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Design and Fabrication of Unmanned Arial Vehicle (UAV) Emergency Medical Purpose

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Abstract: *This paper presents an Emergency Drone Delivery System (EDDS) designed to expedite medical supply transport in critical situations. The system utilizes unmanned aerial vehicles (UAVs) equipped with medical payloads to swiftly deliver essential supplies such as blood, vaccines, and medication to remote or inaccessible locations. Key features include real-time monitoring, route optimization, and autonomous operation, ensuring rapid response times and efficient resource allocation during emergencies. Through case studies and simulations, the efficacy and potential impact of EDDS in enhancing emergency healthcare delivery are demonstrated.*

Keywords: Emergency Drone Delivery System

I. INTRODUCTION

The Design and Fabrication of Unmanned Aerial Vehicle (UAV) Emergency Drone Delivery System for Medical Purpose addresses the pressing need for innovative solutions to enhance medical supply logistics, particularly in remote or inaccessible areas and during emergency situations. With the increasing demand for timely delivery of critical medical supplies such as blood, vaccines, and medication, traditional transportation methods often face challenges such as traffic congestion, infrastructure limitations, and unpredictable terrain. In response, UAV technology offers a promising alternative by providing swift and flexible delivery capabilities. This paper explores the design, development, and implementation of an Emergency Drone Delivery System (EDDS) tailored specifically for medical purposes. By leveraging advancements in UAV technology, including autonomous navigation, payload optimization, and real-time monitoring, the proposed system aims to revolutionize emergency healthcare delivery by significantly reducing response times and improving accessibility to life-saving supplies. Through a combination of theoretical analysis, practical experimentation, and case studies, this research endeavours to showcase the feasibility, efficacy, and potential impact of UAV-based solutions in addressing critical healthcare challenges and saving lives in emergency scenarios.

II. LITERATURE REVIEW

The literature surrounding Emergency Drone Delivery Systems (EDDS) for medical purposes underscores the growing recognition of unmanned aerial vehicles (UAVs) as transformative tools in healthcare logistics. Studies have highlighted the urgent need for efficient and reliable methods to deliver essential medical supplies to remote or disaster-affected areas, where traditional transportation infrastructure may be inadequate or disrupted.

The Emergency Drone Delivery System (EDDS) for medical purposes represents a promising solution to address critical challenges in healthcare logistics, particularly in emergency situations and remote or inaccessible areas. The literature review highlights the growing recognition of unmanned aerial vehicles (UAVs) as transformative tools in improving the efficiency and effectiveness of medical supply delivery

Overall, the review highlights the significant strides made in leveraging UAV technology to enhance emergency healthcare delivery, while also emphasizing the need for continued research, innovation, and collaboration to maximize the potential benefits of EDDS and save lives in emergency situations.

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III. OPERATION OF COMPONENTS

This Emergency Drone Delivery system is also aimed at transforming the various ways of operations carried out by inculcating the use of UAVs in order to reduce manpower and also to increase efficiency

Drone motor

Drone motors are the heart of any unmanned aerial vehicle, providing the necessary thrust for flight. They come in various types, including brushed and brushless motors. Brushless motors are more efficient and durable, making them popular in modern drones. Key factors to consider when choosing drone motors include size, weight, power output, and efficiency, all of which impact the drone's performance and flight characteristics.

Flight controller

He Pixhawk 2.4.8 flight controller is a widely used and highly regarded autopilot system designed for unmanned aerial vehicles (UAVs) and drones. Developed by the open-source community, Pixhawk is known for its robustness, reliability, and versatility, making it a popular choice among hobbyists, researchers, and professionals alike.
Overall, the Pixhawk 2.4.8 flight controller is a versatile and powerful platform that provides users with the tools and flexibility to build and operate a wide range of drones for various purposes, from recreational flying to professional applications

Remote controller

Remote control systems for drones, also known as transmitters or controllers, are essential components that enable users to pilot unmanned aerial vehicles from the ground. These devices come in various designs and functionalities, ranging from basic handheld controllers to advanced systems with built-in screens and telemetry features. The basic components of a drone remote control system typically include joysticks, buttons, and switches that allow the operator to control the drone's movement, altitude, and other flight parameters. Many controllers also feature integrated antennas for reliable communication with the drone, as well as compatibility with different frequency bands and protocols

Working

An Emergency Drone Delivery System for medical purposes operates by swiftly responding to requests for critical supplies during emergencies. When a medical need arises, a request is made through a mobile app or central control centre, specifying the required supplies and delivery location. Upon receiving the request, a medical facility or distribution centre prepares the supplies, ensuring they are securely packaged. A specially equipped drone is then dispatched to the delivery location, autonomously navigating using GPS and sensors. Upon arrival, the drone lowers the package to the ground or a designated landing zone, where the recipient can retrieve it. Confirmation of delivery is made, and the drone either returns for recharging or continues with additional missions. This streamlined process bypasses traditional transportation obstacles, significantly reducing response times and aiding in critical situations.

IV. CONCLUSION

In conclusion, the Emergency Drone Delivery System for medical purposes represents a transformative advancement in emergency response capabilities. By leveraging the speed, agility, and autonomy of drones, this system ensures the swift and reliable delivery of critical medical supplies to areas in need, even in the most challenging conditions. With its ability to bypass traditional transportation constraints and significantly reduce response times, it has the potential to save countless lives during emergencies and improve overall healthcare outcomes. As technology continues to evolve, integrating drones into emergency medical services will undoubtedly play a vital role in enhancing disaster response efforts and providing timely assistance to those in need, making our communities safer and more resilient.

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REFERENCES

[1] Unmanned Aerial Vehicle (DRONE) Priyanka Kumari, IshaRaghunath, Akanksha Mishra, Pinkey Sharma, Ankita Pandey, Mr. SachchidanandJaiswal Department of Electronic and Communication Engineering, Buddha Institute of Technology, Uttar Pradesh, India

[2] Surveillance and Security Management System Using Drone Ganeshwar.R, Ramprabhu.J, Manochitra.P, Kaliappan.S, Department of EEE, Kumaraguru College of Technology, Coimbatore.

[3] International Journal of Engineering Sciences and Research Technology Implementation of Voice Activated Autonomous QuadcopterPritesh A. Metha, M.E. (E&TC) &Prof. M. U. InamdarSiddhant, College of Engineering, Pune.

[4] AssemAlsawy; Alan Hicks article "An Image Processing Based Classifier to Support Safe Dropping for Delivery-by-Drone" (published in the International Journal of Engineering and Advanced Technology in 2020) presents a comprehensive study on the design and implementation of a Drone in healthcare facilities