Home Surveillance System Using Drone

Viraj Thale[1], Supriya Jadhav[2], Vaibhav Kaginkar[3]

[1-3]Department of Computer engineering, Pillai Hoc College of Engineering and Technology, Rasayani, Maharashtra, India

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Abstract - *In today's automated era security is the biggest reason a homeowner should consider. Investing in home security system is that it provides safeguard to family members from trespasser. Security plays an important role in business properties to prevent to prevent thefts and to ensure safe operations. If thefts are not prevented, it can cause a great loss and thieves can break your commercial documents and steal your valuable assets. We have fixed this using a home surveillance system drone. That provides complete security with a distant view. The features of drone deal including video surveillance deters burglars, cameras can check to recognize people, cameras enhance outdoor security and video surveillance provides anytime and anywhere monitoring. A drone is made from different composite material to increase its performance make it lighter in weight. Advantages in-home surveillance using drone gives great enhancement a drone does not need to take an interval or switch stint and can be operationally work for 24 hours. It covers premises complete security at one time. Hence can ensure complete security with backup plans.*

*Key Words***: UAV: unmanned aerial vehicle, UAS: Unmanned Aerial System, FMS: Flight Management System.**

1. INTRODUCTION

In the past years, there were using a small aerial Vehicles which is called as unmanned aerial Vehicles (UAV) also called drones, this have received very much numerous applications in its fields specially in Military communication, Agriculture, photography, land scaling, for public services and in surveillance. In around the whole world there are many registered number of drone in use in the United States exceeded around 200,000 just in 20days of January'16 after the FAA (Federal Aviation administration) after owner to sign up, However the Deployment of drones, drones sure has their many advantages but we can also cannot neglect there miss uses that may enter in air space around airports can pose serious safety threats to conventional air traffic via physical collisions or wireless interference with air flight communication ,similarly they can also publicly miss uses for stalking , or because of their carrying load capacity they may also carry explosive and other dangers chemical or agents which may harm public or private property and human resources. Now as our home surveillance drone will help to provide live video feed from air space to ground base to participant with this we're expanding the surveillance ground as compare to the CCTV cameras, drone we have mount and camera and there is VTR (video transmitter) with

that incoming surveillance feed we will be able to detect face and identify the person.

2. LITERATURE SURVEY

2.1 EXISTING SYSTEM

Security is a backbone for every aspect of reliability. As before many security constraints have been introduced varying in technical development. From ancient guard dogs to watchman for guarding the premises. But due to lack efficiency, more stability acquiring CCTV was developed to keep watch for 24 hours it captured images videos for limitless hours .Later on biometrics was introduced for access control mechanism More later digital signature was developed for authentication between sender and receiver .CCTV have wired communication which you will need to establish in your demanded area any malfunction in wired communication will cause to loss feed on that particular area and then we will have to diagnose the whole communication line from beginning to end to see the problem and solve it but if you have large premises then it's kind of difficult solve that problem even though if we lost the main central box which manage the all CCTV camera in your premise you will lost the feed you need that central module to be working so all system will work as functional. This setup also cost a fortune it's all expensive and maintenance for that system that why we are offering Drone surveillance system which will be less cost than the previous system we were using and it also required less maintenance. CCTV system will require 24*7 power to keep them on so they can function as they supposed to be but during the blackout, they will disable but if they have generator to keep powering the system they won't turn off. With biometric and access control mechanism we are reducing the trespassing in unwanted area where no permission to enter in for unauthorized personal so that access control can be 4 digit pin or Pin code with include alphanumeric combination which something user have only that user is able to enter in Home Surveillance System Using Drone Viraj Thale1,Vaibhav Kaginkar2,Supriya Jadhav3 1,2,3Department of Computer engineering, PHCET, Rasayani, Maharashtra accessible area same goes with biometric access security protocols biometric security can be users thumb, whole palm, eye ball or face pattern this are the some type for biometric security this is something user are cause you cannot change or replace that security access need that exact access, it's enough to keep entering in premise for outsider.

Year	Title of Paper	Name of Author	Advantage
2016	**Drone for smart cities: issues in cybersecurity, privacy & public safety**	**Edwin Vattapparamban, İsmail Güvenç, Kemal Akkaya, Ali İ. Yurekli, Selçuk Uluağaç**	**This kind of drone is used in metro city for inspecting cybersecurity, privacy, public security.**
2017	**Drone-Aided Border Surveillance with an Electrification Line Battery Charging System**	**Seon Jin Kim & Gino J. Lim**	**It is used for altitude and geo fencing and navigate the communication.**
2018	**Amateur Drone Surveillance System Based on Cognitive Internet of Things**	**Guoru Ding, Qihui Wu, Linyuan Zhang, Yun Lin, Theodoros A. Tsiftsis, and Yu-Dong Yao**	**Has machine learning which reduces human eye efforts.**

2.2 PROPOSED SYSTEM

In proposed system we are giving a drone surveillance system we are using drone technology, for that drone we need flight controller to operate its propellers, aviation protocols, on board camera and VTx (Video transmitter) to provide live feed from the drone which will be receive by base VRx (Video receiver) to receive this channel frequency and auto tuning for android mobile. To acquire complete security of surrounding premises or assets for every time there should be something who does not have limitations for electrical cut off, wired problem. Nor it should remain at a single point but should take a view of whole allocated area. To overcome this crisis by using different security hacks introduced some of the drawbacks therefore we have introduced the drone to get complete prospect view for surveillance. By using drone we can get complete view from any angle of any area so that a suspicious activity will be suspected and also if there is any human detected it will go for face and recognize if that person's data match with already data added in face recognition training data if it matches data then application will show the name of that person on screen and if the data doesn't match with the taring data then there is something suspicion on going and authority will take action according to major.
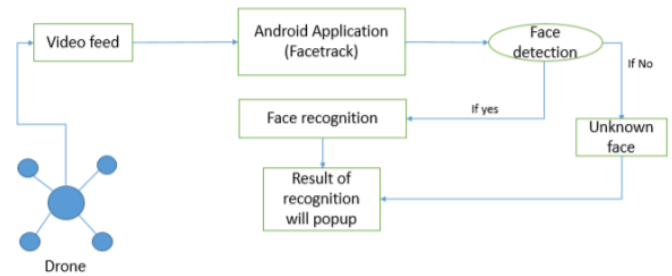

Fig1.Overview of the Purpose system

3. IMPLEMENTATION

The goal of face detection application is simply to display the face detection results, to accomplish this task we need to apply machine learning techniques to biometrics security solution for face recognition we are using OpenCV, libraries real time streaming Vtx for Camera to send its live feed to application for process, in order to process or to function requires three steps first it must detect face then second it must recognize the face which is detected in the feed which was given by mount drone axis camera and Finally it must give a participate head on that certain person is detected in system through the android application. These results are sent through the application to participates via android application. Video feed via video receiver which will send to the android application through the OTG using UVC it's a driver which will use to control UVC camera which is on the drone wireless.
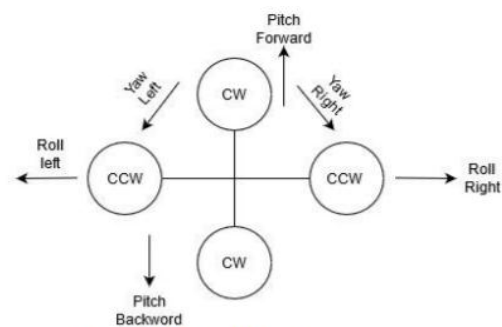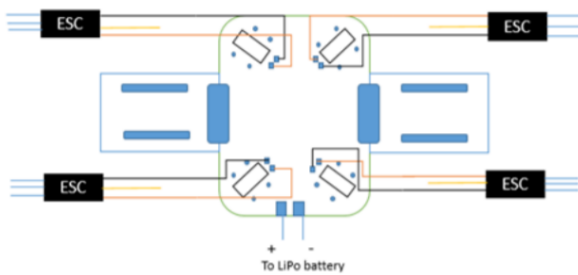

Fig2. Motor Design

Fig3. ESC and PDB Model

In this fig's it displays the motor design how the YAW works the motor design works, drone configuration and axis for forward Yaw is shown and the backward Pitch, left roll and right roll. The ESC have the ability to quickly control the speed and the rotational direction of its motors ESC are the main key to improve performance that will give us smooth and powerful rotation to motors, the ESC is electronic speed control is very important module as Flight control which control this module with out of these two co-ordination drone will not have a steady air mode and it might eventually crash. It very crucial part to give proper power to these ESC, that's why we are using power distributor board (PDB) which will distribute power equal and without creating spike to the ESC and to motors, We are using power source as Lithium polymer battery but we can't use just any LiPo battery we are using 3A power cell with 5200Mah which will give us 11.5V power and 29.9Current burst with but we can't just connect LiPo battery directly we need PDB for that so every component will work according as they supposed to without failing.

4. RESULTS

The final prototype is successfully developed and is working accordingly the prototype model application is in tested in field which performed all the specification, the face recognition and the drone are working according to the flow the drone gives the live feed from mounted camera and that feed is using as data to face recognition by application and results are in expected this will be visible on users application screen the data about face stored and label will give exact person name and mark square to person face with name while drone in elevating on air mode user.
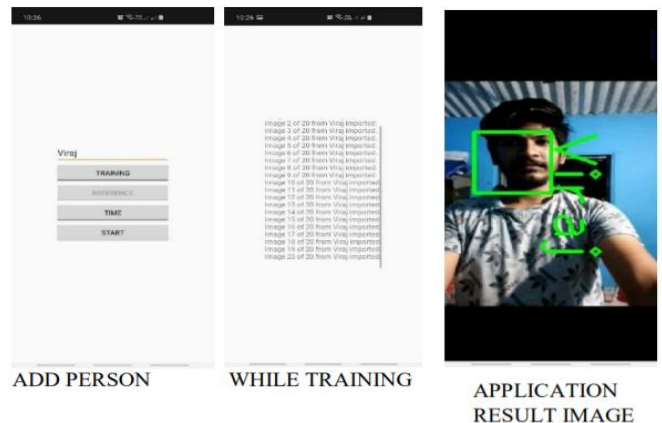

ADD PERSON   WHILE TRAINING   APPLICATION RESULT IMAGE

Fig5. Application View

5. CONCLUSION

The security is important aspect in Home surveillance as there are many ways, we can provide security for require area by installing different devices and access point as our project is mainly focus on combining to way of security to create new security ways and reliable for user. This Paper work of home surveillance system using drone, we use android tool and drone technology and wireless communication protocol for camera (5.8 GHz) and drone to get live feed from drone and for this we have use android studio to build an application so we can see the live feed from drone with the help of receiver. And for face recognition system we are using OpenCV and Tensor-flow Deep neural learning with that feed we are using face recognition to identify the person.

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7. BIOGRAPHIES

Name: Viraj Dattatray Thale College: Pillai HOC college of Engineering and Technology, Rasayani, Maharashtra India

Name: Vaibhav Uttam Kaginkar College: Pillai HOC College of Engineering and Technology, Rasayani, Maharashtra, India

Name: Supriya Sunil Jadhav College: Pillai HOC College of Engineering and Technology, Rasayani, Maharashtra, India

Prof. Snehal Shinde Department of Computer Engineering PHCET, Rasayani