

UAV Systems Intern

Role: Internship (UAV Systems)

No of opening : 2 Interns

Required Qualifications

- **Education:** Pursuing/ completed Bachelor's or master's degree in electrical engineering, Electronics & Communication Engineering, Robotics and Automation, Computer Science Engineering, Mechatronics or any related field.
- **Exposure:** Demonstrated experience in embedded systems development of automated UAV systems and technologies
- **Tenure:** 2 months
- **Salary:** 25,000/month

Location: Kozhikode, Kerala

About Us:

Airawat Research Foundation (ARF) is a Section 8 company established to advance a mission of national importance leveraging AI for sustainable urban transformation. ARF serves as the institutional vehicle for the prestigious Centre of Excellence in Artificial Intelligence for Sustainable Cities, led by IIT Kanpur, under the aegis of a consortium selected by the Government of India.

Nireekshan AI Dynamics Pvt Ltd is a pioneer in AI based smart structural inspection, leveraging advanced Unmanned Aerial Vehicles (UAVs) and Internet of Things (IoT) technologies. We specialize in the inspection of critical infrastructure, including Bridges, Dams, Landslides, Towers, and Transmission lines, ensuring safety and longevity through high-precision data acquisition and analysis.

Role Overview

We are seeking a UAV Systems Intern to lead the development of our cutting-edge drone and IoT projects. The candidate should possess deep expertise in embedded systems architecture, UAV design from scratch, custom payload integration (especially multi-spectral), and the implementation of AI-driven autonomous flight and real-time computer vision capabilities.

Key Responsibilities

1. Embedded Systems & UAV Development

- Aid in end-to-end UAV design and development with a focus on robust embedded flight control systems.
- Develop and integrate low-level firmware for flight control, sensor interfaces, and high-precision GNSS/RTK-based geolocation.
- Implement reliable RTK communication with base stations for accurate real-time positioning and data georeferencing.
- Design embedded solutions to preserve metadata (GNSS, timestamp, orientation) alongside payload data for photogrammetry.
- Design custom PCBs for compact, high-performance UAV systems.
- Integrate advanced payloads (LiDAR, thermal, RGB-D) and optimize control systems for stable flight under heavy/custom loads.

2. Automation & Computer Vision

- Integrate AI-based visual segmentation and real-time detection models on embedded platforms for in-flight processing.
- Develop autonomous flight algorithms for mission execution and real-time object/defect detection.
- Design systems for automated flight planning based on inspection needs and environmental constraints.

3. Regulatory & Field Operations

- Maintain expert knowledge of Indian UAV laws and compliances and ensure all hardware/software development adheres strictly to DGCA guidelines.
- Implement systems to ensure flight safety by respecting no-fly zones and operational restrictions.
- Demonstrate real-time field critical thinking and expertise in UAV flight planning and execution for complex infrastructure inspections.

Technical Skills

- Proficiency in microcontrollers (e.g., STM32, ESP32) and embedded Linux systems (e.g., NVIDIA Jetson, Raspberry Pi, Arduino).
- Strong programming skills in C/C++ for real-time applications and Python for high-level logic and ROS integration.
- Demonstrable experience with flight controllers like Pixhawk/ArduPilot, PX4 and communication protocols like MAVLink, CAN, I2C, SPI.
- Good knowledge of photogrammetry principles, base station connection establishment and practices related to drone data capture.
- Proven experience in designing and fabricating multi-layer PCBs.