

Women Safety Security using Drones (UAV)

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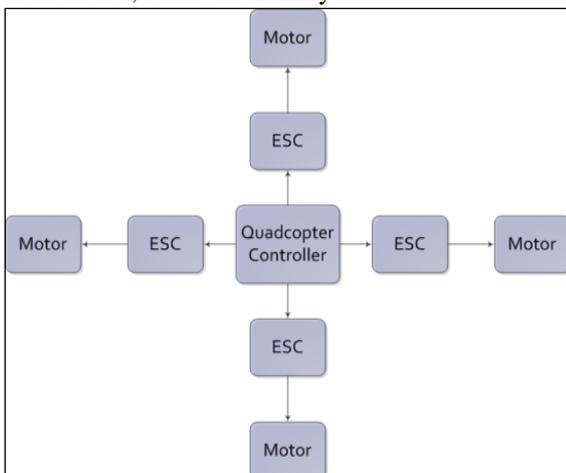
Abstract— The objective of the research work mainly focuses on women safety and to reduce the no. of rape cases which are filed, with the maximum utilization of the available technologies in the field of UAV. The objective is also to help the Indian Police Service to accuse the criminals of this action. Our objective is to build a Drone using ardu-pilot Flight controllers equipped with high resolution cameras to monitor and search, a GPS to track the victim, android application to send the details of the locations to the nearest police station, and moving the drone towards the doer of crime when the situation goes out of control.

Key words: UAV, Women Safety Security

I. INTRODUCTION

Nearly 3.27 lakh cases of crimes against women were reported across the country. Of these over 1.3 lakh were sexual offences. The sexual offences cases included rape; attempt to commit rape, assault on women with intent to outrage her modesty and insult to modesty of women.

In spite of having strict laws we are unable to control the crime in this particular case, this is the root cause of our project so we planned to build a drone (UAV) which will be used for women safety which has become the most needed in our current scenario. Our drone which is built using microcontrollers, cameras and GPS can search and find the women in danger safeguard the women and capture's the doer of crime. An unmanned aerial vehicle (UAV), commonly known as a drone is an aircraft without a human pilot aboard. UAV, a ground-based controller, and a system of communications between the two. The flight of UAVs may operate with various degrees of autonomy either under remote control by a human operator or autonomously by on-board computers. While they originated mostly in military applications, their use is rapidly expanding to commercial, scientific, recreational, agricultural, and other applications, such as policing, peacekeeping, and surveillance, product deliveries, aerial view photography ,agriculture, smuggling, and drone racing. As an extension of these application, we put forward our usage of drone as a new category of applications i.e., for women safety.



II. MATERIALS REQUIRED

A. Flight Control Board: APM 2.8

To maintain balance the quad copter must be continuously taking measurements from the sensors, and making adjustments to the speed of each rotor to keep the body level. This is the new APM 2.8 autopilot module consists of sensors exactly the same as with APM2.6, however this version does not have an onboard compass, which makes this version ideal for use with multicopters and rovers. It allows the user to turn any fixed, rotary wing or multirotor vehicle (even cars and boats) into a fully autonomous vehicle; capable of performing programmed GPS missions with waypoints. Available with top or side connectors.

B. Electronic Speed Controller

An electronic speed control or ESC is an electronic circuit with the purpose to vary an electric motor's speed, its direction and possibly also to act as a dynamic brake. An Electronic Speed Controller does several things. First, it converts your battery voltage down to 5v which is what your receiver runs power from your battery to an AC current which is required by the motor. Brushless motors run off of AC current.

C. Brushless DC motor

BLDC motor, electrical current powers a permanent magnet that causes the motor to move, so no physical commutator is necessary. A BLDC motor is highly reliable since it does not have any brushes to wear out and replace. The Brushless DC (BLDC) motor is the ideal choice for applications that require high reliability, high efficiency, and high power-to-volume ratio. Generally speaking, a BLDC motor is considered to be a high performance motor that is capable of providing large amounts of torque over a vast speed range. BLDC motors are a derivative of the most commonly used DC motor, the brushed DC motor, and they share the same torque and speed performance curve characteristics.

D. Radio Transmitter Receiver

The Avionic RCB6i is the transmitter can be used on any of your planes and with a LCD display screen you can now program the radio at the field and no more to carry your laptop to the field to change any setting. The RCB6i has all the features and more than any high end radio but at a fraction of cost. 2.4 GHz FHSS technology provides a highly secure connection, optimum responsiveness, increased range and the ability to fly more safely current sensing application.



G. Video Telemetry

A video transmitter (VTX) is a device that is connected to your camera and transmits the video signal from your drone back down to you on the ground over the airwaves in real time

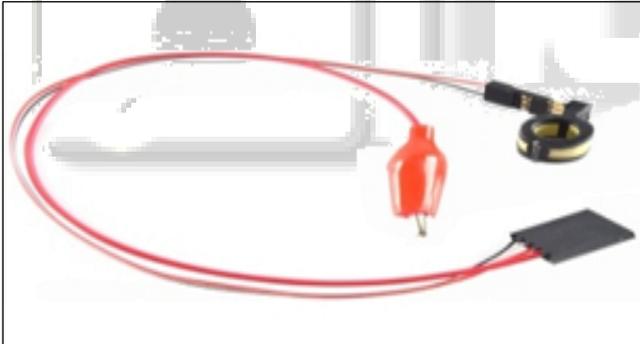
The frequency your FPV transmitter runs on is the most important thing to consider. Most FPV equipment runs on 5.8 GHz since its legal to use for FPV use in most parts of the world. The FPV video telemeter can be operated for a 1km range.



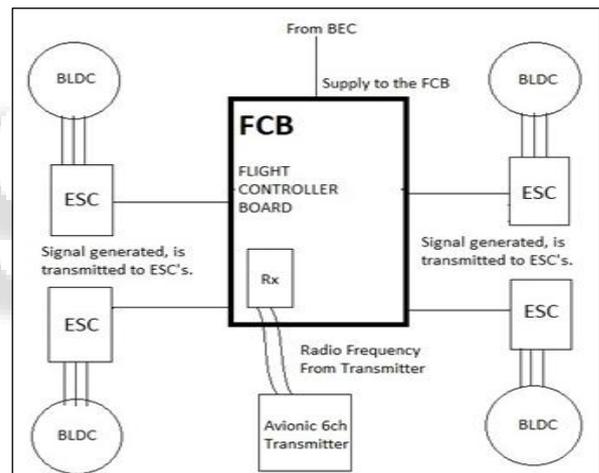
E. Hall effect sensor

A Hall effect sensor is a transducer that varies its output voltage in response to a magnetic field. Hall effect sensors are used for proximity switching, positioning and speed detection.

A Hall effect sensor is a transducer that varies its output voltage in response to a magnetic field. Hall effect sensors are used for proximity switching, positioning, speed detection, and current sensing application. Hall effect sensors are solid-state, magnetic field sensors. They work on the principle that when a conductor with current flowing through it is placed in a magnetic field, the magnetic field induces a transverse (or sideways) force on the charge carriers, which pushes them to the sides of the conductor—negative to one side and positive to the other side. This buildup of charge on the sides of the conductor induces a voltage. This effect is referred to as the Hall effect, after its discoverer, Edwin Hall.

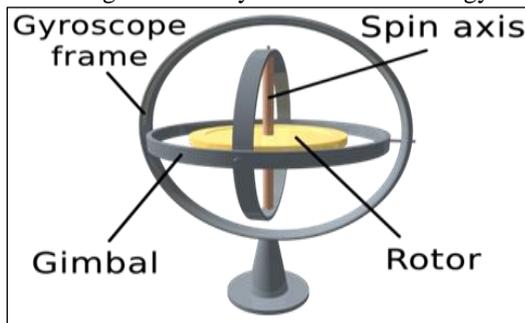


III. GENERAL BLOCK DIAGRAM



F. Gyroscopic Sensor

A spinning wheel can be measured in revolutions per second (RPS) or degrees per second (°/s). Note that the z axis of the gyro below aligns with the axis of rotation on the wheel. If you attach the sensor to the wheel shown above, you can measure the angular velocity of the z axis of the gyro.



A. Android Application



IV. CONCLUSION

The main conclusion of the work is that the drone crafted is a ready to use product for the safety purpose of the women's according to the objective, once the women is feeling insecure she has to press the "send location" button from the application, hence the location is shared with the hub so the specialised trainers fly the drone to the respective place and start monitoring the women until she is reached to her safe place. In case of any problems the immediate information is passed to the police station and the drone is brought near the doer of crime in order to confront and the causality can be brought under control.

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