

SAHIL SIDDIQUI

EMBEDDED SYSTEMS ENGINEER

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SUMMARY

Embedded Software / Firmware Engineer with hands-on experience in STM32 firmware development, Embedded C, and FreeRTOS-based real-time systems. Trained at Bosch Global Software Technologies, with expertise in HAL and register-level programming, device driver development, MISRA C, and embedded communication protocols. Experienced in debugging and building reliable real-time applications for automotive and IoT use cases.

TECHNICAL SKILLS

- **Programming:** C, Embedded C, C++ (Basics), MISRA C
- **Microcontrollers:** STM32F4, ARM Cortex-M, GPIO, ADC, PWM, Timers, Interrupts
- **RTOS:** FreeRTOS (Tasks, Queues, Mutex, ISRs)
- **Communication:** UART, SPI, I2C, CAN (Basic), Bluetooth, Wi-Fi

EXPERIENCE

Bosch Global Software Technologies, Hyderabad
Embedded Software Engineer (Apprentice)

Jan 2025 – Jan 2026

- Developed and debugged Embedded C firmware for STM32F405 using HAL and register-level programming.
- Configured GPIO, UART, SPI, I2C, ADC, Timers, and PWM with real-time validation.
- Implemented interrupt-driven modules, memory handling, and bitwise logic for optimized performance.
- Built subsystems for motor control and sensor integration following AUTOSAR and MISRA C guidelines.
- Utilized Git and hardware debugger tools for troubleshooting and version control.

PROJECTS

Smart EV-Bike (IoT Security & Monitoring)

Tools Implemented: STM32F405, SPI-EEPROM, Accelerometer, IR Sensors, Bluetooth, Wi-Fi

- Developed a prototype with secure user authentication using unique ID storage in SPI-EEPROM.
- Integrated sensors for collision detection, auto-shutdown, and rider safety mechanisms.
- Enabled wireless connectivity for remote alerts, anti-theft notifications, and status monitoring.
- Designed multi-mode speed control logic and safety lockout mechanisms for vehicle operation.

Autonomous Greenhouse Control System

Tools Implemented: STM32, ADC, Timers, PWM, Temperature/Humidity/Light Sensors

- Designed an automated system for environmental monitoring and intelligent hardware control.
- Implemented ADC-based sensor readings and timer-driven periodic sampling for data precision.
- Automated control of fans, heaters, and lighting via PWM based on configurable thresholds.

EDUCATION

Chandigarh University

June 2023

Bachelor of Engineering in Electrical Engineering | **CGPA: 7.78/10**

PUBLICATIONS

Design and Implementation of Automatic Electric Charging of Vehicles

Published in IJARESM (International Journal of All Research Education and Scientific Methods).

CERTIFICATIONS

- Embedded C programming using STM32 Microcontroller
- Mastering Microcontroller & Embedded Driver Development
- Electric Vehicles and Mobility & Introduction to Electronics