Workshop Report

Organized by Enkindle X ICP CREWSPHERE JUIT X Technovatorz

UNDER THE GUIDANCE OF

- Dr Vivek Sehgal
- Dr Aman sharma
- Mrs Anita

Day 1: Drone Workshop

Date: 12/11/25
Time: 5 PM – 7 PM
Venue: CR3, JUIT
Number of Participants: 28

The Day 1 session focused on Drone Technology, providing participants with a foundational understanding of Unmanned Aerial Vehicles (UAVs). The session covered the basics of drones, their applications, types, components, and flight principles.

Types of Drones Discussed:

- Multirotor drones
- Fixed-wing drones
- Hybrid drones
- Single-rotor drones

Key Concepts Covered:

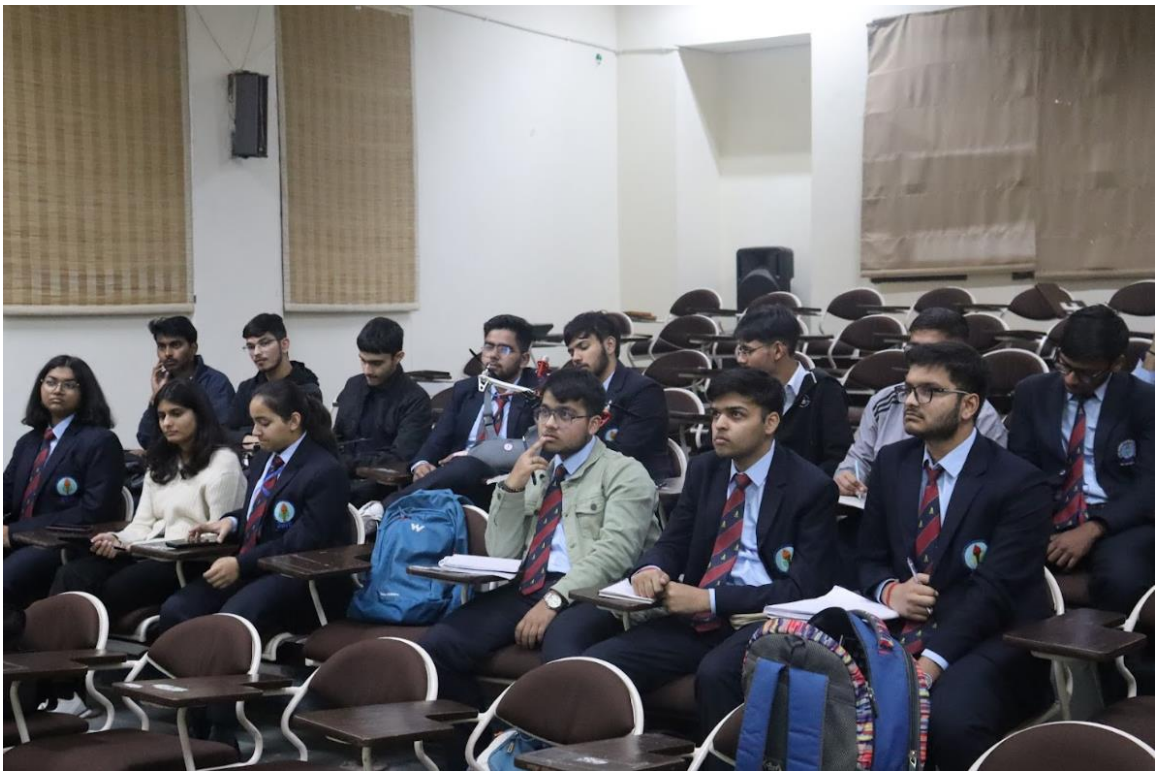
- Quadcopter principle and aerodynamics
- Forces of flight
- Sensors: IMU, gyroscope, accelerometer, GPS, barometer

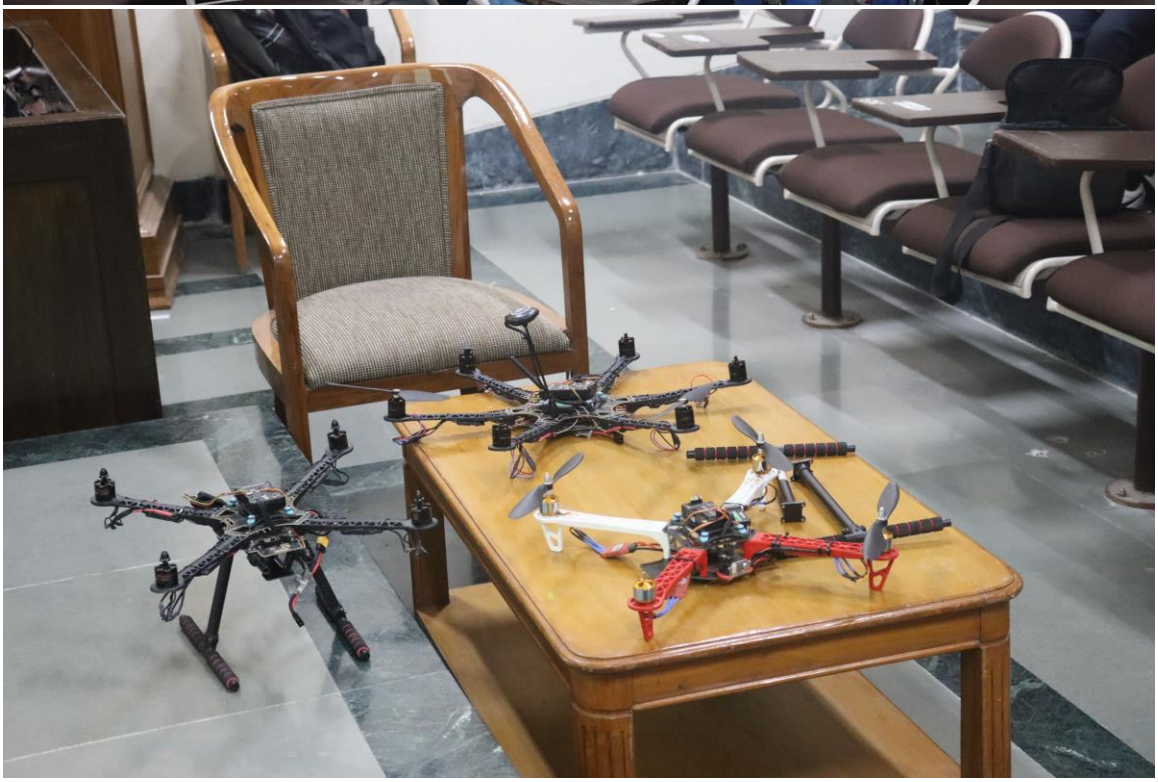
Drone Components Introduced:

- Frame
- Motors
- ESCs
- Pixhawk flight controller
- RC transmitter
- GPS module
- Battery

Calibration and Troubleshooting:

- ESC calibration
- Sensor calibration
- Flight modes: Manual, Altitude Hold, Position Hold





Day 2: Robotic Dog Workshop

Date: 12/11/25
Time: 5 PM – 7 PM
Venue: CR4, JUIT
Number of Participants: 25

Day 2 focused on quadruped robotics using the Unitree Go 2 Edu robot dog. Participants explored advanced robotic capabilities and learned about sensors, navigation, and microprocessor-based control.

Prerequisites Discussed:

- Understanding of C++/Python
- Knowledge of Linux shell workflow (Ubuntu)
- Understanding of ROS2 (Robot Operating System)
- Basics of microprocessors: NVIDIA Jetson, Raspberry Pi

Connectivity and Working:

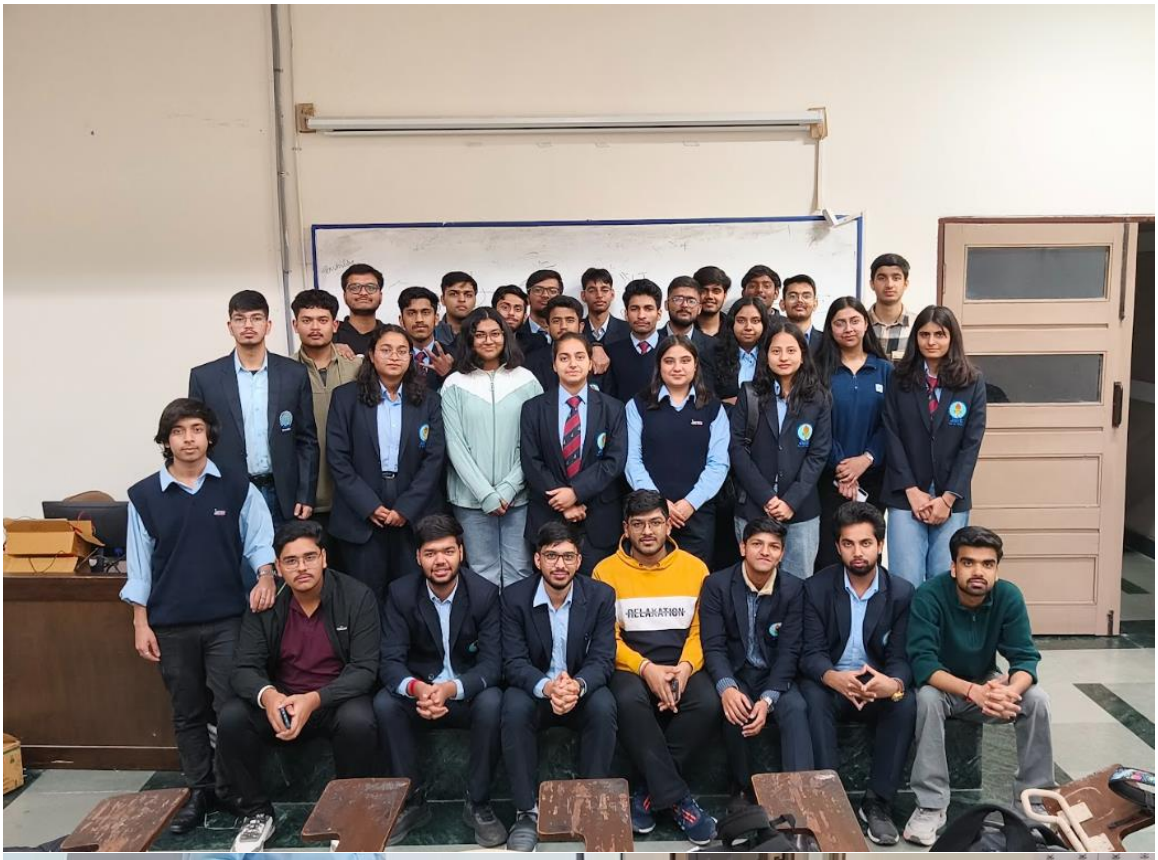
- Uses Jetson Orin Nano as the main onboard computer
- Connects to mobile for manual control or block coding
- Uses ROS2 for PC-based robot communication and navigation

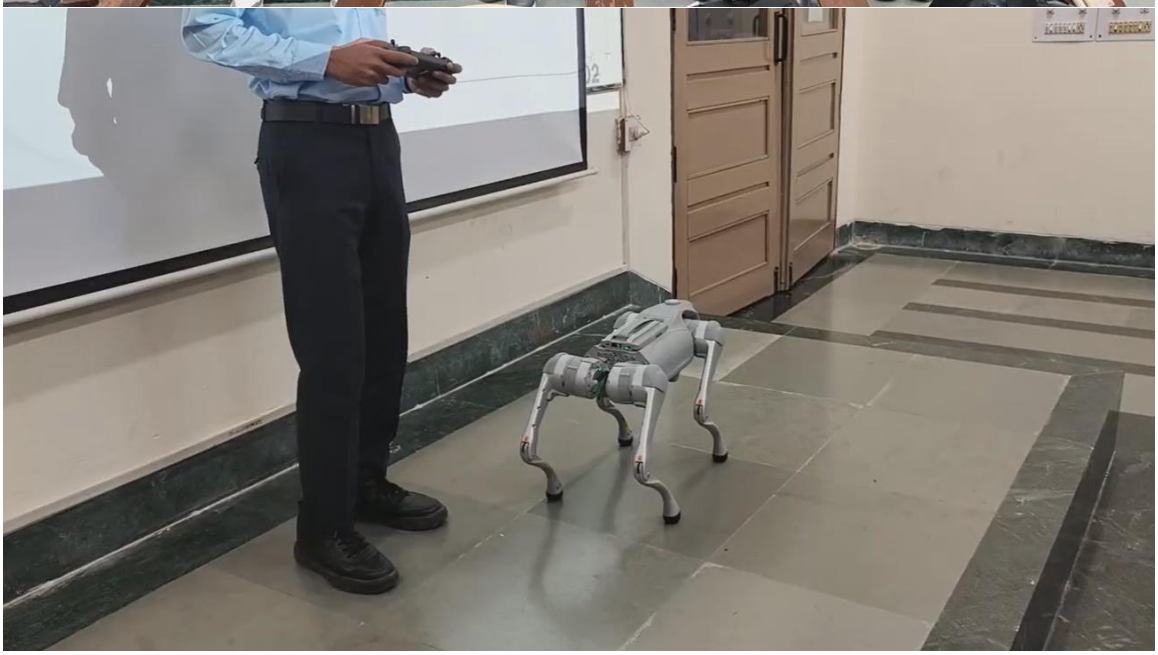
Unitree LiDAR L1 Features:

- Helps the robot navigate safely by detecting obstacles
- Allows maneuvering without collisions
- Assists in activating safety mode

Hands-On Demonstration Highlights:

- Real-time LiDAR obstacle avoidance
- Stable gait movement demonstration
- Smooth navigation using ROS2 command inputs


RELAXATION



Conclusion

The two-day workshop enhanced participants' understanding of unmanned aerial vehicles and quadruped robotics. Students gained hands-on exposure to drone components, ROS2-based robotic systems, and cutting-edge technologies used in research and industry.