Quad Copter For Security Purpose And Campus Surveillance

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Abstract- *Surveillance is critical for military, law enforcement, and search and rescue operations. In the past, stealth aircraft and helicopters were used for these types of missions. Recently however, unmanned aerial vehicles (UAVs) have grown in popularity and are an excellent resource that can be utilized for surveillance missions. Since this is a common capability of drones, this project sought to create a surveillance UAV that was autonomous, inexpensive, lightweight, and easy to manufacture. The drone was designed as a quad rotor that houses cameras with a wireless transmission system that provides live feed from the cameras to the ground station. It was also intended to be able to carry a payload for future developments. Though not all of the goals were fully realized by the project's conclusion due to stability and networking complications, the drone met size and cost standards. Additionally, its controls were understood through simulation and testing.*

Keywords- UAV

I. INTRODUCTION

Unmanned Aerial Vehicle (UAVs) is crafts capable of flight without onboard pilot. Drone is Remotely Controlled Flying Robot. They can be controlled remotely by an operator or can be controlled autonomously via pre programmed flight paths. Quad-copter is a device with a intense mixture of electronics, mechanical and mainly on the principle of Aviation. The drone seen today started innovation in the early 1900s and was originally used for target practice to train military personnel. It continued to be developed during World War I. Quad-copter is a device with a intense mixture of Electronics, Mechanical and mainly on the Principle of Aviation**.** Over last few years we have been a massive growth in the manufacture and sales of remote control Air borne vehicles known as Quad-copter. These UAV have four arms and fixed pitch propellers which are set in a ' X ' or ' + ' symbol. In the Standard format two propellers will spin in a Clockwise direction with the other two spinning in an Anti-Clockwise direction allowing to fly in a designed direction.

II. EASE OF USE

Need of project

The Research and development of unmanned aerial vehicle (UAV) and micro aerial vehicle (MAV) are getting high encouragement now a days, since the application of UAV and MAV can apply to variety of area such as rescue mission, military, film making, agriculture and others. In U.S. Coast Guard maritime search and rescue mission, UAV that attached with infrared cameras assist the mission to search the target and campus surveillance for colleges and societies in affordable cost.

III. PROBLEM STATEMENT

The main problem in Quad copter is the balancing and stability system. Most of Quad copter will be unbalance and lost stability in case there are disturbance direct on it such as wind. In this research, to solve above problem the full system of Quad copter is design and construct. Graphical user interface (GUI) is design in this research to make control task of Quad copter easier.

IV. PROPOSED SYSTEM

Block diagram, the complete working of Quad copter is shown In this, for the better stability & control the CC3D processor is used.

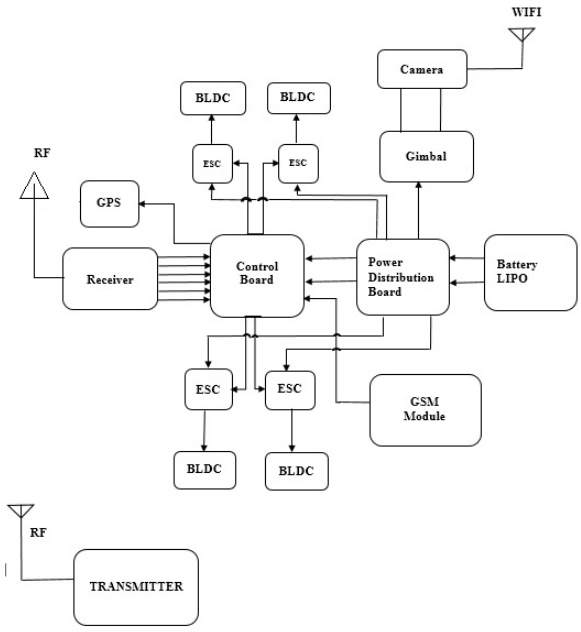

Fig 1: Block Diagram of the proposed system

The control board is the main controller.Which is connected to the power distributer board.The Power distributer board is connected to the ESC (Electronic speed controller) , which controls the speed of BLDC motor.The four connected BLDC has four different ESC the maintain the speed of each individually.The PDB receives the power from LIPO battery.The receiver is connected to the control board . It receives signal from RF transmitter.The gimbal is used to hold the camera.We have used GSM module to give instructions and to communicate with another person .It is basically used in campus surveilliance.

CC3D Controller

The CC3D board is an all-in-one stabilization hardware which runs the OpenPilot firmware. It can fly any airframe from fixed wing to an octocopter and is configured and monitored

Using the OpenPilot Ground Control Station (GCS) software. The CC3D boards have gained great popularity among UAV fans for its small volume, tidy circuit and affordable price.

1. Powerful STM32 32-bit micro controller running at 72MHz, and can reach at 1.25DMips/MHz when performance at 0 wait state memory access.
2. Integrated with MPU6000 (3-axis high-performance gyros and 3-axis high-performance accelerometer), with 16M IC
3. Support GPS and data transmission
4. Operating voltage: 5V

Proposed Work

Main objective of this work are

1. To study the existing quad copter technology about its advantages and disadvantages.

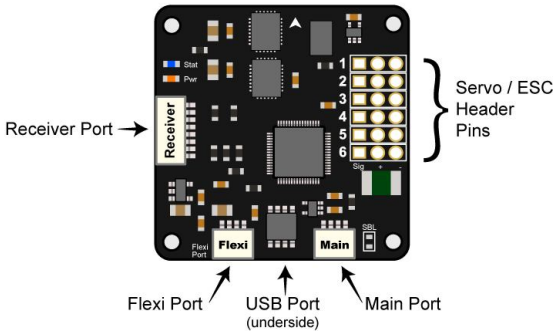

Fig 2: CC3D Controller

2. To explain various technological options to replace existing quad copter systems.
3. To design Unmanned aerial Vehicle or Drone to or to overcome disadvantages of the existing quad copter systems.

Work Implemented

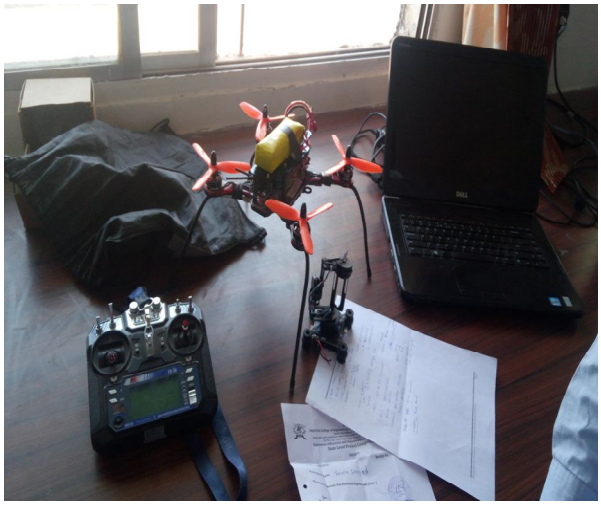

Fig 9. Unmanned Aerial Vehicle or Drone

A Drone is developed using four BLDC motors, four ESC one LIPO battery and four propellers. It is operated by remote control it uses battery as the power supply. In the proposed system Unmanned Aerial vehicle is use for campus surveillance and security purpose by using rotating camera. The implemented module is shown in above.

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