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Survey on Face-Recognition and Emotion Detection

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Abstract - *These days CCTVs are put in at several places like banks safe. However, the CCTV cameras incessantly record the situations. Hence there's associate degree needless memory wastage if there is nothing happening ahead of the camera. Also, the CCTV system doesn't offer alerts of felony happening at a particular time. Thus there's a requirement of a system that is able to record the case providing there's some movement happening in front of the camera and send alerts to the manager still as the police this technique is developed from the safety purpose of view. The target of Real-Time Security System victimization face recognition, motion detection, following, and human emotions is to develop a system that monitors the realm within which it's being deployed. During this System, the net camera is applicable in the area wherever nobody is permissible to enter, also where system ought to discover if any motion has been done. This technique use camera face recognition, Motion, Object Detection, and Tracking. The Camera is employed to catch the live pictures of the area within which it's being enforced if any object is moving. The captured pictures are held on for any work. If a motion is found during this video, the Computer can begin to send a notification to folks listed in its information. In this way, the system can offer safety against any misbehavior.*

***Key Words*- Face detection, Face recognition, Face tracking**

1. INTRODUCTION

At present, many incidents occur, such as theft, theft of an unwanted input occurs abruptly. Safety is therefore important in this daily life. People are always busy with their daily work and also want to ensure the safety of their favorite items. Sometimes they forget to take care of things like keys, wallets, credit cards and so on. Without this, they cannot get to their house or a place of their choice. The conventional security system requires that the user have a key, a security password, an RFID card, or an ID card to access the system. These safety systems, however, have shortcomings; For example, they can be forgotten or stolen by unauthorized persons. Therefore, it is necessary to develop software that guarantees a higher security model. One of the unique features of our brain is that it can only think in pictures, not in words. Once you've forgotten to keep the key to your car, you'll never forget having a face with you. God gave everyone a unique face. The face is the most important part of our body, so it can reflect many emotions of a person. Last year, used non-living space (smart cards, plastic cards, PINs, tokens, keys) for authentication and access to grants in restricted areas such as ISRO, NASA, DRDO and so on. , Types of biometric features such as physiological features (face, fingerprint, finger geometry, hand geometry, palm, iris, ear, and voice) and behavioral features (gait dynamics, signature, and keystrokes). Sometimes your behavioral traits may change due to illness, anxiety, hunger, etc. The face recognition and recognition system are more economical, simpler, more accurate, and no more intrusive than other biometric systems. The system is divided into two categories: face recognition (1: 1) and face recognition (1: N). In face recognition, the system needs to order facial regions in relation to those who are not, while in the recognition process system needs to compare a single face image to multiple images of the input image. This work uses the BCM2835 processor, called the Raspberry Pi card. The heart of the card is the processor above. It is a RISC processor based on ARM11. The card has special features such as a camera interface and a touch screen, making it suitable for real-time image processing. Open cv includes a variety of built-in image processing capabilities. It is BSD licensed, so libraries are free of proprietary costs. Extensive library functions simplify complex mathematical operations.

2. EXISTING SYSTEM

1) Gill et al. (2009) explain the activated network digital technology is quickly introduced into the household Automation. For the purposes of home automation, this is Technology opens up new and existing opportunities to increase device connectivity. Remote control technology synchronizes quickly with the expansion of the Internet.
2) Upadhyay and. Al. (2016) proposed a house With the Indoor Positioning System (HIPS), it is possible to locate mobile devices such as smartphones and location-based IoT applications. This paper introduces a house Indoor location system with Wi-Fi signals. The proposed system is a smart mobile robot that automatically creates radio cards for the system.
3) Shetel and Agarwal (2016) explain in their Paper for IoT Internet connectivity for all types of devices and physical objects in real-time Systems. The virtualization of this system allows Perform activities without direct physics Synchronization between devices. The IoT allows you to manage multiple tasks without Limit distances with the help of intelligent High-speed devices and networks.
4) Lee et al. (2017) explain the web in his work physical objects is an internet of things that Contains

integrated technology that helps the Development of the machine to machine or person to machine Communication. This document contains dynamic data a leaf has taken on the environmental parameters of the city of the autonomous system.

5) Chou u. A. (2017) describes in his work the automated home automation system is controlled remotely Surgery. This article discusses the problem of their installation, discovers the different solutions through different network technologies and also try to Optimize the use of this system. The House The automation system (HAS) requires heterogeneous systems, an eternal and distributed computing environment careful study to develop an appropriate.

6) Kamal et al. (2017) explain in his work how In this article, Raspberry Pi was used as a network gateway. This document uses MQTT (Message Queuing Telemetry Transport) Protocol for sending and receiving the Data. All the sensors used in this article were is controlled by the website that implements access Checklist (ACL) to provide the encryption method for the secure transmission of data. This paper is used by various sensors, wired and wireless, are connected with the Raspberry Pi.

7) Sahadevan et al. (2017) explain in his work how the internet of things works wonderfully the attention of consumers and the company The electronic market quickly at home implement Automation, smart cities, automated industries, etc. Building these applications requires many energy savings and on the market, there are cheap sensors for the developers. The server-side takes care of it Do calculations while the client is taking Sensor-actuator work maintenance. This requires a robust Network infrastructure worldwide. This Paper suggested online-offline asynchrony Communication Strategy for the Internet of Things Application, in Message Queuing Telemetry The transport protocol (MQTT) is used. This paper has implemented a portable device system on Intel Galileo, which demonstrates the feasibility of such the system without alteration of functionality.

3. Requirements

3.1 Hardware Requirements:

- **Raspberry Pi**

Fig 1:- Raspberry PI

The Raspberry Pi card is a microcontroller card used to develop various integrated level projects. His size is no more than a credit card. It has a Broadcom multimedia processor BCM2835 with [SoC] system. It also has a 512MB memory chip on the card in the middle. The Set Architecture Instruction differs from other architectures and is used for Advanced RISC Machines (ARM). The Raspberry Pi runs on a Raspberry Pi compatible operating system called GNU / Linux Raspbian. Operating systems like Windows and IOS are also compatible with Raspberry Pi. The reason for using Linus, however, is that LINUX is open source and programming oriented, which facilitates its development.

- **Camera Module**

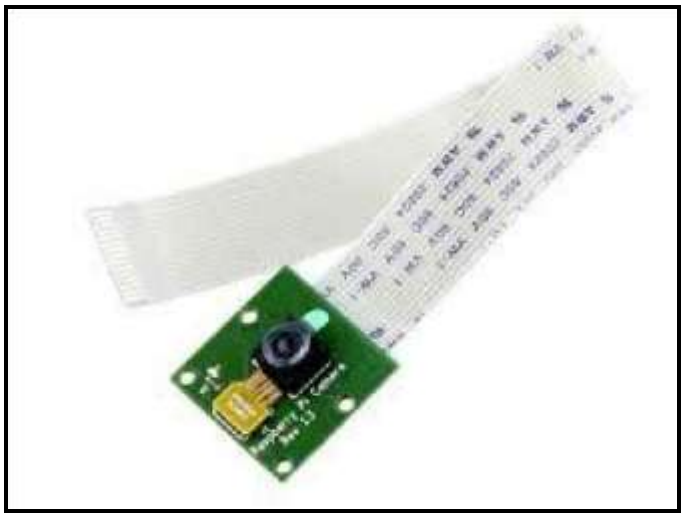

Fig 2 -: Camera Module

The Raspberry Pi camera module is an add-on designed specifically for Raspberry Pi, which attaches to one of the two small sockets on the top of the board to Raspberry Pi. This interface uses the special CSI interface, which was developed especially for the interface with cameras. The CSI bus can achieve extremely high data rates and transmits only pixel data.

3.2 SOFTWARE REQUIREMENTS

- **Opencv**

Opencv is a Python-based computer vision library that facilitates image processing.

4. ALGORITHM FOR PERSON ALERT

Step 1: Capture the camera image in real time

Step 2: Convert the RGB image to grayscale Step 3: Get the latest and latest tables.

Step 4: Find the difference between these two pictures Step 5: Threshold for this image

Step 6: Check if the difference value between the two pictures (i.e. the moving speed) is larger as the value set by the user.

Step 7: In this case, activate the alarm and send an SMS to the recipients.

5. CONCLUSION

The proposed safety system is a low-cost, low-energy system Security level because it combines two modern technologies, namely face recognition and IoT. These are Fast growing technologies in industry and science are still looking for them. That's why these two have had a significant impact on the development of the security system. Using IoT allows remote control and monitoring, and facial recognition is almost complete Impossible to hack.

6. ADVANTAGES

- Remote Monitoring.
- IoT Based.
- Scalable and flexible.
- Low power consumption.
- Low Cost

7. FUTURE SCOPE

1. Implement the system in real time and test the system in a large number of long sequences.
2. Determine the identity of a person who has entered the room. The system recognizes a number of interesting human actions.
3. The system can be used for multiple cameras or for a single camera.
4. Notification by SMS to managers and police.
5. The authenticated person can stop the alarm for a while to enter the room remotely

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