Hariom
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My Workshops and Sessions | My Projects
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Personal Statement

Electronics Engineering student with hands-on R&D experience in embedded systems, IoT, and robotics at Shiksha Sopan, IIT Kanpur. Skilled in microcontrollers (Arduino, ESP32, STM32) and microprocessors (Raspberry Pi). Proficient in sensor integration (IMU, GPS, LiDAR, cameras) and actuator control (BLDC motors, ESCs, servos). Strong foundation in circuit design, PCB prototyping, and communication protocols (I^2C, SPI, UART, CAN). Passionate about UAVs, intelligent systems, swarm robotics, and end-to-end product development.

Education

- **Indian Institute of Technology - MADRAS** Chennai, TN
  Bachelor of Science - Electronics Systems 2024 - Present
  - 2nd-year student, specializing in embedded systems, electronics, robotics, and IoT.
  - Engaged in research projects on UAVs, intelligent systems, and interdisciplinary innovation.

Work Experience

Srajnik Lab Coordinator Shiksha Sopan, IIT Kanpur
Sept. 2021 - Present

- Designed and prototyped **36+ embedded/IoT projects** using Arduino, ESP32, STM32, Raspberry Pi, and various sensors/actuators.
- Implemented IoT solutions with Adafruit IO, ThingSpeak, and Google Sheets for real-time data logging and visualization.
- Conducted **15+ workshops and mentoring sessions, guiding 100+ students** for science fairs and Inspire Awards.
- Built custom hardware prototypes, integrating sensors, actuators, and wireless communication modules (Wi-Fi, Bluetooth, RF).
- Designed PCB layouts and optimized circuits for low power consumption and reliable field performance.
- Led a student R&D team, managed project execution, and coordinated with faculty and external stakeholders.

Selected Projects :

- **GPS IoT Lamp:** Solar-powered lamp with GPS tracking and IoT status monitoring.
- **Smart School Bag:** Integrated GPS, heart rate, and temperature sensors; RFID locking with cloud data logging.
- **F1 Training Reflex Game:** Arduino-based reflex game using LEDs and ultrasonic sensors to measure reaction time.
- **Smart Soldering Station:** Arduino-controlled soldering iron with thermocouple sensors, relay, and 16×2 LCD (I2C) for temperature monitoring.
- **FPV RC Car:** ESP32-CAM live video streaming with iBus remote control and tilt/pan camera.
- **Custom FPV Drone:** Built from scratch with an Arduino flight controller and ESP32-CAM for live streaming.

Skills

Programming & Software Development

- Expert: C, C++, Embedded C, Python, Arduino IDE
- Intermediate: MicroPython, FPGA Programming, Raspberry Pi (GPIO, Camera, Sensors)

Microcontrollers & Hardware Platforms

- Arduino, ESP32, STM32, Raspberry Pi, FPGA
- IMU, GPS, LiDAR, Ultrasonic Sensors, MPU6050, RFID, MAX30102
- BLDC Motors, ESCs, Servos, and Gimbal Systems

Communication Protocols & IoT

- I^2C, SPI, UART, CAN, PWM
- IoT Cloud Platforms: Adafruit IO, ThingSpeak, Google Sheets (Automation & Visualization)

Simulation, Design & Prototyping

- PCB Design & Circuit Simulation: EasyEDA, Fritzing, Wokwi
- 3D CAD & Mechanical Design: Onshape (3D Design), Fusion 360 (Basic)
- 3D Printing & Prototyping: Rapid Prototyping with FDM Printers

Embedded & IoT Development:

- PlatformIO, ESP-IDF, STM32CubeIDE, MicroPython

Testing & Debugging:

- Logic Analyzers, Multimeters, Oscilloscopes, UART/I^2C/SPI Analyzers

Professional & Interpersonal Skills

- Team Coordination and Stakeholder Communication
- Strong Documentation and Presentation Skills
- Deep Focus, Discipline, and Innovative Problem-Solving

Languages

- English (Fluent)
- Hindi (Native)

Interests

UAVs & Aerial Systems, **Swarm Robotics**, AIoT (Artificial Intelligence of Things), Human-Computer Interaction, Embedded AI, Cyber-Physical Systems, Digital Twin Technology, Autonomous Vehicles, 3D Printing & Rapid Prototyping, PCB Design & Hardware Prototyping, Robotics & Mechatronics, Internet of Medical Things (IoMT), Wearable Devices, Renewable Energy Systems, STEM Education & Mentorship.