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Drone for Essential Supplies in Remote Areas

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Abstract - This proposed drone focuses on providing essential medical aids in rural or hilly regions where it is difficult to reach fast. This drone can be used during natural calamities like earthquake, flood and landslide. It will help to deliver medical supplies and lab samples. Moreover, blood samples will also become unusable after travelling long distances from hilly areas to the laboratories. It can be overcome by using this drone. It can give the real time video of the location. In India, due to heavy traffic the emergency need of blood and medicines are delayed, but this problem can be overcome by our drone. This drone can automatically travel the given path without any control from user. It can be also controlled manually during some obstacles or dangers at any time.

Keywords - Unmanned Aerial Vehicle(UAV); Biocompatible; Autopilot; Real Time Video.

INTRODUCTION

The commonly name drone or the unmanned aerial vehicle is the type of aircraft which is controlled by a ground base remote controller. First pilotless aircraft was invented in the 19th century for the purpose of war fighting. In India first unmanned aerial vehicle was take off on November 2009 for Indian air force stated by DRDO rustom. The delivery of essential commodities by drones is discovered after the year 2000. In recent time unmanned aerial vehicle (UAV) has become very popular in various projects and research field. In India drone is mainly used in defence purpose. The delivery drone can be used in the areas affected by natural calamities. It is a great problem in India to deliver food, drinking water, medicines and other necessary material in an affected area in proper time. Many casualties occurs due to non availability of food, medicines and other materials in proper time. It is easier to deliver anything by using modern technology instead of human being. It will save transportation expenditure. In this proposed drone, 4 propeller and litheum polymer rechargeble battery to generate the thrust are used. This drone can carry 1 kg weight and it can fly near about 100ft. It has also the GPS which will track the exact location of the affected area and it can be seen on the PC. The telemetry is used which will send and receive data between the drone and ground station. A camera is used to load the image of the location and will send. If the remote area has no internet connection then the GSM is used to keep contact with the device. This drone can be used to supply essentials by air when there occurs earthquake, fire breakout or any other natural calamities. Therefore, delivery drone will be a fruitful device for any disaster.

MOTIVATION

In past few years, many research about making of unnamed aerial vehicles has been done because it is human friendly as well as safe for the environment. The development of this device has opened a vast opportunity in the field of remote sensing, aerial surveillance, filmmaking, disaster relief and delivery. The main aim of our project is faster and low cost delivery. In our country due to traffic congestion delivery becomes slower. Transportation by trains, aeroplanes and trucks becomes expensive, slower and also affects the environment. Blood samples becomes unusable if kept for a long before experiment. In case of emergency need some medical aids fails due to heavy traffic or higher cost. Avoiding the above stated problems we designed a device that can be used for delivery at a very short time in lower cost and will also not affect the environment. It can also give real time update about certain places affected by some natural or man-made disasters. Our drone can also detect the presence of human body for safety and rescue.

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WORKING PRINCIPLE:

1.Quadcopter is a device which has an intense mixture of electronics, electrical and mechanical. Mainly it is based upon principle of aviation.
2.Quadcopter has four motors whose speed and direction changes according to user's desire to move the device in particular direction such as forward, backward and sidewise direction.
3.Electronic Speed Controller (ESC) controls the speed of rotation that it sends the signal to the motors as per the user's desire.
4.Propeller behaves a major part to take of the drone. According to Newton's third law ,when the rotor pushes the air ,air pushes the rotor back. This is the basic principle that the drone can go up and down.
5.Drone can follows the route which is mapped by user through telemetry and we can find the actual location by Global Positioning System(GPS).
6.We can get real time video by camera and also can communicate for long distance.

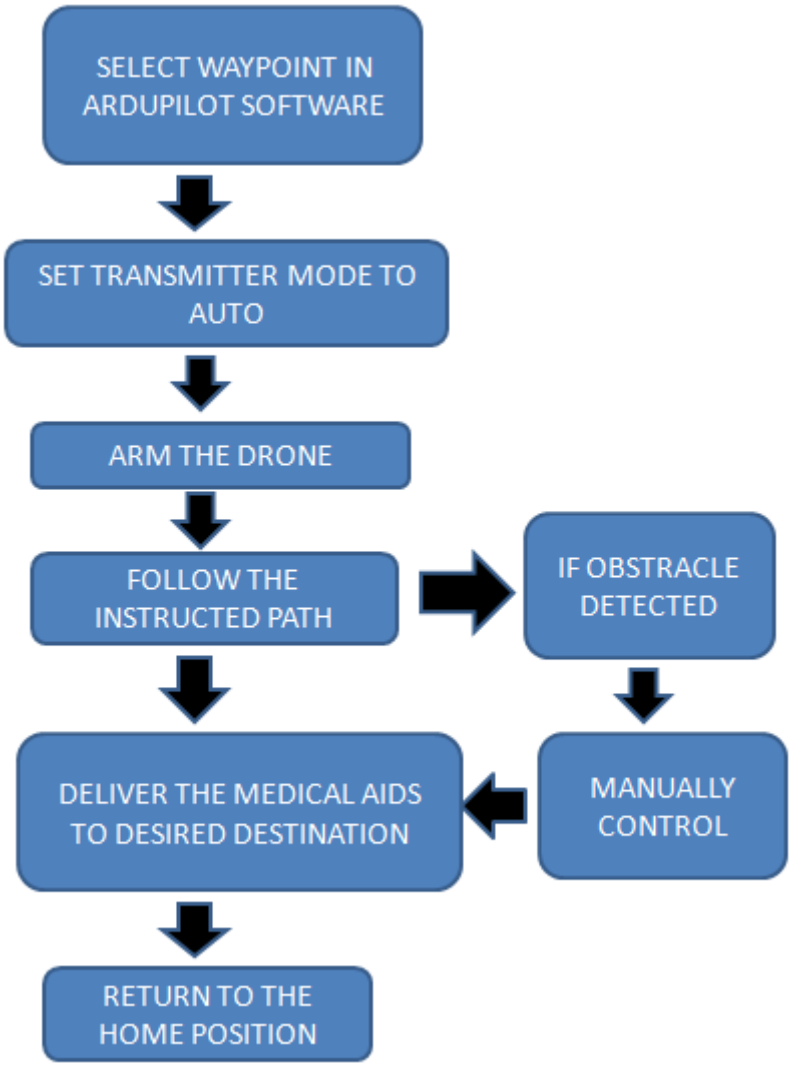

Fig. 1. Block diagram for this proposed model

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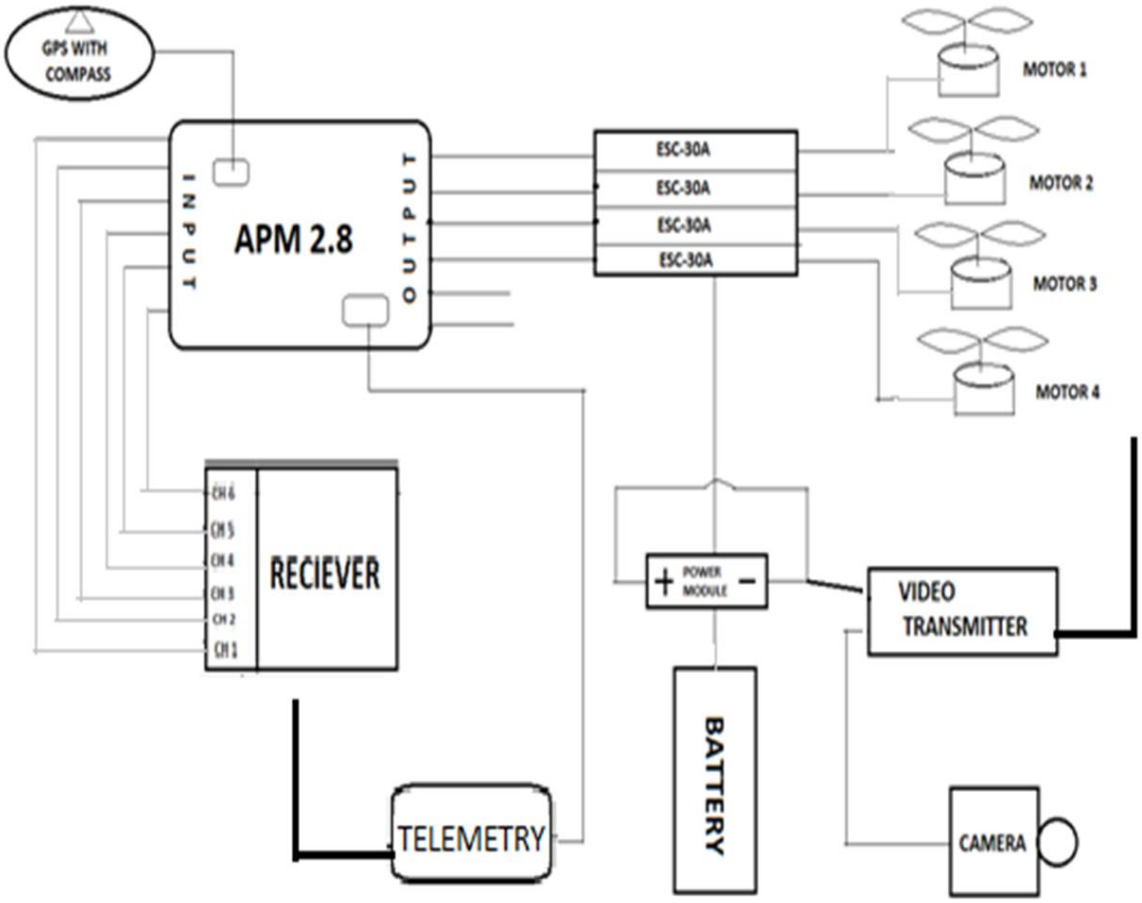

Fig. 2. Circuit Diagram for this proposed model

COMPONENTS

1.APM 2.8 Board.
2.AC Brushless Motor 1000kv.
3.Electronic Speed Controller(ESC-30A).
4.Power Module.
5.GPS with Compass.
6.2200 mAh Lithium Polymar Battery.
7.Propeller(10-45).
8.GPS Stand.
9.Telemetry (Transmeter +Reciever).
10.Camera (Transmitter + Reciever).
11.Power Distribution Board.
12.450 Frame.
13.FS-I6 Controller.
14.B3 Charger.
15.Servo Motor.
16.Landing Gear.

ADVANTAGES:

Drones will play a major role in almost all fields in near future.

- It will reduce the time of delivery of packets.
- It will be solution to heavy traffic.
- The drone will reduce transportation cost.

- It controls environmental pollution.
- Also human errors can be minimized.
- It can reach inaccessible to mankind and provide help there.

FUTURE SCOPE

- Drone is a technology that will occupy a vast business market in near future , especially supplier drone.
- Now let us talk about own drone:
- It is very advantageous for services like patrolling and search and rescue purpose.
- This drone can contribute to safe infrastructure maintenance and management.
- It can give media access where hard to reach.
- In near future we can drive it using GSM technology of mobile phone to avoid network problem.

CONCLUSION

In recent past years, we had seen that the interest in drone delivery of essentials (medicines, organs, bloods) to remote areas. But very little information has been reported about the impact and the feasibility of drone for delivering medicines. The full usefulness, effects and potentials of drones regarding medical transportation are unknown but it had promise. The role of drones for medical purpose transport is promising but for future research to access feasibility, safety, awareness and demand of drones is garmented.

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