

PRITAM KUMAR

EMBEDDED SOFTWARE ENGINEER



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GURUGRAM

PROFILE

Dedicated Embedded Software Engineer with 1.4 years of hands-on experience in embedded systems development, specializing in C programming, microcontroller interfacing, and firmware design. Proficient in developing efficient, reliable, and scalable solutions, including secure IoT implementations and hardware-integrated software architectures. Strong problem-solving abilities with a focus on optimizing performance and ensuring system portability across platforms. Eager to contribute technical expertise to innovative embedded product development.

EDUCATION

Bachelor of Technology in Electronics & Communication Engineering

Malout Institute of Management and Information Technology | 2020-2024

CGPA 7.81

Higher Secondary

LPM College | 2018-2020

Percentage 72.2%

Secondary

BM High School | 2016-2018

Percentage 71.4%

EXPERIENCE

Embedded Software Engineer | Aaensa Tech Pvt Ltd. | Jan 2026 - Present

- Involved in development of embedded firmware for ESP32 IOT Project.
 - Worked on esp32 microcontroller for real-time processing.
 - Designed and implemented offline data logging using SD card for reliable data storage during network unavailability.
 - Developed file handling mechanisms for structured data storage and retrieval from SD card.
 - Created functional and error test cases for communication reliability and system robustness.
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Embedded Engineer | Recorders & Medicare System Pvt. Ltd. | Nov 2024 - Dec 2025

- 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 and testing for reliable system operation.
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Embedded Engineer Training | Emertxe Information Technologies | Jan 2024 - Oct 2024

- 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, esp32), communication Protocols (UART, SPI, I2C, USB), Basic Linux, Linux Internal, Cryptography: AES-GCM, X25519, ECDH
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PROJECTS

Secure Offline Data Storage & Encryption using TA101

- Designed and implemented secure offline data storage across Application Layer, Service Layer, and Hardware Layer
- Built a modular and portable architecture where Application and Service layers are independent of the Hardware layer
- Ensured hardware abstraction, enabling seamless migration to different microcontrollers without major code changes
- Integrated TA101 secure element for secure key storage and cryptographic operations
- Generated X25519 types key pairs and implemented ECDH-based shared secret derivation
- Performed AES-GCM encryption for secure communication

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
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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
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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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Quadrupped 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
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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.