

PRITAM KUMAR

Embedded Software Engineer

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Chandigarh

SUMMARY

Dedicated Embedded Software Engineer with 1 year of industry experience and 9 months of hands-on training in embedded systems development. Skilled in C programming, microcontroller interfacing, and embedded software design. Eager to apply technical knowledge and problem-solving skills to develop efficient and reliable embedded solutions.

EDUCATION

Malout Institute of Management and Information Technology | 2020-2024

Bachelor of Technology in Electronics & Communication Engineering

CGPA 7.81

LPM College | 2018-2020

Intermediate

Percentage 72.2%

BM High School | 2016-2018

High School

Percentage 71.4%

WORK EXPERIENCE

Recorders & Medicare Systems Pvt. Ltd. | Nov 2024 - Present

Embedded Engineer

- Involved in design and development of embedded firmware for multi-channel EEG acquisition systems.
- Worked on STM32F429 and STM32F103 microcontroller for real-time data acquisition and processing.
- Implemented SPI-based communication with ADS1298 analog front-end ICs for bio-signal measurement.
- Developed USB vendor-specific communication protocol for data transfer between device and PC.
- Performed debugging, testing, and hardware-software integration for reliable system operation.

Embedded Engineer Trainee

- Gained hands-on experience in Advanced C.
 - Learned basic Linux, shell scripting, and Linux internals for embedded development.
 - Worked on microcontroller programming using PIC18F4580 and STM32 series.
 - Implemented peripheral interfacing using GPIO, UART, SPI, and Timers.
 - Developed, compiled, and debugged embedded applications using MPLAB X IDE.
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SKILLS

- Advance C, Embedded C, Microcontrollers(STM32F429, STM32F103), Communication Protocols (UART, SPI, I2C, USB), Basic Linux, Linux Kernel System, Shell Scripting
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PROJECTS

Maximus (EEG)

- Developed a 32-channel EEG signal acquisition system using 4× ADS1298 (8-channel biopotential ADCs) interfaced with STM32F429BIT6 via SPI.
- Implemented real-time EEG data streaming through custom USB Vendor-Specific protocol, supporting high-speed data transfer to PC.
- Designed EEG display logic on TFT 640×480 with smooth, real-time waveform scrolling per channel.
- Implemented UART debug interface for system monitoring and real-time register verification.

Car Black Box

- The Car Black Box Project is designed to log critical driving data such as gear shifts, speed and real time, providing detailed insights into vehical usage using PIC18F4580.
- Capturing and storing critical events like gear shifts, speed, and time in real-time without missing data.
- Storing large volumes of data in EEPROM or external storage while preventing memory overflow.
- Implementing a reliable password-based system to prevent unauthorized access to logs.

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.
 - Understanding of pixels and header of image file by doing literature study.
 - Faced challenges while doing bitwise manipulation of data to embed as well to retrieve the data from the destination image which was solved by self-understanding
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Linux Mini shell

- Developed a custom shell in C, supporting built-in commands (cd, pwd, exit), external command execution using system calls, and signal handling (SIGINT, SIGTSTP).
- Managing parent-child processes and synchronization for external commands.
- Implementing pipes for inter-process communication and managing multiple commands.

Address Book

- Built a Address book where users can add, edit, delete, and search contacts. I implemented this project using file handling to store data persistently, which enhanced my skills in handling user input and structuring data for efficient access and modification.
- Implemented efficient memory management using dynamic allocation.
- Focused on error handling and optimized performance for scalability.

Quadruped Spider Robot

- The Quadruped Spider Robot project involves building a four-legged robot using an Arduino Uno to mimic spider-like movement.
- Precisely controlling multiple servomotors to achieve accurate and reliable leg positioning.
- Integrating sensors effectively to detect and navigate around obstacles without compromising movement

Automated self - driving car

- I led the development of an Automated self-driving car that utilized sensors and software algorithms to perform real-time object detection and navigation in a controlled environment.
- Implementing accurate and fast object detection algorithms to identify and respond to obstacles in real-time.
- Developing algorithms that allow the car to make safe and effective decisions based on sensor inputs and environmental conditions.
- Creating robust navigation algorithms that enable the car to plan and follow optimal paths while avoiding obstacles.

KEY ACHIEVEMENTS

Technical Fest Award

- Received Award on Technical fest, a college during Graduation Award given to best project with a cash prize of RS 2000.
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