

Sidharth K

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EDUCATION

College Of Engineering Trivandrum

Bachelor of Technology in Electrical and Electronics Engineering

Trivandrum

July 2019 – July 2023

Chinmaya Vidyalaya

Higher Secondary Education

Thrissur

June 2016 – March 2018

EXPERIENCE

Embedded Software Developer

Bosch

Hyderabad

January 2025 – Present

Built an interactive UI with real-time graphing for linear actuator

- Developed a cross-platform actuator control application using Python (PyQt5) for the GUI and C++ for hardware interfacing via a custom DLL.
- Designed the GUI with advanced features such as real-time plotting, step recording, and live actuator data visualization.
- Implemented hardware communication through a C++ DLL with seamless integration in both scripting and PyInstaller-based production builds.
- Implemented dynamic loading of configuration headers and runtime macro synchronization for flexible deployment and easy updates.
- Built comprehensive test suites using pytest, pytest-qt, and unittest.mock to ensure reliability, regression safety, and high code quality.

ECU development for RC4x Controller

- Working with the BSW team for Bosch RC40 controllers across requirements, architecture, testing, planning, and source code management.
- Developed a Python-based ECU flashing tool using PCAN and UDS over CAN, handling flash preparation and programming of respective memory blocks on RC4x controllers.
- Developed and maintained IBM Rhapsody models for RC40 controllers by adding required elements and resolving system-level errors to ensure model accuracy and reliability.
- Executed module-level unit testing with TESSY, achieving strong code coverage and validating compliance with project and safety requirements.

PROJECTS

Smart Environment Monitoring System

February 2025 – March 2025

- Developed a Smart Environment Monitoring System using an STM32 microcontroller
- Connected sensors using I2C and logged data to an SD card using SPI.
- Used FreeRTOS tasks to handle sensor reading, data logging, and communication.
- Displayed real-time temperature and humidity data on an LCD display.
- Sent live sensor updates to a computer through UART for monitoring.

KernelSync: Event-Driven Linux Character Device Driver

May 2025 – June 2025

- Developed a Linux character device driver for kernel-user space communication.
- Implemented an in-kernel circular buffer for data exchange.
- Added custom IOCTL commands for device control and runtime status querying.
- Exposed driver parameters and device state via sysfs for runtime inspection and configuration.
- Supported blocking and non-blocking I/O using wait queues and poll.
- Ensured thread-safe access using kernel synchronization primitives.

TECHNICAL SKILLS

Languages: Python, C++, C

Communication Protocols: SPI, I2C, UART, CAN, UDS, ISO-TP

Developer Tools: Git, Visual Studio, STM32CubeIDE, PCAN, IBM Rhapsody, Tessy

Kernel and Driver Development: Linux Kernel Modules, Character Device Drivers, IOCTL, Sysfs, Wait Queues

Libraries / Frameworks: Qt, PyQt5,pyqtgraph, unittest, pytest