HARSHITHA DUDDU

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SUMMARY: -

- Strong foundation in parallel programming, software design, and the C language.
- Proficiency with communication protocols for device control, including SPI, I2C, and UART.
- A solid grasp of data structures, algorithms, optimization strategies, and OS architecture.
- Skilled in the design, development, debugging, testing, and hardware optimization of embedded SW.
- Able to debug hardware using datasheets, schematics, oscilloscopes, and multimeters.

EDUCATION

Bachelor's Degree in Electronics and Communication Engineering – Amrita School of Engineering, Bangalore 08/2021 – 05/2025

RELEVANT COURSE WORK

Embedded Systems	Microcontrollers & Interfacing	Computer Architecture
Data Structures & Algorithms	Machine Learning	Multimedia Wireless N/W

KEY ACADEMIC PROJECTS

Image Compression and Processing | C Language 05/2024

- A 704x536 color JPEG image was compressed with 24 bits per pixel. Algorithms: Simple row and column replication and linear interpolation are used to up sample, followed by a 4:2:0 down sample, then a comparison.
- The final RGB image was 2.8 times smaller than it was initially. The up-sampled linear interpolated image's MSE was 0.0761 in the absence of quantization.

Socket Programming | TCP/IP, C Language 07/2023

- Designed and implemented a data transfer link between two LAN-connected university servers.
- Developed client/server scripts to construct a server architecture and two clients utilizing UDP sockets.

Multithreading vs Multitasking for a Robotic Assembly Line | Linux, RTOS, C Language 10/2022

- Using the C programming language, an RTOS solution for a robotic assembly line was developed. This included task definition, the creation of distinct threads with distinct priority levels for each robot, task synchronization via semaphores and mutexes, task timing management, and the implementation of error handling mechanisms.
- Moreover, message queues utilizing the inter-process communication (IPC) approach were employed to facilitate communication among the various robots and guarantee coordinated operation.
- With a difference of roughly 40% and 15%, respectively, multithreading has a high average throughput and a shorter delay.

WORK EXPERIENCE

SAEINDIA – Battery Systems Firmware Engineer, India 08/2023 – 05/2025

- Energy Storage was a member of a competitive design team that helped create, build, test, and race an electric vehicle in the style of Formula One. took part in the 2023 SAEINDIA.
- Fixed the overcharging problem detected by the high voltage energy storage box by coding Embedded C. Additionally, the circuit is designed to shut down using an STM32 when a relay to GPIO detects a defined high temperature. TMS communications are accomplished by CAN to the Master Panel Control Module, and CANalyzer is used for analysis. To keep an eye on all seven battery segments, VMS uses serial communication with three satellite modules.

TECHNICAL SKILLS

Languages: Python, C, C++, Kernel C, MATLAB & Simulink.
Interface Protocols: SPI, I2C, TCP/IP, ADC, DAC.
Technical Skills : RTOS, TCP/IP.
Software Skills & Tools: LabView, MATLAB, Git, Visual Studio, MS Office, Oscilloscope, Logic Analyzer.

CERTIFICATIONS

- Programming with C and C++: Internshala trainings, 2022 Certificate no. : CEFE890B-7AFD-3CE4-A30E-56114B3A7E9C
- Programming with Python: Internshala trainings, 2022 Certificate no. : 48B1C712-FA94-E7FE-5F82-0CD17A9373E8

AWARDS

- Co-Secretary in Racing club – SAEINDIA
- Secured 1st and 2nd prize in Relay Race
- Executive in Avishkara club (Science Club)
- Executive in Prerana Club (Social Outreach Club)
- Volunteer in Prakalp event