www.ijprems.com
editor@ijprems.com

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 02, Issue 05, May 2022, pp : 227-232

e-ISSN : 2583-1062

Impact Factor : 2.205

VIDEO SURVEILLANCE DRONE FOR IMAGE RECOGNITION

Sneha P[*1], Dhivya S[*2]

[*1]Student, Masters of Engineering, Communication Systems, Sri Ramakrishna Institute of Technology, Coimbatore, Tamil Nādu, India.

[*2]Assistant Professor, ECE, Sri Ramakrishna Institute of Technology, Coimbatore, Tamil Nādu, India.

ABSTRACT

Maintaining surveillance is not any easy job, neither is chasing criminals nor trying to find kids or elderly people who are lost in crowded areas. This ultimate goal is to propose a feasible solution for the above-mentioned issues. This proposal is on the working of an Unmanned Aerial Vehicle (UAV) with an add-on of face recognition. The method flow executes the input received for the face of the person (either blacklisted or lost) into the software followed by drone tracks for the inputted faces and providing live alerts when a match is found alongside their location. The appliance of this project is often extended to seem humans in closed environments- like exhibition halls, railway stations, Temple functions, pattern tracking, and public safety surveillance. UAVs are the longer term and using them for such applications help reduce the human efforts, thereby making things easier and human error-free.

Keywords: Face detection, Video Surveillance, MATLAB, Image Recognition, Viola-Jones algorithm.

1. INTRODUCTION

We have proposed a face recognition based Unmanned Aerial Vehicle which can maintain safe and stable flight with a wireless transmission system to provide surveillance of real time environment... Often people tend to urge confused between face detection and face recognition. Face detection software can only detect the human faces and highlight in an environment; whereas a face recognition software identifies the scanned face with the inputs appended to the database and provides the results with all the inputted details including name. Though face recognition software is often installed in stationary cameras, drone provides a plus of mobility and flying at low altitudes, i.e., at face levels. They will be flown both indoors and outdoors and are far more effective compared to observations done by humans alone. The input images considered for project problem statement would be the faces of blacklisted humans or persons missed in crowd. Once fed into the software, the drone is going to be flown and therefore the attached camera will scan faces and send the video updates in real time environment.

2. METHODOLOGY

The main aim of the proposed system is to supply a further resource to the local authorities to seem for human that have either gone missing or blacklisted. The proposed method consists of three units namely, navigation control unit, image processing unit and quadcopter unit. In the navigation control unit RF transmitter is used to provide four axis control to the quadcopter unit such as throttle, rudder, aileron, elevator. The Accelerometer and gyroscope will provide the position data to the flight controller in order to maintain the stability of the drone. The Image processing unit which is connected with wireless camera in drone to capture images in Realtime. The captured image is then analyzed using face recognition algorithm and the result is send to the display. In prior to face recognition two steps like Face data set preparation and dataset training is carried out.

2.1 Surveillance system using Drone

The parts of Quad copter are Frame, DC brushless motor, electronic speed control (ESC), Propeller, Ii-PO battery, Remote control, Receiver. The flight controller control inputs are received by the RF Receiver and are distributed to four electronic speed controllers (ESCs) which are in turn attached to the BLDC motors. The speed of the BLDC motors is controlled with the help of PWM signals which are generated from the KK2.1 flight controller based on the received control inputs. The Accelerometer and gyroscope will provide the position data to the flight controller in order to maintain the stability of the drone.

2.2 Face recognition using MATLAB

The recognition of human faces is carried out using computer vision technology to distinguish facial features taken from either photo, real time image or video clips. To get the best results, an algorithm was proposed to identify the face and compare it with the face data which is stored in local device or either cloud storage. By using MATLAB code, face, eyes, nose, and mouth recognition is achieved through the built-in Cascade Object Detector function in the toolbox.

A program was designed to determine the face, where the most accurate results were obtained in quick steps.

www.ijprems.com
editor@ijprems.com

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 02, Issue 05, May 2022, pp : 227-232

e-ISSN : 2583-1062

Impact Factor : 2.205

The proposed algorithm, with the help of MATLAB, to identify the face, the following steps show the stages of the face detection of the image Input color Image

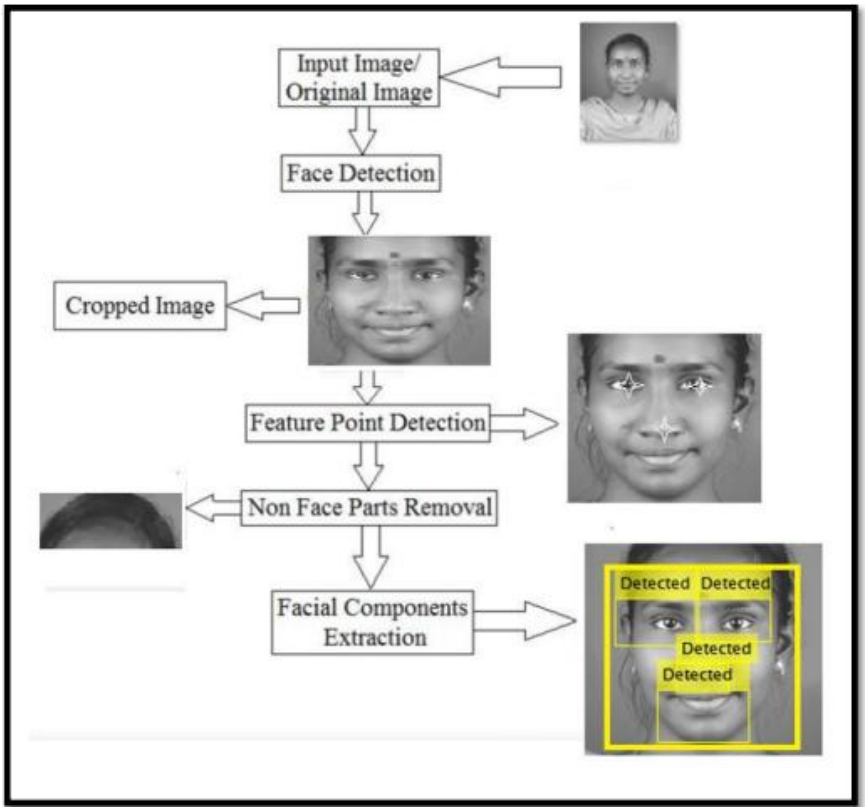


Figure 1: Face Detection Algorithm

Step1: analyses image to 3 layers RGB

Step 2: processed filter 3 × 3 After you treat the filter with the image, the image size is reduced

Step3: In this step, the object properties are determined after Vision. Cascade Object Detector is created

face Detector = vision. Cascade Object Detector ();

Step 4: In this step, you call the object with the arguments (as if it behaves as a function)

Step 5: Facial information is identified and read

[filename, pathname] = uigetfile('*.*', 'Select the Input Image');

Filewithpath = strcat(pathname, filename);

Figure 2: Facial Feature Detection and Face Detected

Output: the image with face detected

3. MODELING AND ANALYSIS

The proposed method consists of three units namely, navigation control unit, image processing unit and quadcopter unit.

www.ijprems.com
editor@ijprems.com

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 02, Issue 05, May 2022, pp : 227-232

e-ISSN : 2583-1062

Impact Factor : 2.205

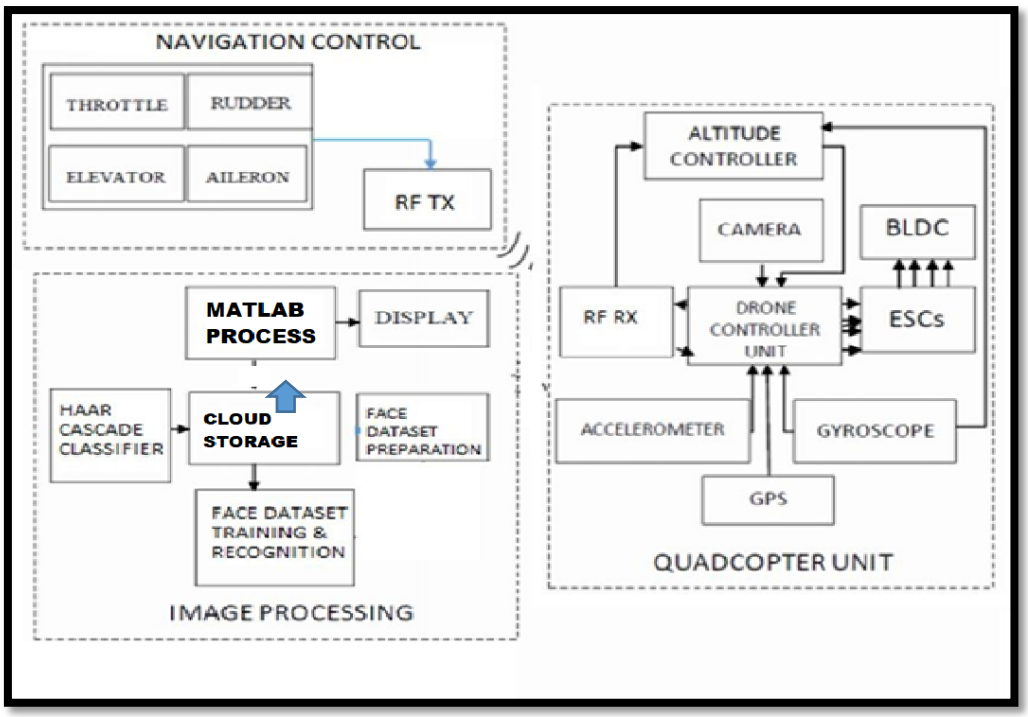


Figure 3: Block diagram for Video Surveillance Drone for Image Recognition

4. RESULTS AND DISCUSSION

In this paper, an algorithm was built for face detection technology by segmenting the color image into RGB, where the face area of a person was detected first and as a next step Image comparation between the input source image and output source image is processed and the person face is identified successfully with the names stored in database.

Figure 4: Assembled drone with wireless camera

The algorithm was applied to the images with different sunlight, and the other stage was with group of peoples. As the algorithm was applied with high and fast technology, as the algorithm proved its efficiency because the examples showed that the new algorithm is valid under the new circumstances.

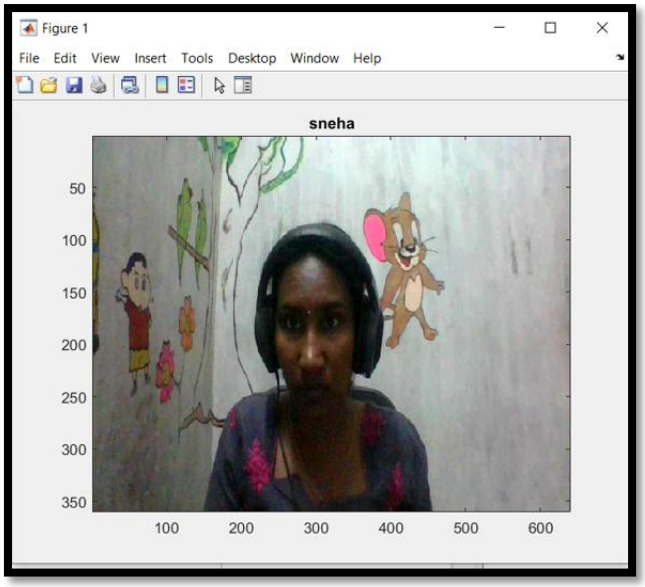
www.ijprems.com
editor@ijprems.com

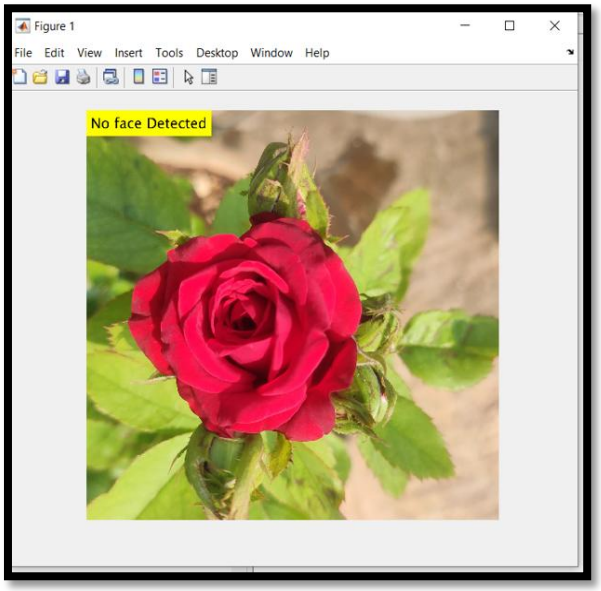
INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 02, Issue 05, May 2022, pp : 227-232

e-ISSN : 2583-1062

Impact Factor : 2.205





www.ijprems.com
editor@ijprems.com

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 02, Issue 05, May 2022, pp : 227-232

e-ISSN : 2583-1062

Impact Factor : 2.205

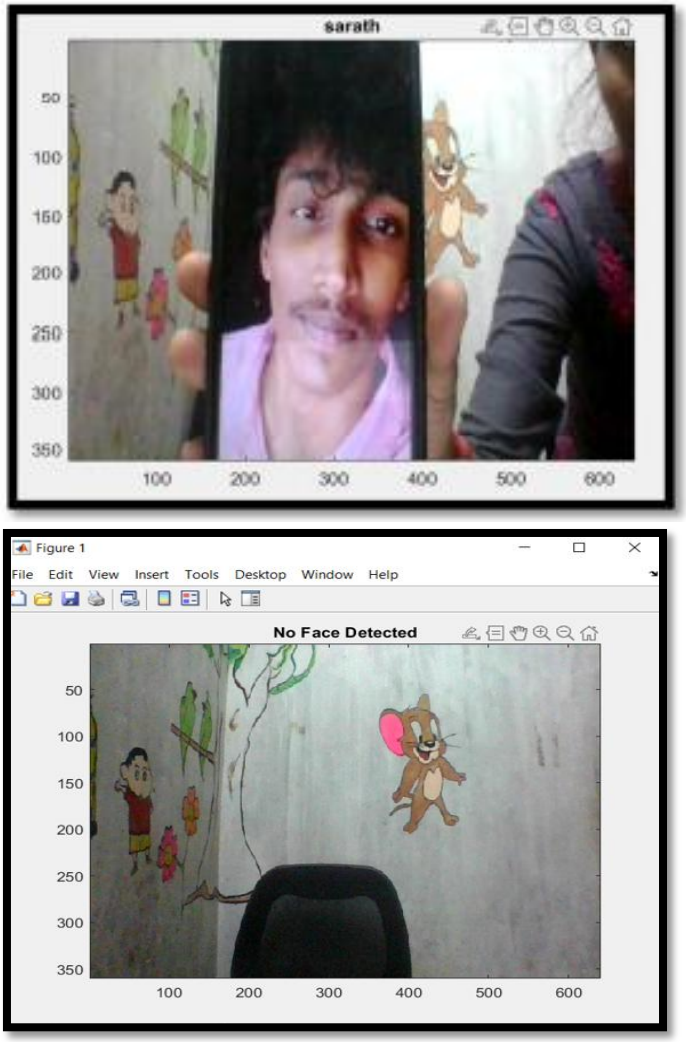


Figure 5: Person identified with Names stored in cloud

5. CONCLUSION

The Proposed system is to identify a person in a crowd. To achieve this, we have used a drone attached with wireless camera where camera acts as hotspot from drone and mobile as WIFI. From this way the image to test or video clip can be stored in our cloud storage. From the database the stored images is compared to the cloud storage images which we have got from live camera. The algorithm we applied finds the right person with accuracy 90%. Thus The results obtained for the correct rate of face detection are presented. the new algorithm shows its efficiency by presenting the results obtained.

6. REFERENCES

[1] A M Abou El-Nasr, and A L Abbot 2007 A New Face Detection Technique using 2D DCT and Self Organizing Feature Map in Proc. of World Academy of Science Engineering and Technology 21 pp 15-19

[2] J. Nagi 2007 Design of an Efficient High-speed Face Recognition System Department of Electrical and Electronics Engineering College of Engineering Universiti Tenaga Nasional March

[3] C Zhang, Z Zhang 2010 Boosting-based face detection and adaptation Synthesis Lectures on Computer Vision Morgan & Claypool Publishers 2 (1) pp 1-140 Chengwei Liu, Yixiang Chan, Syed Hasnain Alam Kazmi, Hao Fu, "Financial Fraud Detection Fluid: Based on Random Forest," International Journal of Economics and Finance, Vol. 7, Issue. 7, pp. 178-188, 2015.

[4] Jessica R. Cauchard ; Alex Tamkin ; Cheng Yao Wang ; Luke Vik ; Michelle Park ; Tommy Fang ;James A. Landy(2019),"A Gestural and Virtual Interface for Human-Drone Interaction" on 14th ACM/IEEE International Conference on Human Robot Interaction (HRI).

[5] Raj n.Sarath ; Jerrin Thadathil varghese ; Feni pandya (2019), " unmanned aerial vehicle for human tracking using face recognition system" advances in science and engineering technology international

conference(ASET).

[6] Edwin Jose ; Greeshma m ; Mithun t.p Haridas ; M.H Supriya (2019),” face recognition based surviellance system using MTCNN” 5th international conference on advanced computing & communication systems(ICACCS).

[7] Ishakalra ; Maneet singh ; Shruti nagpal ; Richa singh ; Mayank vatsa (2018),”Sujit dronesurf benchmark dataset for drone-based face recognition” on 3rd international conference for convergence in technology.