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Track Name: ITHREECTCON2026

Paper ID: 1484

Paper Title: DESIGN AND DEVELOPMENT OF SHORT-RANGE PACKAGE DELIVERY DRONES

Abstract:

The growing demand for fast, reliable, and low-cost delivery systems—especially within campuses, institutions, and short-range environments—has encouraged the use of unmanned aerial vehicles (UAVs) for small-package transport. Traditional delivery methods often face delays due to traffic, human dependency, and limited accessibility. This project focuses on designing and developing a simple, budget-friendly, and fully autonomous short-range delivery drone using the Pixhawk flight controller as the core system, without any companion computers or advanced onboard processing. The goal is to create a practical prototype that can fly predefined routes, deliver light payloads safely, and return to the starting point without human intervention.

The drone is built on a lightweight multi-rotor frame and uses essential components such as brushless motors, electronic speed controllers, a Pixhawk 2.4.8 flight controller, a GPS module for navigation, a Li-Po battery, and a basic servo-based payload-release mechanism. All autonomous missions are designed and uploaded through Mission Planner, enabling waypoint navigation, geofencing, altitude control, and return-to-launch (RTL) functionalities. The design emphasizes simplicity, stability, and safety, making it suitable for academic and prototype-level logistics applications.

Testing was carried out through controlled field trials and simulated environments to evaluate flight stability, waypoint accuracy, battery endurance, and payload-release reliability. The drone achieved stable hover, consistent GPS-based navigation, and dependable delivery performance for short distances. With an average flight time of around 10-12 minutes under typical payload conditions, the system proves adequate for small-range logistics tasks such as document delivery, small package transport, or intra-campus use cases.

Overall, this project demonstrates that a low-cost, autonomous drone can effectively support short-distance With an average flight.

Created on: Sat, 29 Nov 2025 10:11:35 GMT

Last Modified: Sat, 29 Nov 2025 10:13:07 GMT

Authors:

- mhk29024@gmail.com (Primary)
- gorthidevendranaidu@gmail.com
- BODIMANI.20221ISE0005@presidencyuniversity.in

Secondary Subject Areas: Not Entered

Submission Files:

UAV project report paper.pdf (727 Kb, Sat, 29 Nov 2025 10:03:40 GMT)

Submission Questions Response: Not Entered

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CMT team.

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