

Surveillance Drone

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Abstract

National and international level there are no. of quad copter are developed. Most of them are used for video surveillance as well as information transfer system. But that is not enough for disaster management also cost of that quad copter are very high which cannot afford to human being so to overcome this problem will decided to add pickup assembly which definitely help to people in disaster management. The ultimate goal of our project is to create quad copter type help which can be process easily and give a proper and desired output. this technology can be used for search and rescue, firefighting(),law enforcement, military and most important medical help in hazardous condition by being able to deploy aerial correspondence much faster than conventional helicopter. The end result of producing pick up facility will allow for future expansions such as a UAV sentience, target tracking and disaster management.

I. INTRODUCTION

Autopilot is one of the most advanced full featured and reliable auto point software available used by a wide variety professionals and has been developed by a team of professional engineers. ardupilot provides a large set of features fully autonomous,semi autonomous,and a fully manual flight modes. Support for navigation gps denied environments with vision based positioning optical flows, ultra sideband positioning. Gps virtual fencing is an animal friendly fencing system that enables livestock to be confined moved without using fixed fencing .wireless technology and sensor to control the location of livestock without need for an actual fence. In navigation controlling position hold: allows the drone to maintain position at a fixed altitude and location. Return to home: the drone resembles the spot from where it tok off from at the press home button. Human computer interface are software development documents which offer application developers a set of recommendation of their aim is to improve the experience for the user by making application interfaces more learn able and consistent.

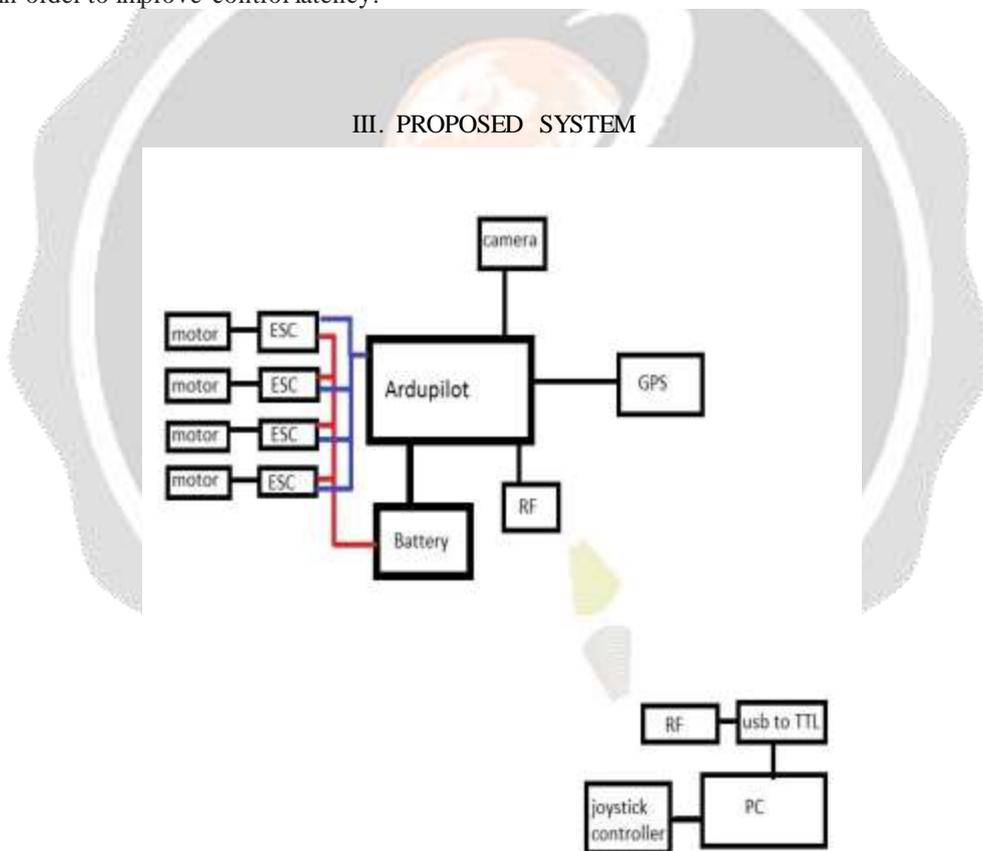
With the popularity of winter tourism, the winter recreation activities have been increased day by day in alpine environments. However large no. of peoples and rescuers are injured and lost in the environment due to the avalanche accidents every year. drone based rescue system are envis ioned as a viable solution for saving lives in this hostile environment to this aim, a European project named smart collaboration between humans and ground aerial robots for rescuing activities in alpine environment in a real world hostile scenarios drone technology and regulations in the united states have evolved dramatically over the past few years, paving the way for mass commercial adoption. Affordable ease to use drones with powerful cameras is now easily accessible to individuals and businesses. As I am pursuing my final year engineering in Electronics & Telecommunication, so this is a golden opportunity for me to use my knowledge to develop a system which is truly useful society

II. RELATED WORK

Researcher group presented [1] there is no fixed definition but I like to refer to an autopilot as a complete system that enables your drone to fly autonomously to way-points etc..., and a flight controller is just the device that will keep your aircraft stable. However depending on who you talk to many people use these two words interchangeably. As an example on most mini racing quad copter you use a flight controller that helps keep your craft stable and constantly calculates the best command to send the motors based on the pilot input. Whereas something like a mapping drone will have any autopilot system which includes a flight controller and other equipment such as GPS that will keep the aircraft stable while working out where it is and where it needs to go.

Researcher group presented [2] have proposed that dc motor converts the electrical energy into mechanical energy dc motor armature rotate inside the magnetic field. The basic principle of dc motor is that whenever current carrying conductor placed inside the magnetic field conductor experience the mechanical force. in our project we are using dc motor for the movement of Fan.

Electronic Speed Controllers (ESC) are an essential component of modern quad copter (and all multi rotors) that offer high power, high frequency, high resolution 3-phase AC power to the motors in an extremely compact miniature package. These craft depend entirely on the variable speed of the motors driving the propellers. This wide variation and fine RPM control in motor/prop speed gives all of the control necessary for a quadcopter (and all multirotors) to fly. Height is determined by the amount of power to all four motors. Forward motion is achieved by driving the aft (back) props faster than the forward props. Sideways motion is achieved by running the left or right props faster. 'Rudder' movements (yaw), (turning left or right) are again achieved by slowing or speeding individual motors - and this control is reliant on the fact that two of the rotors rotate clockwise while the other two rotate counterclockwise so that, again, slowing or speeding individual motors (and props) will produce a change in attitude in the craft. Quad copter are a rapidly growing hobby subject but also provide aerial mounts for video cameras for sports coverage, agricultural research, inspection of electrical pylons and historic exploration. Quad copter ESCs usually can use a faster update rate compared to the standard 50 Hz signal used in most other RC applications. PWM signals up to 400 Hz can be used in some cases, and other control options can increase this rate even higher. Also some software delays, such as low-pass filters, are removed in order to improve control latency.



A GPS module measures your drone's location by measuring how long a signal takes to travel from a satellite. A GPS module is also able to give an estimation of your drone's altitude. However GPS modules are rather inaccurate and will only give you a position to within 5m. However as discussed before, by combining measurements from other sensors the flight controller can get a better picture of what the drone is doing. The main feature used by the GPS module is that you can autonomously fly your drone to way-points, so your drone can potentially fly on its own from takeoff to landing.

This is the central unit that runs the autopilot firmware and performs all the calculations. Most flight controllers have 32bit processors which are more powerful than 8bit systems, but there are still a few popular 8 bit

autopilot platforms such as autopilot mega which can be found online very cheaply. Usually the largest chip with the most connectors on your flight controller is the main processor

Because your autopilot is a sensitive electronic device, it's important that it receives a clean power supply. A power module is used to convert the battery voltage from your drone battery down to a low voltage that your autopilot uses (often 5v). However the other benefit of using a power module is that it gives you the ability to measure your battery voltage and capacity. This is useful because if your flight controller can measure the battery it knows when your battery is running low so it can warn you to land. Other autopilot systems also have some failsafe functions built in which will automatically take over and bring your drone back home when the battery level gets too low

IV. CONCLUSION

This paper presents an approach which could be used for developing a small and compact sized quadcopter which can be used to carry out rescue operations and provide audio/video aid to the people in distress. It could also be used as a surveillance system to increase the security strength especially in the area where human interference is strictly prohibited. It could also be used for performing live video streaming. Quadcopter offer advantages for many applications when comparing with their manned counter parts. They save human pilots from flying in dangerous conditions that can be encountered not only in military applications but also in other scenarios involving operation in bad weather conditions, or near to buildings, trees, civil infrastructures and other obstacles.

References

- [1] Dhriti Raj Borah et al., "A review on Quadcopter Surveillance and Control", ADBU-Journal of Engineering Technology, 4(1), 2016, 116-119
- [2] Prof.A.V.Javir, Ketan Pawar, Santosh Dhudum, et al., "Design, Analysis and Fabrication of Quadcopter", Journal of The International Association of Advanced Technology and Science, vol. 16, 2015
- [3] Yiwen Luo, Meng Joo Er, et al., "Intelligent Control and Navigation of an Indoor Quad-copter", IEEE, 2014, 1700- 1705
- [4] Gordon Ononiwu, Arinze Okoye, et al., "Design and Implementation of a Real Time Wireless Quadcopter for Rescue Operations", American Journal of Engineering Research, 5(9), 2016, 130-138.
- [5] Prabhjot Singh Sandhu, "DEVELOPMENT OF ISR FOR QUADCOPTER", International Journal of Research in Engineering and Technology, 03(4), 2014, 181-189