

RISHABH KUMAR SINGH

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Embedded Systems Engineer skilled in firmware, PCB design, and hardware bring-up. Experienced with STM32, Renesas, ARM Cortex, and UART/SPI/I2C/USB/LVDS.

EXPERIENCE

ADJAC India Pvt. Limited, *Embedded Engineer*

Delhi, India

February 2025 – Present

- Implemented firmware for an automated liquid handling system using STM32 and FreeRTOS, enabling precise control of motors, sensors, and real-time operations.
- Led end-to-end R&D including system architecture, hardware bring-up, and validation testing..
- Architected multi-layer PCBs for motor control, sensing, and power subsystems, improving signal reliability and reducing noise-related issues by 15%.
- Integrated peripherals using UART, SPI, and I2C protocols with FreeRTOS-based multitasking to ensure reliable real-time communication.
- Performed hardware debugging and system validation, reducing system failures and improving overall reliability by 20%.
- Applied DFM/DFA principles and maintained technical documentation to improve design traceability.

Freelance PCB Designer

Remote

February 2025 – Present

- Engineered high-speed multi-layer PCBs for embedded and RF applications, ensuring signal integrity and optimized routing while reducing EMI-related issues.
- Built a 4-layer PCB integrating an NRF wireless module using SPI communication for reliable embedded connectivity.
- Implemented high-voltage (300V / 0.9A) and FPGA-based PCB designs with controlled impedance and differential pair routing to enhance signal performance.

Nosh Robotics, *Embedded Intern*

Bengaluru, India

August 2024 – January 2025

- Built and validated 10+ service parts for PCBs, limit switches, and motor control assemblies to support robotic system testing and diagnostics.
- Created a non-contact water-level sensing system using phototransistors, achieving $\pm 5\%$ measurement accuracy.

EDUCATION

C.V. Raman Global University, *B.Tech in Electrical and Electronics Engineering 2024* | Odisha, India

CGPA: 8.95/10.0

SKILLS

Programming	Embedded C, C, C++, Python, MATLAB
RTOS	FreeRTOS, Task Scheduling, Queues, Semaphores
Interfaces & Protocols	UART, SPI, I2C, CAN, Ethernet, Modbus, RS-232, RS-485, USB, ADC
Hardware & PCB	Schematic Design, Multi-layer PCB Design, Signal Integrity, Hardware Debugging, DFM/DFA
Tools	Altium Designer, STM32CubeIDE, Keil, MPLAB, Git, Linux, Xilinx Vivado
FPGA (Basic)	Verilog, RTL Design, FPGA Architecture

PROJECTS

Custom ESP32-S3 Gateway for JBD Smart BMS

May 2025

- Developed a gateway device using ESP32-S3 to directly acquire data from a JBD Smart BMS and transmit it to a remote server for real-time monitoring.

Smart Infusion Pump Control System

2025

- Designed an embedded control system for a smart infusion pump prototype enabling precise fluid delivery using stepper motor-based actuation and real-time sensor feedback.

IEEE Paper – ICEFEET 2023, NIIT Patna (Published)

Aug 2023 – Jan 2024

- Solar Powered MPPT Buck-Boost Converter Using Adaptive ML Algorithm and Smart Controller For DC Fast Charging Application.