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# Medical Delivery Drone

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**ABSTRACT:** The use of medical delivery drones has been recognized as a promising technology to enhance healthcare availability and delivery in challenging and inaccessible regions. The delivery drones can overcome geographical barriers, allowing for the prompt and efficient transportation of important medical supplies such as vaccines, medications, and blood samples. Furthermore, medical delivery drone has the potential to decrease the risk of human exposure to infectious diseases and enhance responsiveness during critical situations. Nevertheless, there are several regulatory, technological, and organizational hurdles that must be overcome to guarantee the secure and dependable operation of drone medical delivery. Despite these challenges, the future of healthcare delivery may be revolutionized by drone medical delivery, leading to better patient outcomes.

**KEYWORDS:** Drone, Medical delivery, Healthcare access, Remote areas, Geographical barriers

## I. INTRODUCTION

A new technology called medical drone delivery, sometimes referred to as drone medical delivery, has the potential to revolutionise the way healthcare is provided. With its ability to navigate through remote and hard-to-reach areas, drone medical delivery can provide essential medical supplies to patients who might otherwise lack access to healthcare services. This technology has the potential to revolutionize healthcare delivery in areas with poor infrastructure, limited transportation options, and challenging terrain.

There are many advantages to using drones for medical deliveries. In particular during emergencies, drone delivery can offer prompt and effective conveyance of medical supplies like drugs, vaccinations, and blood samples. Drones can help speed up the journey time for medical personnel to remote places and lessen the risk of human exposure to infectious diseases.

For the successful adoption of medical delivery drone, there are a number of issues that must be resolved. They include logistical, technological, and regulatory concerns. For instance, rules must be established to guarantee the responsible and safe usage of drone

Drones must be technologically capable of navigating through harsh terrain and weather while also insuring the security of medical items while transporting. Systems for managing the logistics of drone delivery, such as coordination of deliveries and medical supply tracking, must be in place

As a result, governments and organisations from all over the world are investing in this technology to enhance healthcare delivery and access.

## II. RELATED WORK

The usage of drones for medical delivery has drawn more attention over the past ten years. Drone technologies for medical delivery have been developed and tested by numerous researchers, organisations, and businesses throughout the world. Examples of notable drone technologies for medical delivery include:

- Zipline: This US-based start up has created a fleet of drones that can deliver blood and medical supplies to hard-to-reach places in Rwanda, Ghana, and other remote areas.
- MatterNet: This Switzerland-based company has developed a drone-based logistics platform for medical delivery, which has been used in various pilot projects around the world, including in Switzerland and the United States.

**Organized by**

Department of CSE, Velammal Engineering College, Chennai, India

- Vayu: This India-based company has developed a medical delivery drone that can transport medical supplies and samples to far-flung locations with scant infrastructure.
- Sweep aero: This Australian-based company has developed a drone-based medical delivery system that has been used in various pilot projects in Africa, Australia, and the Asia-Pacific region.

### III. METHODOLOGY

Here we have used the two drone technologies such as the normal drone and FPV drone for better drone technologies which will open more wider opportunities to create and explore by doing this we can achieve lot of applications. The APM2.8 flight controller is a popular open-source flight controller that is widely used in the drone industry. When combined with a QA250 frame, it provides an excellent platform for building a small, high-performance drone. The APM2.8 flight controller is a multi-purpose control system that is designed to control drones, planes, and other autonomous vehicles. It is based on the Arduino platform and uses a combination of sensors, GPS, and other components to provide stable and accurate flight control. The APM2.8 flight controller has a range of features that make it an excellent choice for building a drone with a QA250 frame.

1. Accelerometers and Gyros: The APM2.8 flight controller includes three-axis accelerometers and three-axis gyros, which provide precise measurements of the drone's movement and orientation.
2. GPS: The APM2.8 flight controller also includes a GPS module, which provides accurate positioning information that can be used for navigation and other purposes.
3. Barometer: The APM2.8 flight controller includes a barometer, which provides information on the drone's altitude.
4. Compass: The APM2.8 flight controller includes a digital compass, which provides information on the drone's orientation.

When combined with a QA250 frame, the APM2.8 flight controller provides a stable and responsive platform for flying small drones. The QA250 frame is a lightweight and durable frame that is designed for small drones. It is made from high-quality materials, such as carbon fiber and aluminum, and is designed to be easy to assemble and customize.

To use the APM2.8 flight controller with a QA250 frame, you will need to connect the flight controller to the frame and configure it using a computer. The APM2.8 flight controller comes with software that can be installed on a computer, which allows you to configure the flight controller's settings and set up your drone.

Once the flight controller is connected and configured, you can start flying your drone. The APM2.8 flight controller provides a range of flight modes, including manual mode, stabilized mode, and automatic mode. In manual mode, you have full control over the drone's movement and orientation. In stabilized mode, the flight controller uses its sensors to stabilize the drone and make it easier to fly. In automatic mode, the drone can fly autonomously, following pre-programmed flight paths and waypoints.

It provides accurate and stable flight control, and its open-source nature allows for easy customization and integration with other components. By combining the APM2.8 flight controller with a QA250 frame, you can build a high-performance drone that is ideal for a range of applications, from aerial photography to search and rescue.

This drone is consisting of various technologies in it which can be widely used in all sectors. This drone is consisting of obstacle avoidance and FPV system which make more reliable to fly and discover more.

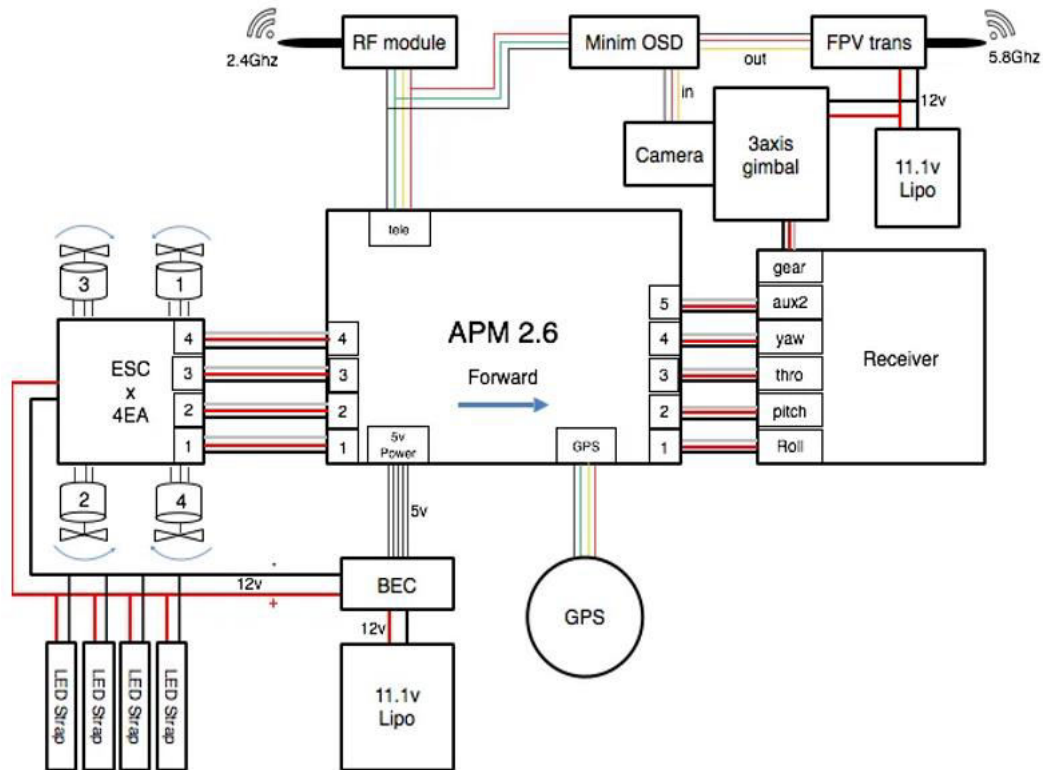
This drone inheritance of various features and have better

1. Endurance.
2. Traffic and Obstacle Detection.
3. Navigation.
4. Communication.

#### Features

1. GPS module.
2. Receiver.
3. Cameras.

4. Sensors.
5. Altimeter.
6. Small weight.
7. Long lasting
8. Max speed 70mph



APM2.6/2.8 drone work flow

#### IV. EXPERIMENTAL RESULTS

The execution of the process have been successfully executed which implies the various model of phases which include the multiple criteria's under which it has been executed. This drone basically consists of the very light weight material for the maximum portability and can carry up to the max weight of 1.5kg which opens the various opportunities to create.

- Delivering of medical supplies to the remote areas
- Speedy recovery of patients
- Easy access to emergency medical resources and delivering medical supplies to disaster zones , remote areas .
- It tracks the location of the user and deliveries the needed medical resources.
- Long lasting and carries maximum of 1.2 to 1.5 kilograms .
- It can detect traffic and obstacles and overcome it so that the products are delivered on time and easily to the user/patients.

The maximum flight time and the maximum rage of this drone is 20 mins and 5km respectively. This drone includes the 32bit processor for its very fast response to the real world scenarios and can perform the obstacle avoidance.



## V. CONCLUSION

In conclusion, medical delivery drones have the potential to transform the healthcare industry by providing timely and efficient delivery of critical medical supplies to remote and hard-to-reach areas. The use of drones can save lives, improve patient outcomes, and increase access to medical care for underserved populations.

However, there are still significant challenges to be addressed, including regulatory hurdles, safety concerns, and reliability issues. As technology advances and regulations evolve, it is expected that the use of medical delivery drones will become more widespread, benefiting patients and healthcare providers alike. With careful planning and implementation, medical delivery drones can help to address healthcare disparities and improve healthcare access and outcomes for all.

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