SAGNIK CHATTERJEE

ROBOTICS • DRONES • IOT • DISTRIBUTED SYSTEMS

CONTACT

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EDUCATION

- **Undergraduate [2024-Present]:**
  RCC INSTITUTE OF INFORMATION & TECHNOLOGY
- **Class XII [2024]:**
  ADAMAS INTERNATIONAL SCHOOL [ISC: 91.5%]
- **Class X [2022]:**
  ADAMAS INTERNATIONAL SCHOOL [ICSE: 94.8%]

TECHNICAL SKILLS

Programming: Java, Python, C, C++
Software Engineering Practices: Automation, Debugging, Log Analysis, Modular Code Design
Embedded Platforms: ESP8266, ESP32, Arduino, Pi Pico, STM32 arch, Raspberry Pi
Communication & Protocols: UART, SPI, I2C, Wi-Fi, BLE, NRF24L01, CRSF-ELRS
Systems & Tools: Linux, Bash, Git, Docker, VPN, MQTT
Domains: Robotics, Autonomous Drones, IoT Systems, Distributed & Embedded Systems

EXPERIENCE:

Software Intern — LabWare Ltd
Python | Automation | Log Analysis

- Automated analysis of large-scale system error logs using Python, applying pattern detection and frequency analysis techniques relevant to complex engineering systems
- Designed rule-based classification logic to identify recurring error patterns across distributed system logs
- Reduced manual debugging effort by generating automated analytical reports

Intellectual Property:

Granted Copyright (Government of India)
"Automated Drone–Ground Station System for Vision-Based Human Crowd Mapping in Disaster Zones"

PROJECTS:

Automated Drone–Ground Station System for Human Crowd Mapping in Disaster Zones
(Granted Copyright)

- Designed an algorithm to detect and map human accumulation from drone camera feeds
- Implemented drone-to-ground-station communication for real-time reporting
- Aimed at supporting rescue operations and situational awareness in disaster scenarios

Tech: Computer Vision, Python/C++, Drone Systems, Wireless Communication

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Autonomous & FPV Drone Platforms

- Built and flew 5" FPV and 10" autonomous drones from scratch
- Designed, tested and fabricated custom designed flight controller.
- Integrated telemetry, wireless control, and sensor systems
- Worked on autonomy logic, tuning, and communication reliability

Tech: Embedded C/C++, ESP32, CRSF-ELRS, NRF24L01

IoT Smart Home Automation Platform

- Designed a full-stack IoT system for monitoring and controlling home appliances
- Integrated Alexa, Home Assistant (HAOS), Blynk, and Rainmaker
- Implemented real-time dashboards and cloud-to-device communication

Tech: ESP32, MQTT, Wi-Fi, REST APIs

Self-Hosted Home Server & Distributed System

- Built a Linux-based home server using Docker to host multiple services
- Deployed VPN, web server, CCTV system, and local LLM,
- Connected Raspberry Pi Zero nodes as distributed CCTV clients
- Created automation workflows similar to IFTTT

Tech: Linux, Docker, Bash, VPN, Raspberry Pi