Arduino, Raspberry Pi, ADC, DMA, GPIO, PWM, JTAG
Frameworks: FreeRTOS, TinyUSB, LWIP
Programming Languages: C, C++, Python, Java, JavaScript, Node.js
Software: Altium Designer, Eclipse STM32Cubeide, Git
Tools: Logic Analyzer, Oscilloscope, 3D Printing
Miscellaneous: Multi-Layer PCB Designing, Component Selection, Board Bring up, Custom MCU Bootloaders

Experience

Firmware Engineer (Remote)

XDLINX SPACE LABS INC, Fremont, CA — Apr 2024 – Present

Satellite On-Board Computer (OBC):

- Designed and developed Satellite On-Board Computer (OBC) for LEO satellite, optimizing performance and energy efficiency.
- Implemented OBC firmware using STM32 microcontroller for real-time data acquisition, telemetry, and command handling.
- Integrated multiple communication interfaces (I2C, UART, SPI, CAN, Ethernet) for inter-system communication.
- Developed custom bootloader and device drivers for secure firmware updates and fault tolerance.

Embedded Systems Engineer

Voltino Systems LLP, Hyderabad, India — Oct 2021 – Aug 2022

Electrical Power System (EPS) for Satellite:

- Designed and implemented Battery Management System (BMS) and solar panel MPPT control for 6U Satellite Electrical Power System (EPS).
- Developed device drivers for various ICs and sensors communicating over I2C with STM32.
- Created I2C messaging protocol for Satellite's On-Board Computer (OBC) to configure and control EPS parameters.

IoT Data Acquisition Framework:

- Engineered IoT solution for real-time data collection from MCU to Database via GSM over MQTT.
- Deployed an MQTT broker on an in-house Linux server, enabling secure data transmission with AES CCM encryption.

Automated PCBA Testing System:

- Developed automated firmware upload and testing setup, reducing troubleshooting time from half-day to half hour per unit.
- Designed a testing board to simulate motors and sensors for production line efficiency.

Embedded Systems Intern

Voltino Systems LLP, Hyderabad, India — July 2019 – Sept 2021

Programmable Toy:

- Conceptualized a coding-free robotic toy using STM32 microcontroller PCB with integrated motors and sensors.
- Managed hardware, firmware, and software development, including intuitive Android and Desktop apps for programming.
- Authored user manuals and mass-produced 300 units of the product.

General Purpose Graphical Display and UI Framework:

- Proposed a versatile display solution using KS0108-based graphical display and STM32 MCU.
- Designed PCB schematics with RS232/RS485 connectivity; developed firmware for UI framework and communication protocols.

Education

Stevens Institute of Technology, Hoboken, NJ — Sept 2022 – Dec 2023
Master of Science in Computer Engineering

Sreenidhi Institute of Science and Technology, Hyderabad, India — Aug 2017 – Sept 2021
Bachelor of Technology in Electrical and Electronics Engineering