International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 04 | April - 2023 Impact Factor: 8.176 ISSN: 2582-3930

Smart Surveillance System using Python and OpenCV

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ABSTRACT

Computer vision expands the paradigm of image processing, including the understanding Security and protection are the most important issues in modern times. This project reviews some of the latest developments in the field of computer vision and image processing to solve safety issues. It also describes the efforts of the development teams to incorporate some of these pioneering ideas into a consistent prototype system of scene content, object tracking and classification. The development of computer vision technology often takes into account very specific applications, and the goal of a more complete understanding of computer vision systems still exists outside the existing technology, at least for now.We are mainly stressing on the features of smart surveillance which are monitoring feature, noise detection, face identification and visitors in room detection. This can be achieved by integrating camera with python computer vision algorithms

KEYWORDS

Open CV , Smart Surveillance, Android.

1. INTRODUCTION

High-level comprehension can be attained from digital photos or films using computers. The objective is to automate operations that the human visual system is capable of performing from an engineering standpoint. Images can be acquired, processed, analysed, and understood using computer vision techniques. High-dimensional data can also be extracted from the real environment to create numerical or symbolic information, for example. In the context of decisions, computer vision is a deeply branched scientific discipline that deals with issues like how. A library of programming functions called Open CV (Open source computer vision) is primarily concerned with and focuses on real-time computer vision. It was initially created by Intel. Later, it received assistance from Willow Garage and Itseez, which was subsequently bought.

1.1 OBJECTIVE

The major goal of this project is to develop a smart surveillance system using open CV and python to secure from robberies at banks, schools and many other public places.

1.2 SCOPE

Future versions of this application might include the more security by detecting the unknown persons of an organization.

2. RELATED WORK

Si.No	Title	Year of Publication	Author	Description
1.	Automated security system using surveillance.	2015	P. Vigneswari, V. Indhu, R. Narmatha. A..Sathinisha & J. Subhashini.	Security automation is the process of automatically detecting, investigating and remediating cyberthreats — with or without human intervention — using a programmatic solution specifically designed for this purpose.
2.	Image processing based system	2013	Hasane ahammad, S.K.Rajesh	To detect people we use Gaussian mixture algorithm to detect the object.
3.	Wireless home automation and security systems.	2002	V.Satyanarayana, S. Gayathri	It is particularly appealing to develop systems that can recognize object pass through the cameras.
4.	A vision based home security system using open CV	2016	Sanjana Prasad	A vision-based home security system using OpenCV on Raspberry Pi 3 model B was developed to **improve the effectiveness of motion detection**. This system applied the Haar-Cascade algorithm coupled with background subtraction as well as considered the Histogram of Oriented Gradients (HOG) during the development stage.

3. EXISTING SYSTEM

The existing system either need a human safety officer or need work for installing and finally which may produce false alarms. In some surveillance systems, an interloper will be detected by using video recording cameras and stores the recorded video in an external storage disk and need a huge investment for controlling it, storing, and monitoring the activities.

4. PROPOSED SYSTEM

At the beginning itself, valid faces/ familiar faces are stored in the database. System also uses motion analysis to detect motion and verify whether a real person is present or a 2D image is present in front of a camera. When the camera detects the motion, it simply searches for a face. After detecting a face it compares it with the pictures or faces stored in the database. If the face matches with the one in the database, the face is authenticated and no action needs to be taken.

MODULE

- First install Python.
- Then install Open CV library.
- And then install all the libraries which are used for video detecting and give audio .
- Next, if we run the code the webcam in the pc/laptop opened .
- If we keep image or human in front of that webcam ,it can detect the object and give alert message(Object Detected).
- This the implementation of Smart Surveillance System using Python and Open CV.

5. ARCHITECTURE

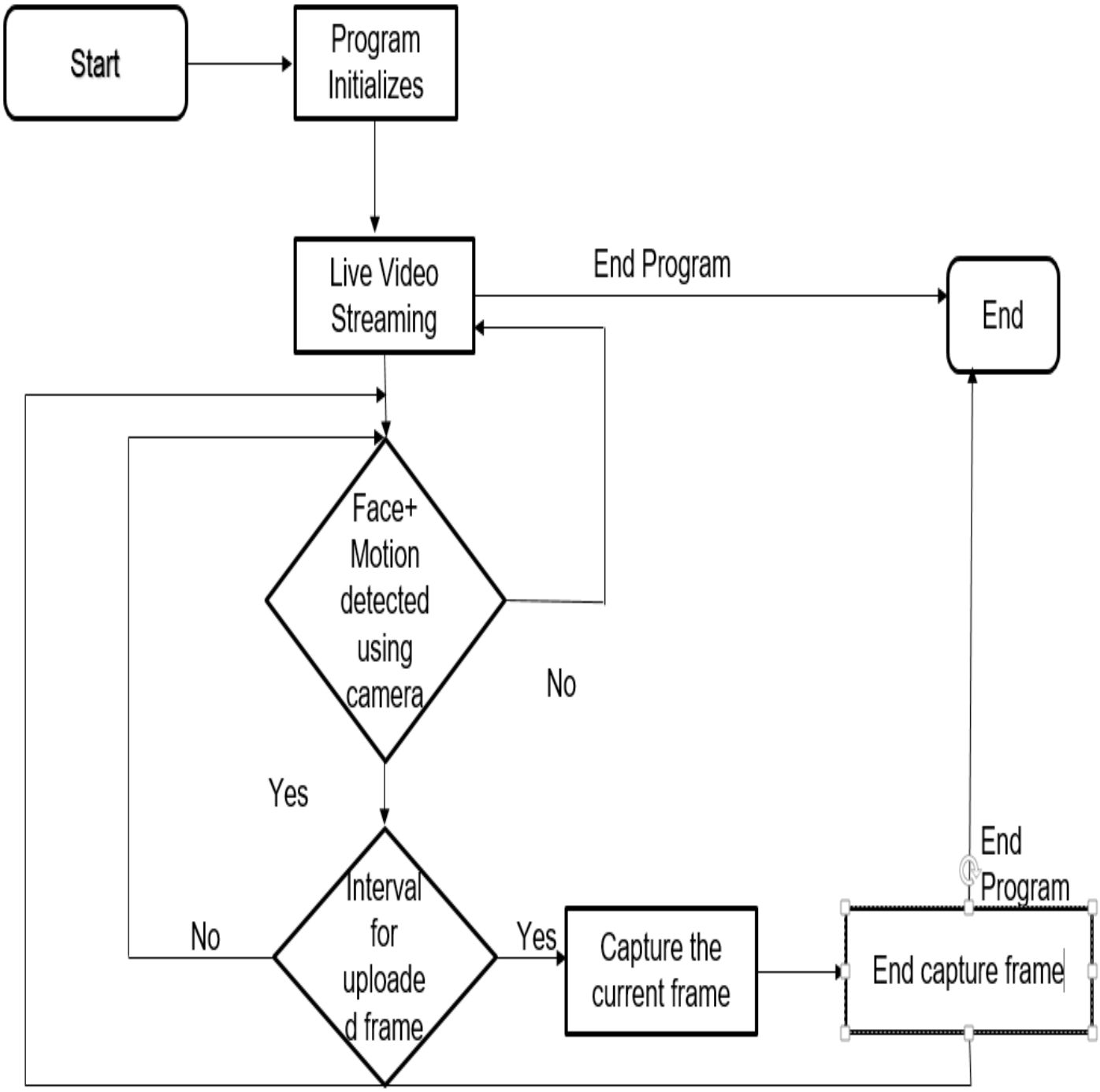

FIG NO 5.1 ARCHITECTURE OF THE PROPOSED SYSTEM

6. RESULT

FIG DELTA FRAME

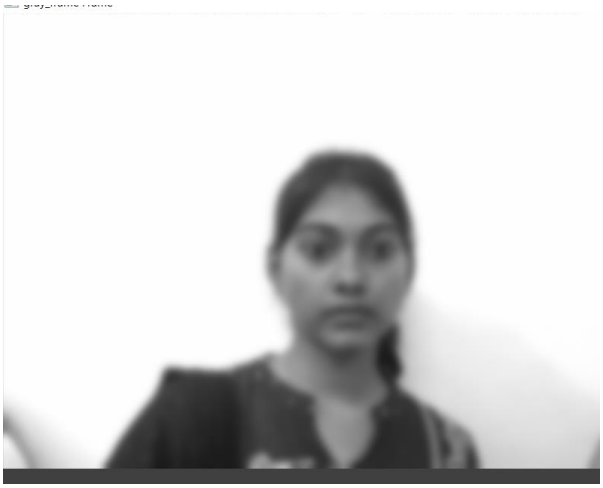

FIG 6.2 GRAY FRAME

FIG 6.3 THRESHOLD FRAME

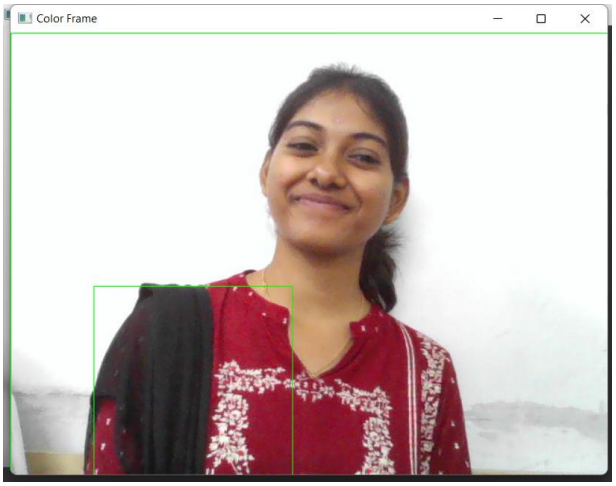

FIG 6.4 COLOR FRAME

7. CONCLUSION

Smart surveillance system using open cv and python we have come to a conclusion that security is the most important aspect everywhere so taking that into consideration without the help of any physical devices we are trying to monitor security using open computer vision and python software .This project ensures that we use computer vision technologies in a right and useful manner. Smart surveillance system has been one of the most important because we ensure safety and security without the involvement of any physical devices.

ACKNOWLEDGMENT

The authors would like to thank Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya (SCSVMV) Deemed to be a university for supporting this work.

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S.Vinoothna Reddy, B.E. Computer Science and Engineering, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya Enathur, Kanchipuram, India. Article Employee Engagement Strategies in Information Technology Companies was published in the International Journal of Scientific Research in Engineering and Management (IJSREM).

Dr. R.Prema, Assistant professor in the Department of computer science and Engineering, their publications, the Published paper titled “Smart surveillance system using open CV and python” International Research Journal of Mathematics, Engineering, and IT Volume 4, Issue 6, June 2017