International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 06 | June 2019 www.irjet.net p-ISSN: 2395-0072

Drone Delivery System

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Abstract - *The internet evolution continues. Whether it is online shopping, ordering food, buying gifts, grocery runs or personal packages the consumer space in increasingly relying on fast and reliable door step delivery. The market for delivering goods is massive, Shopping, logistic online shopping businesses are investing heavily in the entire supply chain up to the last mile delivery to make it fast and efficient. On the other hand, there are significant technological advance in building drone in the delivery area. Drone could allow accelerated delivery time, improved accuracy and reduce human cost associated with delivery.this system is designed using the naza m-lite flight controller, ESC, GPS module .*

***Key Words*: Naza M-lite Flight controller, ESC, GPS Module.**

1. INTRODUCTION

The technological evolution that characterised the last century deeply modified the manner folks perform daily activities. This is evident once considering, for example, the novel transformations brought within the organization of house works by refrigerators/freezers, laundry machines, etc. In the last years, humanity is witnessing a replacement evolution, in which appliances and devices that once required a human command in order to be activated have become more and a lot of intelligent and ready to take choices supported the external context. Beginner drones typically don't have GPS, however a lot of advanced drones create use of GPS receivers among the navigation and management loop that permits for a few good GPS drone navigation features that include: Position Hold: permits the drone to keep up position at a hard and fast altitude and placement. Return to Home: The drone remembers the spot from wherever it took removed from, and at the press of the come back to home button, it will automatically return to this spot.

2. LITERATURE SURVEY

1st Joseph Christopher Fancher Et. Al (2017) In Drones for Medical Supply States Drone applications in the United States have the potential to shape the future of the economy, society and the daily lives of people. In today's society, there are many negative connotations that are associated with drones. When people think of drones they usually associate them with video surveillance or military warfare purposes. Drones are currently being used in the U.S. for surveying, inspecting, and imaging. Strict regulations and licensing requirements are enforced by U.S. federal agencies, which currently hinder the exploration of drone technologies. However, the use of drones for commercial application has been an increasing topic of exploration for many companies. The top three companies that are exploring the use of commercial drone applications are Amazon Prime Air, DHL and Google [1]. Google has been exploring commercial drone and disaster relief applications. Recently, Google released information about a new project they have been developing, "Project Wing." Project Wing has been a work in progress for two years with a goal of completion coming in 2017. The goal of Google's Project Wing is to provide disaster relief by delivering aid, including water and medical supplies to affected areas. To avoid any legal conflicts Google has consulted the Federal Aviation Administration (FAA) and has been conducting their flight and performance tests in Queensland, Australia. Regulations were established after consulting the FAA, which include a maximum drone altitude of 500 feet and air traffic control system structured by existing cell network infrastructure [2]. Plant protection for agriculture and forestry jobs. The unmanned aircraft by the flight platform (fixed-wing, single rotor, multi-rotor) composition, GPS flight control, spray bodies of three parts, by remote control or GPS ground flight control to achieve spraying operation, the agent can be sprayed, seeds, powders, etc. China's sales of plant protection drones consist of two types, oil dropping plant protection agents and plant protection spraying drones. [3]

2nd HimadriNath Saha et.al (2018) in A low cost fully autonomous GPS (Global Positioning System) based Quad copter for disaster management Author States Quad copter is one of the examples of a man machine concept implementation. In real time when a Disaster happens due to earthquake, any construction collapsed or in time of flood, manpower of disaster management team reaches there and rescues the victims; But sometimes too many areas where victims are there and they are alive but people from rescue team are not able to reach there. In this situation quad copter can help; like if Quad copter is flying at disaster area then through night vision it is possible to see how many people are stuck and where they stuck on and how many of them are alive. If anywhere suddenly conflagration happens, and then Quad copter can spray water or any fire resistant. As it has camera with live broadcasting system, it can easily show everything live and any rescue team of any disaster management team can take proper action. In time of flood, where rescue team is not able to reach, there Quad copter can go and can provide drinking water and proper food, so that they can survive.

UAV's have the added advantage of not having the operator on board which makes them more expendable and allows them to operate in extreme and dangerous environments with no risk to the operator. UAVs are agile, fast, can exhibit autonomous behaviour and hence perform operations hard to execute by human operators, and at low operating costs but the current use of drones in Disaster Response scenarios is extremely limited due to the limited range, prohibitive cost of sensors required for safe flight and the requirement for skilled operators to fly the drones. In a typical scenario, UAVs will be deployed in an area of interest, perform sensory operations to collect evidence of the presence of a victim, and report their collected information to a remote ground station or rescue team. The key challenge in making drones ubiquitous in disaster response is to localize the robot purely through its on-board sensors enabling it to perform true autonomous flight but equipping each and every drone with the required sensors for autonomous navigation drives up the per unit price of the drones and drives up the cost of the entire system. In order to overcome this issue, we propose a networked system where different classes of drones are used for different purposes and the data collected from the onboard sensors is transferred to the cloud for use by other drones in the network. The mapping and 3D modelling of the affected area will be performed by a class of Path finder drones that carry laser range scanners, inertial measurement units(IMU) and stereo cameras for accurate modelling of the terrain. The 3D map created by the path finder drones will be transferred to the cloud where it can be used by Drones equipped with Infrared scanners to detect people who are stranded, these drones on locating human beings log the GPS coordinates which are then passed on to heavy lift cargo drones which make use of the logged coordinates to perform aerial drop of supplies. The maps created will be of a higher quality than satellite imagery as they can provide depth information as well as provide fast refreshes to the map which cannot be done through satellite imagery. In the aftermath of a disaster quick response of rescue teams can make a huge difference in the number of survivors and these maps can help SAR teams choose the best path to reach stranded people in shortest time.

3rd Apurv Saha et.al (2017) in FPV Drone with GPS used for Surveillance in Remote Areas author states Drones are the hottest consumer product of 2016. Last year, a true revolution occurred in terms of the hardware and software used in both the manufacturing process and in controlling drones. This has made these devices easier to maneuverer, able to fly more, be safer and able to obtain video footage and high-resolution photos at a professional level. In recent research [4] it is clearly observed that drones are about to create a revolution in human life and industry. The most important aspect is that it can be used for effective surveillance at places where human being can't reach. To reduce the cost of the drones, Low cost avionics System Prototypes [5] are made. It makes the structure light as well as strong. In comparison to these prototypes we have tried to improve the video transmission of data from drone to the server by increasing the quality as well as making it fast. Researchers have also tried to receive the data at multiple devices and for analysis they have stored the data in their server. Surveillance Drone for Landmine Detection [6] provides the exact location of mine and sends it through GSM. Paper described above uses a Multivii flight controller connected to Arduino with GPS and thermal camera in contrast to these prototypes. We have tried to make the connection more reliable by using a channel of 5.8 GHz and increasing the speed of our prototype. 978-1-5386-1931-5/17/$31.00 ©2017 IEEE Thermal camera is also one of the important devices used these days with regard to surveillance. Digital Image Stabilization [7] technique is introduced by implementation of the Speed-Up Robust Feature (SURF) method. The fundamental concept is to compare the current image with another from the previous frame. The result indicates that SURF method is useful in stabilizing the image capturing process in drone. In the coming days, Image Processing can be utilized to process the captured images.

3. BLOCK DIGRAM

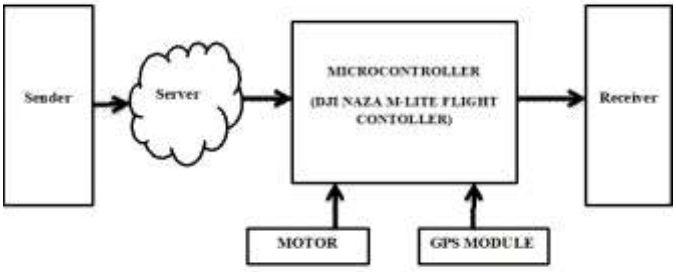

Fig 3.1 Block Digram

3.1 Naza M-lite flight controller

Naza m-lite flight controller is use to the set the different types of modes which drone have to flight.

It comes with the three modes Atti mode ,fail-safe, GPS Mode .it has the voltage protection indicator.

Fig 3.2 naza m-lite flight controller

3.2 ESC Controller

An electronic speed controller (ESC) is an electric device to monitor and very the speed during the operation.

Fig 3.3 ESC Controller

3.3 GPS Module

The GPS module is responsible for the provision of the drone longitude, latitude and elevation points. It is a very important component of the drone.

Fig 3.4 GPS Module

Without the GPS module, drones would not be as important as they are today. The modules helps drone navigate longer distances and capture details of specific locations on land. The GPS module also help in returning the drone safely "home" even without navigation using the FPV. In most modern drones, the GPS module helps in returning the drone safe to the controller in case it loses connection to the controller. This helps in keeping the drone safe.

3.6 The Receiver

The receiver is the unit responsible for the reception of the radio signals sent to the drone through the controller.

Fig3.5 The Receiver

The minimum number of channels that are needed to control a drone are usually 4. However, it is recommended that a provision of 5 channels be made available. There are very many different types of receivers in the market and all of them can be used when making a drone.

1) 3.7 The Transmitter

The transmitter is the unit responsible for the transmission of the radio signals from the controller to the drone to issue commands of flight and directions.

Fig3.6 The Transmitter

Just like the receiver, the transmitter needs to have 4 channels for a drone but 5 is usually recommended. Different types of receivers are available in the market for drone manufacturers to choose from. The receiver and the transmitter must use a single radio signal in order to communicate to the drone during flight. Each radio signal has a standard code that helps in differentiating the signal from other radio signals in the air.

4. RESULT

The below figures shows the prototype of drone delivery system .in this project we are built the 3 Mode of for the

drone . 1st mode is atti mode in this mode the drone will hold the altitude. 2nd mode is RTH (GPS) in this mode the drone will hold the GPS Position and also the follow the mission planner mission set .3rd mode is the failsafe mode when the drone will go out of range the controller will safely land the drone in land.

Fig 4.1 result

5. CONCLUSION

This project describes a drone whose operation is completely based on Naza M-Lite flight controller. Project provides accurate delivery with the help of GPS using drone. This project reduces time of delivery and gives precise performance. With the help of ESC we can control the behaviour of drone and hence provide better operation to fulfil the requirements. Using transmitter we can adjust the direction and speed of drone. In addition with camera we can detect the suspicious activity in the unmanned area.

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