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A Face Recognition Method in the Internet of Things for Security in Smart Recognition Places

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Abstract: ***In recent years, the safety constitutes the foremost necessary section of the human life. At this point, the price is that the greatest issue. This technique is incredibly helpful for reducing the price of watching the movement from outside. During this paper, a period of time recognition system is planned which will equip for handling pictures terribly quickly. The most objective of this paper is to safeguard home, workplace by recognizing individuals. The face is that the foremost distinctivea part of human's body. So, it will replicate several emotions of associate degree Expression. A few years past, humans were mistreatment the non-living things like good cards, plastic cards, PINS, tokens and keys for authentication, and to urge grant access in restricted areas like ISRO, National Aeronautics and Space Administration and DRDO. The most necessary options of the face image are Eyes, Nose and mouth. Face detection and recognition system is simpler, cheaper, a lot of accurate, process. The system under two categories one is face detection and face recognition. Throughout this case, among the paper, the Raspberry Pi single-board computer is also a heart of the embedded face recognition system.***
Keywords: Raspberry Pi, Face recognition system

I. INTRODUCTION

IoT or Internet Effects or Internet of Things refers to the network of connected physical objects that can communicate andchange data among themselves without the need of any mortal intervention. It has been formally defined as a "Structure of Information Society", because IoT allows us to collect information from all kind of mediums similar as humans, creatures, vehicles, kitchen appliances. Therefore, any object in the physical world which can be handed with an IP address to enable data transmission over a network can be made part of IoT system by bedding them with electronic tackle similar as detectors, software and networking gear. IoT is different than Internet as in a way it transcends Internet connectivity by enabling everyday objects that uses bedded circuits to interact and communicate with each other exercising the current Internet structure. Today, the long run security may be an important subject in our everyday life. Like in Rural Areas, Cities, homes, Offices and conjointly in sensible places. Family security is that the 1st priority. we will do something for our family. In rural areas all are exploitation smarts phones. Smarts systems give net of Things. The net of things is applied in Rural Areas, sensible cities and sensible Recognition places to reinforce our security system. The sound judgment of utilizing IOT is to share data and data with everybody inall over around the world.

Face recognition system grow to be one in every of the foremost active analysis areas particularly in recent years. It's a large application among the ranges: peace, access management, Master Card verification, criminal identification, social control commerce, data security, human laptop intelligent interaction, and digital libraries. Generally, it acknowledges persons in public areas like homes, offices, airports, searching centers and banks. This mechanism permits secure access to the house by police investigation motion controlled by the embedded system. The face is that the foremost distinctive a part of human's body. So, it will replicate several emotions of associate Expression. a few years past, humans were exploitation the non-living things like sensible cards, plastic cards, PINS, tokens and keys for authentication, and to urge grant access in restricted areas like ISRO, independent agency and DRDO. The foremost important options of the face image are Eyes, Nose and mouth. Face detection andrecognition system is simpler, cheaper, a lot of correct, process. The system has two classes one is face detection and face recognition.

II. REVIEW OF LITERATURE

A. *Nashwan Adnan, Othman, Ilhan Aydin, "A face recognition method in the Internet of Things for security applications in smart homes and cities", 6th International Istanbul Smart Grids and Cities Congress and Fair (ICSG), IEEE, 2018*

In recent years, the safety constitutes the foremost vital section of the human life. At now, the price is that the greatest issue. This technique is extremely helpful for reducing the price of monitoring the movement from outside. During this paper, a period recognition system is projected that may equip for handling pictures terribly quickly. The most objective of this paper is to shield home, workplace by recognizing folks.

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For this purpose, the PIR detector is employed to find movement within the specific space.Afterwards, the Raspberry Pi can capture the pictures. Then, the face are going to be detected and recognized within the captured image. Finally, the pictures and notifications are going to be sent to a smartphone based mostly iot by using message application. The projected systems square measure period, quick and has low machine value. The experimental results show that the projected face recognition system is employed in a true time system.

B. *Abhishek Kumar, Palvadi Srinivas Kumar, Rashmi Agarwal, "A Face Recognition Method in the IoT for Security Appliancesin Smart Homes, offices and Cities", 3rd International Conference on Computing Methodologies and Communication(ICCMC), IEEE 2019*

Internet of Things is that the rising technology that evolves drastically altogether the domains like industries, medicine, companies, house hold appliances, sensible devices etc., in an exceedingly bit any IoT technology began to proliferate its hybrid applications notably within the space of image process.

The increasing integration of IoT devices and also the sensible sensors help in reorganizing the face of an individual for a more robust results and security purpose. In our analysis we have a tendency to observethe photographs of the folks and that we observe the mentality of the person in numerous mechanisms. Primarily pc version could be a thought-about joined of the terribly sophisticated domains. For such domains we've got to adapt the method of automatic or semiautomatic mechanisms with none user interaction. Our projected task can show all reasonably potential ways for playacting the higher results. In his analysis work, we have a tendency to use footage with sensors that utilizes the capabilities and principlesof IoT.

C. *Ravi Kishore Kodali, Vishal Jain, Suvadeep Bose, Lakshmi Boppana, "IoT based smart security and home automation system", International Conference on Computing, Communication and Automation (ICCCA), IEEE 2016*

In this projected work they focus on building a wise wireless home security system that sends alerts tothe owner by exploitationweb just in case of associate degree trespass and raises an alarm optionally. Besides, constant may also be used for home automation by creating use of constant set of sensors.

The leverage obtained by preferring this method over the similar varietiesof existing systems is that the alerts and also the standing sent by the local area network connected microcontroller managed system are often received by the user on his phone from any distance no matter whether or not his mobile is connected to the web.

The microcontroller employed in the present example is that the TI-CC3200 platform board that comes with associate degree embedded micro-controller associate degreed an aboard Wi-Fi protect creating use of that all the electrical appliances within the house are often controlled and managed.

D. *Anitha A, "Home security system using internet of things", School of Information Technology an Engineering, VIT University, Vellore, Tamil Nadu, India, 14th ICSET-2017*

In this projected work they are using it to form an affordable security system for homes furthermore as industrial use. The systemcan inform the owner regarding any unauthorized entry or whenever the door is opened by causation a notification to the user. Once the user gets the notification, he will take the required actions. The safety system can use a microcontroller referred to as Arduino Uno to interface between the elements, a magnetic Reed detector to observe the standing, a buzzer for sounding the alarm, and a Wi-Fi module, ESP8266 to attach and communicate using the web. The most benefits of such a system includes thebenefit of fitting, lower prices and low maintenance.

III. METHODOLOGY

The main aim is to guard our family and friends and colleague by using real time technique. For this purpose, the Raspberry pi camera is captured the photographs and movements of individuals once nobody presents at homes or offices. Then face and movements detected and recognized with in captured image.

Then with the assistance of IOT, the any well- known person returnsto home or offices then send solely notifications to Email via sensible phones and for unknown person send captured pictures, movements to Email using smarts phones. The projected systems area unit period, quick and have low procedure price. The experimental results show that the projected face recognition system is commonly utilized in a very true time system.

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IV. FLOW CHART

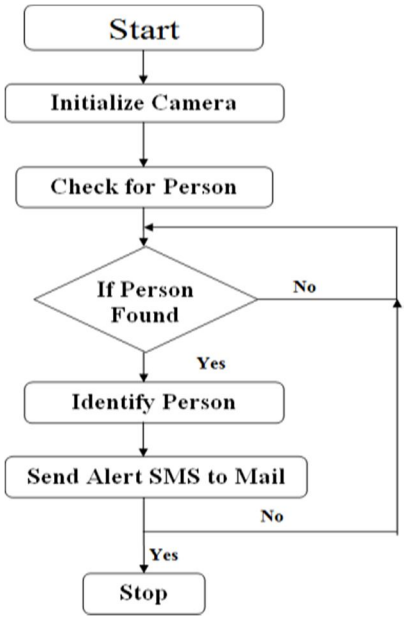


Figure 1: Flow chart for proposed work

This system is works for Security Purpose. Once we don't seem to be present in Homes, Offices or any places, in those placesneed a lot of security. Everyone needs a lot of security so to boost our daily busy life by using thing of factor and Raspberry Pi. The Project of IOT primarily based for sensible recognition places is consisting of Raspberry pi four, webcam, open CV. Once the device is prepared and by providing needed commands it starts getting the video. Now, it compares the person within the video with the information footage present in it. Then associate degree email is sent together with the image of the person.

V. ADVANTAGES

A. Increase the Security.
B. To determine who is visited at our home or offices when we are not present.
C. Alert from Thief.
D. Increase and secure our smart recognition places.
E. Alert from Unknown person.

VI. DISADVANTAGES

A. Huge cost
B. Dependency on internet
C. Dependency on professional
D. Fear of hack hence protection required everywhere

VII. RESULT AND DISCUSSION

The overall Project of IoT based Smart Home Security System is consists of Raspberry pi 4, webcam, OpenCV. Once the device is ready and by providing required commands it starts acquiring the video. Now, it compares the person in the video withthe database pictures present in it. Then an email is sent along with the picture of the person. Consisting raspberry Pi with enclosurand the camera module which is integrated. When we not present at homes, offices or smart recognition places these techniques helps to detected known and unknown person visited at our offices, homes and smart recognition places. When known person visited then only notification send to mail via smart phones and for unknown person visited then captured picture and send to mail via smarts phones. We already filled known person data into system. So that known person information send notification viasmart phones.

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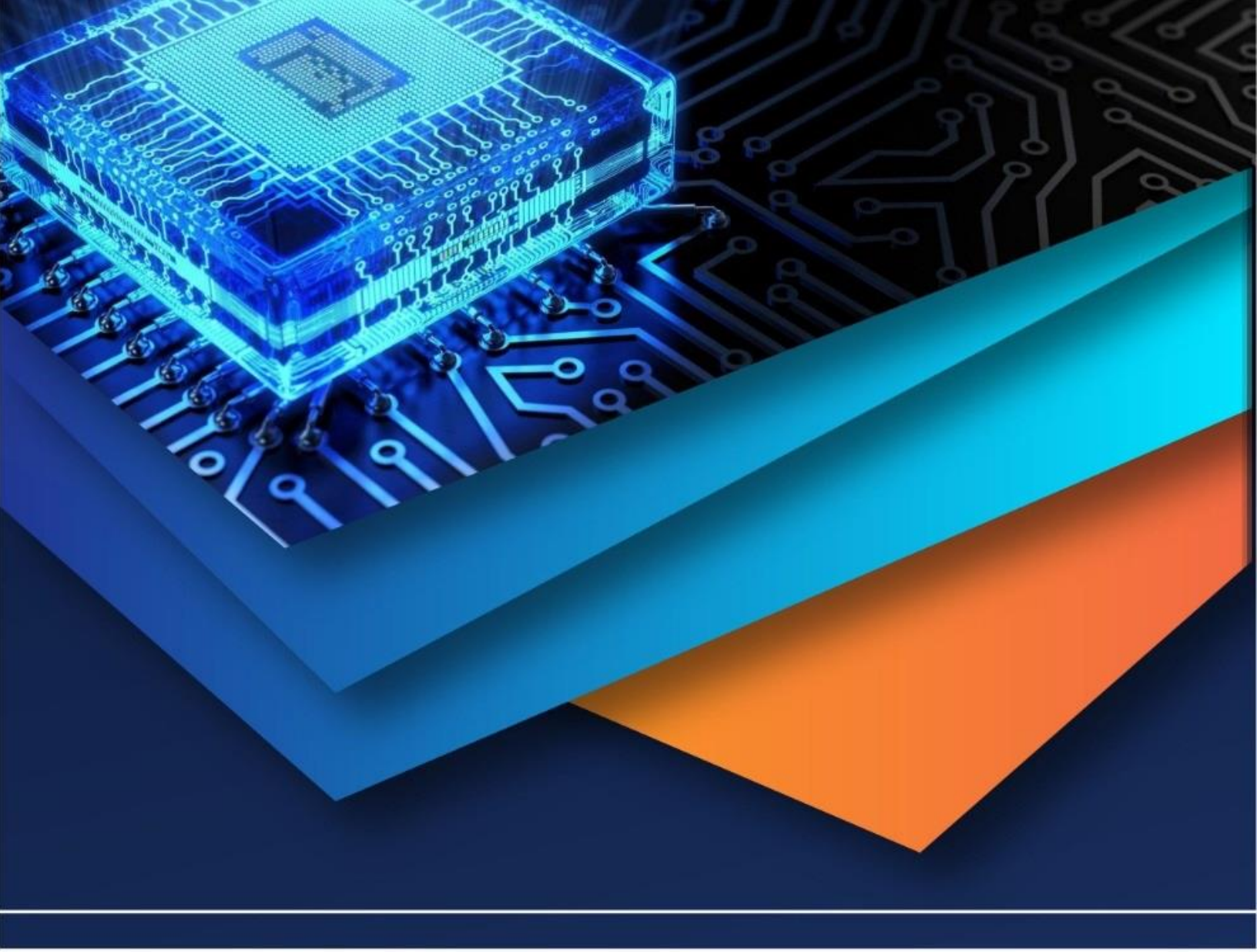
Figure 2: Hardware setup.

VIII. CONCLUSION

The IoT device market has undergone radical changes in only a few short years. Starting with disparate devices and no ecosystems to speak of, the market has now grown to encompass enterprise players working together to create ecosystems, tailored for mobile technology, which allows IoT devices to become interconnected. This system is based on Raspberry Pi minicomputer with IOT integration Face recognition using advanced technology like tensorflow deep learning. This system also provides the live stream of video to user using internet.

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