

Security Breaching System

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Abstract - The contentious surrounding is growing in buffer study day by day. Hence, it has become very essential for one to protect one's valuable resources from worldly misuse such as heist, spoiling the valuable things, people with hurtful ambition etc. This technique used by criminals and stealers for shoplifting has been boosting aggressively because of the occurrence of technology in today's era. So, it has become mandatory to monitor the performance to also upgrade with the evolving planet. With the betterment in mainstream media and different figure of broadcasting, it is currently feasible to the observer and guidance the circumstances which is in turn advantage to the keeper of the possessions. The modernistic equipment are using counter heist and blowing up are the record supervision and detector. By using the equipment, it is possible to detect and seize every degree and supplementary to the part of delight. Although, these functionalities can only detect the crime and do not take part in controlling the violation. Accordingly, we have enlarged a technique that detects the movement in a video series setting. This aim will detect the crime but also assist in terminating or removing the violation while a violation is taking place. Consequently, this organization is used to note any activity in a live ripped video and one time activity is been caught in the undergo stream, the program will initialize a lesson of an organization as an alarm and catch the live streaming record.

Keywords- Technique, Detection, Video, Heist, Monitoring.

I. INTRODUCTION

Motion detection can be generated by sound, lack of transparency, geomagnetism, reflection of transmitted energy, electromagnetic installation and vibration. The security breaching system is a security alarm that secures access of the one's personal gadgets by detecting motion. In this system, there is an alarm that uses an electronic mail service that informs the user in case there is an unauthorized access to his/her device along with the location and image of the event which is activated when someone enters a wrong password. Motion detection system is highly used as automatic gate-hand dryers, security lighting etc. Closed circuit television monitoring began with video surveillance. As preliminary as 1965, there were lean on information in different states beyond the earth recommended police use of inspection cameras in public location.

Video surveillance became most popular when videocassette recorder hit the market. Analogue automation using record tape machine recordings signify observation could be protected on tape as verification. A finalized analogue video-monitoring structure composed by a camcorder, recorder, and VCR. The previous tube camera was only beneficial in the daytime, and the VCR could keep eight hours of motion picture at the best.

The disadvantage was that after the following interval, holders and workers of the system would become self-satisfied and not change the record on a daily basis or the record would deteriorate after months of entity change. There was a problem in recording at night or in low light. The machinery hadn't yet summit this concept is also good. The other pace was the Charged Coupled Device camera (CCD), which is used in microcircuit computer approach. In the late 1990's in practically, the establishment of scan multiplexing construct a great step of video observation. When digital multiplexer units became affordable, it revolutionized the surveillance industry by enabling recording on several cameras at once (more than a dozen at time in most cases) [2]

Biometrics is the branch of knowledge and machinery of calculating as well as examining organic details In information technology, biometrics refers to technology that measure and analyse human body characteristics, such as DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication [3]. Face identification and recollection machinery has been extensively talked about in connection to computer imagination and pattern identification. Countless approach has been enlarged payable to the increasing amount of existent world implementations. Biometrics contains techniques for incomparable acknowledged humans established across one or more inherent bodily or behavioural attributes.

Face detection is a technique use to find if there are any faces in a given image or not, if present, then it returns the image location and information of each face [4]. This is the first stride of any totally automated method that examines the content carried in profiles. It is a kind of a category of object observation in which the positions and dimensions of all devices in an image that belongs to a particular category of object are set up in face perception.

Face detection is the extensive instance of face localisation in which the position and dimension of a known aggregate of features (usually one) are explicated. While initial tasks distribute mostly with upright frontage faces, some systems have been spread that are allowed to discovered face justify correctly with out-of-plane or in-plane sequence in actual time. Although, a face perception module is typically created to distribute with one image, but if video stream is available then its performance can be further improved.

II. PROPOSED WORK PLAN

Open CV emphasises on vision and machine learning framework. The library runs beneath Linux, Windows and Mac OS X and is put in writing with C and C++. Open CV has a strong emphasis on real-time applications and is outlined for strong computational efficiency [5]. There are distinct libraries of Open CV that carry over 500 methods that traverse many areas in vision, factory product inspection, medical imaging, security purposes, user interface, camera calibration, stereo vision, and robotics.

An Open CV has some basic structure which is as follows: The CV component carries higher-level computer vision algorithms and the fundamental image process. A machine learning library includes many clustering tools and statistical classifier. CX Core contains the fundamental data structures and content and high GUI contains I/O routines and functions for storing and loading images and videos.

Open CV includes the Haar cascade classifier which is a supervised classifier. In this, we create histogram and equal-sized image spots to the classifier, which are then titled as containing or not containing the face for this classifier.

Open CV has a commutable structure, which means that the package contains few shared or static libraries. Distinct modules are available in these packages:

- **Core functionality** – It is a compact module which defines the basic data structures which contains several basic functions and the opaque multi-dimensional array Mat used by all other modules. The name of its library is core.
- **Image Processing** – It is an image processing module that runs colour space transformation, some linear and non-linear image filtering, some distinct histograms and some geometrical image modifications and so on. The name of its library is imgproc.
- **Video Analysis** – It is a video inspection module that carries algorithm of object tracking, background subtraction and motion estimation. The name of its library is video.
- **Camera Calibration and 3D Reconstruction** – They are used to handle parts of 3D reconstruction, stereo correspondence methods, multiple-view geometry methods, object pose approximation, and single and stereo camera calibration. The name of its library is calib3d.
- **2D Features Framework** – It involves important feature detectors, descriptors, and descriptor matchers. The name of its library is features2d.
- **Object Detection** – It involves detection of instances and objects of the predefined classes (for example, faces, mugs, cars, and so on). The name of its library is objdetect.

- **High-level GUI** – High level GUI is an easy-to-use interface to simple UI capabilities. The name of its library is highgui.
- **Video I/O** – It is an easy-to-use interface to video coder- decoder and video capturing. It also contains several other modules, such as FLANN and Google test wrappers, Python bindings, and others. The name of its library is videoio.

The system data flow diagram, which we created, explains how the elements of the system interact and work together to obtain the general system goals. It describes the function of each component and provides the data about information exchange. The data flow diagram was designed for basically getting an idea of how the actual system works and operates [6].

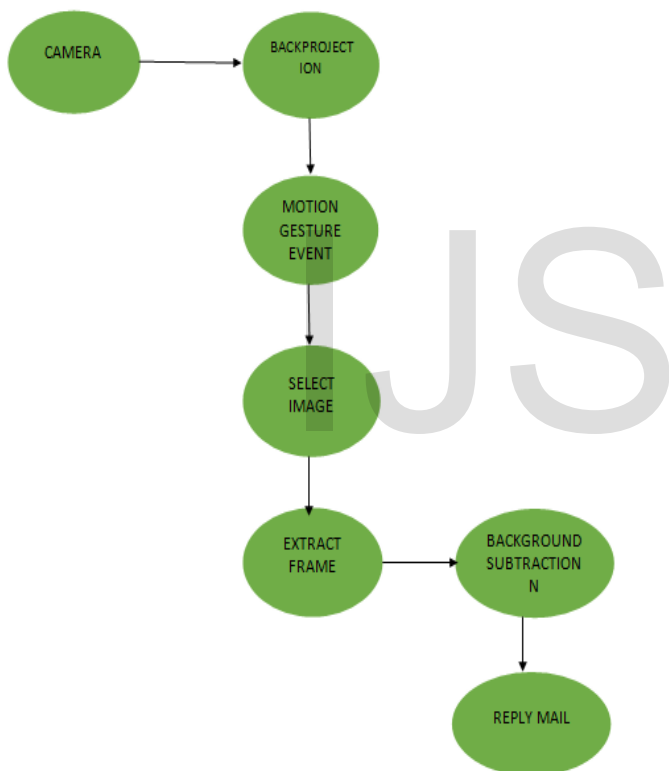


FIG. 1 DATA FLOW DIAGRAM OF OUR SYSTEM

III. METHODOLOGY

A broad variation of human to device interactions training observations have been used in human observing approaches for motion inspection. This employs a large number of visual and physiological features, a fact which usually impedes the training process [7].

In this segment, the procedures and the techniques used for the monitoring system will be detailed. Python software is used in all programming segments. Open CV that is an open source computer vision library is used.

Open CV was planned for computational organization and having a high centre of attention on real-time figure observation. Open CV is systemised with optimised C and can take a task with multi-core centre processors. If they want more automated optimization using Intel architectures [Intel], they can purchase Intel’s Integrated Performance Primitives (IPP) libraries. These are made up of low-level procedures in different programming regions which are optimized. Open CV recurrently operates the IPP library, at runtime if that library is installed.

One of Open CV’s objective is supply a simple-to-use data processor vision framework which supports the person to construct highly experienced vision implementation fast. The Open CV library, carrying over 500 tasks, reaches many regions in vision. Because machine learning and computer vision often goes holding hands, Open CV also has a common purpose, Machine Learning Library (MLL). The statistical design identification and grouping is the centre of substitute part of the library. The MLL is very convenient for the vision purposes that are the foundation of Open CV’s functionality, but is wide enough to be help for any machine learning issue.

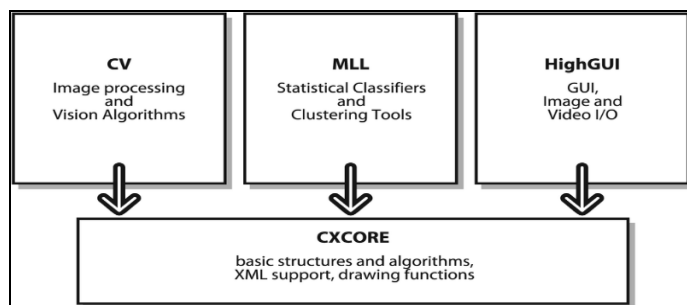


FIG. 2 STRUCTURE AND CONTENT OF OPEN CV

Python is an interpreted and general purpose programming language with integrated dynamic semantics primarily for web and app development. It is the greatest captivation in the field of Rapid Application Development because it offers dynamic typing and dynamic binding options. Guido van Rossum discovered python. It is free software and is also free in other major ways, for instance, the users are free to copy it as many times as per their requirement, and are free to study the source code, and make modifications to it.

IV. RESULT

Richard Stallman was behind this idea of free software which is now a global movement.

Python is relatively less complicated, so it's easy to learn since it requires an individual syntax that focuses on readability. Python is much more powerful than FORTRAN but it has some similarities to FORTRAN which is one of the earliest programming languages. Python code is much easy for the developers to read and is easy to translate in comparison to other languages. It is an interpreted language, which means that the implemented code can run directly, without compiling a program into machine language. On the other hand, most programming languages do this compilation before the program is even executed. Python language was used for trivial projects initially, that is why it is also known as a "scripting language".

In Python, variables can be used without declaring them, and indentation is the most important property that python uses as a control structure. Python gives the freedom to write the code without defining the class, unlike java, but the user is free to do so when he/she thinks is suitable. Sequentially, this decreases the cost of program development and maintenance because it permits the teams to work collectively without notable language and experience hurdles.

Python is a programming language that can represent the real world and that is why it is said to be object-oriented. It has a centre of attraction on objects, and integrates functions and data. In clashing, a procedure-oriented language whirls around methods, which are codes that can be rephrased. One of the key features of python is that it supports both procedure-oriented and object-oriented programming. A program with multiple-inheritance can run in python unlike java. A class is a blueprint for such an object. It is an abstract data type, and holds no values

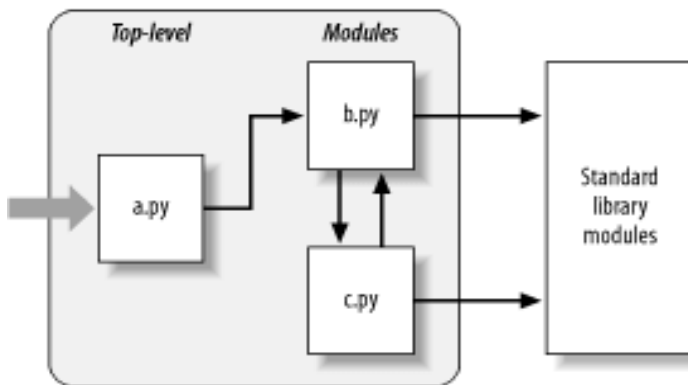


FIG. 3 STRUCTURE OF PYTHON

As soon as we start or run the project, a GUI window will open on the screen in front of the user so that the user can interact with that window and do their work. The window consists of 2 buttons, each of them having a different and unique functionality.

The first button is for TARGET EMAIL and the second one is for START TRECKING .

The project is about detecting motion along with capturing the images of the event, the system will capture the image of the event and within few seconds the user gets informed by an alert message through users email.

There are some snapshots of the user using the software which tell us that how the software will interact with the user and what will be its functionality in different cases.

Snapshots with their description are described below:

This is the first screen that will be opened on the main screen as soon as our code gets executed. This contains a GUI screen which has 2 buttons. The working of each button can be easily understood by the names only.

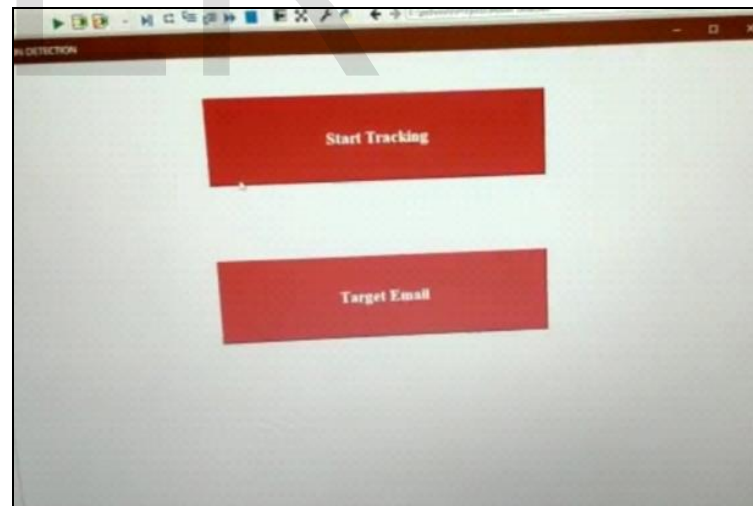


FIG. 4 MAIN GUI WINDOW

When the user selects the "start tracking" button on main GUI window, the main code of motion detection will get started and an image of the event captured will be sent to the targeted email, the main user of the device with an alert message on the email informing the user.

V. CONCLUSION

In this project, we discussed the implementation of a security breaching system to be used for access control. The focus was thus to implement a motion detection system along with face recognition that is good enough to be used for access control. To deliver image data of poor quality and also contain so much noise used by video camera to access control system. The focus was also on developing a real-time motion detection system.

The system captures the live image of the event involving the person who wants to get the access of the system and then a random number of images is captured and within few seconds the most appropriate image is sent to the actual user of the device. And informing the user about an unauthorized access to his/her device is taking place.

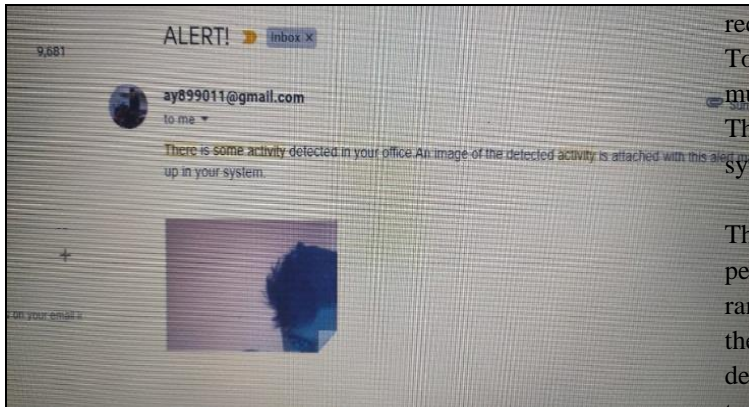


FIG. 5 ALERT MESSAGE TO THE TARGETED EMAIL

Our proposed system could have been more coherent if we implemented the GSM of high band rate and if we also involved the GPS module for the co-ordinates and it is evident that the result of this motion detection and recognition system is good but there is scope for further improvement. We were not able to achieve few goals because of time limitations that would have definitely improved the technology of the system.

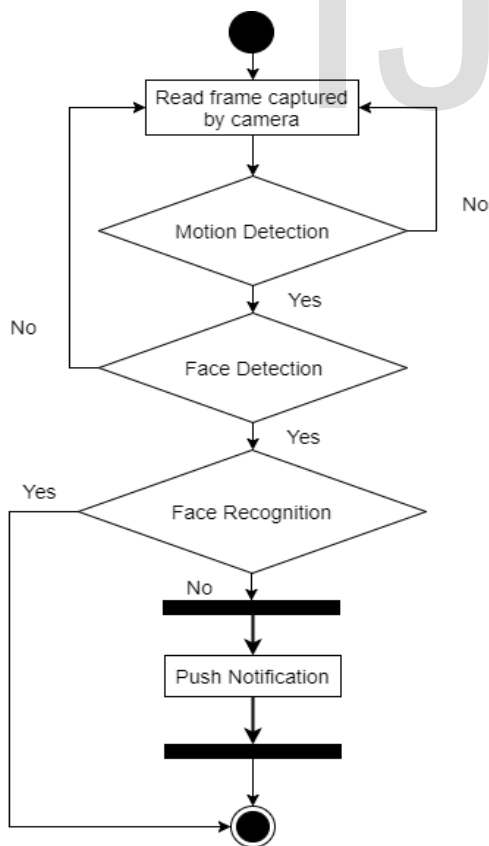


FIG. 6 SYSTEM FLOWCHART

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