

Seeking a challenging role in embedded systems where I can leverage my technical skills, enhance my knowledge, and contribute to innovative solutions. Passionate about robotics, automation, and embedded hardware, I aim to work on cutting-edge projects that drive technological advancements and efficiency.

## EDUCATION

Degree	Institute, University	CGPA	Year
M.Tech	Indian Institute of Technology Indore	8.69	2024
B.Tech	Vidyalankar Institute of Technology, Mumbai University	8.47	2022

## TECHNICAL SKILLS

- **Programming:** C, Python, ROS2, C++(Basic)
- **Embedded:** Microcontrollers (ARM, 8051), Communication Protocols (SPI, I2C, UART, CAN), RTOS (Real-Time Operating Systems), NVIDIA Jetson Boards, Raspberry PI, Arduino, Oscilloscopes
- **Development tools::** STM32CubeIDE, Keil  $\mu$ Vision, CANoe, FreeRTOS, VS code, Version control systems (Git), Jira, Confluence

## EXPERIENCE

- **CNH Industrial** December 2023 - Present  
*Embedded Software Trainee* Gurugram
  - Developed a GNSS-based autonomous tractor system for real-time farming applications, enabling straight-line navigation and precise execution of mechanical and electrical control commands through software.
  - Worked on various modules, including coordinate transformation, swath generation, data logging, and a PyQt-based GUI over Ethernet.
  - Interfaced multiple sensors with STM32H7 firmware, including speed sensors, angle sensors, and IMUs.
  - Achieved centimeter-level accuracy in straight-line navigation.
  - Worked in a team of four and received the "Project of the Quarter" award in the Innovation domain at Global CNH 2024 (January 2024 – April 2024).
- **IIT Indore** Jun 2023 - Dec 2023  
*Teaching Assistant(Embedded System)* Indore
  - Conducting Embedded system lab, assisting during theory lectures and helping students in mini projects.
  - Explaining the 8051 architecture, special function registers (SFRs), peripherals and communication protocols(UART, I2C, SPI), along with their implementation using Embedded C.
  - Executed various mini projects involving sensor and actuator interfacing, LCDs, ADC (MCP3204), EEPROM (AT24C08), RTC (DS1307), and more, utilizing hardware peripherals and bit-banging technique.

## PROJECTS

- **Real-time RFI Mitigation filter on FPGA and GPU** Jan. 2023 - Present  
*Prof. Abhirup Datta (M.Tech. Thesis)*
  - Collected RFI-contaminated data using SDRs and custom radio receivers, while also generating diverse synthetic datasets with signal generators, modulation techniques, and software-based simulations.
  - Detected RFI using CNNs and applied signal processing techniques to mitigate interfering signals.
  - Deployed state-of-the-art algorithms optimized with the Vitis-AI SDK on the Zynq UltraScale+ MPSoC ZCU104, as well as on NVIDIA AI-Edge devices, including Jetson Nano, Jetson Orin Nano, and Jetson AGX Orin.
  - Benchmarked all development boards based on inference time, computational efficiency, and power consumption.
- **Autonomous Drone** Dec. 2023 - Jan. 2024  
*IVDC Club (Robotics club)*
  - Designed a self-landing and autonomous hexacopter based on the Robot Operating System (ROS2).
  - Implemented robot localization, Kalman filter, and the ROS2 Navigation Stack for navigation and sensor fusion.
  - Used Jetson boards as the onboard computer to control the Pixhawk flight controller, LiDAR, and camera.
  - Tested the UAV in real-world conditions as well as in a custom Gazebo simulation environment.
- **Automatic Attendance System using Face Recognition** May 2021 - May 2022  
*Vidyalankar Institute of Technology*
  - Implemented the LBPH algorithm for real-time face recognition. Integrated a camera module with Raspberry Pi for image acquisition and processing.
  - Optimized system performance by interfacing Raspberry Pi GPIO with peripheral devices. Configured I2C communication for hardware interfacing and data logging.
  - Deployed the system as a standalone embedded solution, reducing dependency on external PCs.

## POSITIONS OF RESPONSIBILITY AND ACHIEVEMENTS

- **TPC(Training and Placement Co-ordinator)**, Placement Cell, IIT Indore Feb. 2023 - May 2024
- **Captain and Club Head**, Football Club, IIT Indore Sep. 2022 - Aug. 2023
- **GATE Qualification**, Qualified GATE in ECE with 881 rank 2021,2022