VOICE CONTROLLEDAPPLIANCES BASED ON AI

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ABSTRACT-Smart security system has become indispensable in modern daily life. The proposed security system has been developed to prevent robbery in highly secure areas like home environment with lesser power consumption and more reliable standalone security device for both Intruder detection and for door security. The door access control is implemented by using face recognition technology, which grants access to only authorized people to enter that area. The face recognition and detection process is implemented by principal component analysis (PCA) approach and instead of using sensor devices intruder detection is achieved by performing image processing on captured video frames of data, and calculating the difference between the previously captured frame with the running frames in terms of pixels in the captured frames. This is the stand alone security device has been developed by using Raspberry Pi electronic development board and operated on Battery power supply, wireless internet connectivity by using USB modem. Auto Police e-Complaint registration has been achieved by sending security breach alert mails to the nearby police station e-mail id. This proposed is more effective, reliable, and this system consumes very less data and power compared to the other existing systems.

Key Words: Home security system, Door lock access, Face Recognition, Security breach alerts, Intruder detection

INTRODUCTION

We want to provide high level security to home by using IoT technology [10[11][12][13]. IoT is new technology which has made an enormous impact on the modern world. The IoT can be defined as the system of interconnected mechanical, electrical and computing devices and other objects like animals, humans which are given an unique identifier and this system has an ability to transfer data over a wide network of such interrelated systems without requiring human-to-human or human-to-computer interaction. In short, the IoT has an ability to make things self-instructed. Hence it can make significant impact on modern security technologies [2][10]. Home security has become a solemn issue in the society. Anyone can be harassed in its own house. Older security systems can't tackle some situations like hacking, break down in the system. Unwanted persons like thieves, murderers and some known criminals will try to intrude in the home any time they want. Also we know that the gadgets nowa days are not that secured and hence can be easily hacked. Even intruders have found their way to take over these gadgets. So to avoid such situations, we have to develop the system in such way that no one should get an intrusion to the system. The use of IoT will enhance some security level as well as it will help in accessing and controlling the system remotely. Therefore we are trying to develop a face recognizable [7] automated door unlocking system using an IoT[10][11][12]. IoT will enable sensing, actuating and communication in the system. System can be made automated easily. So we can go on developing a smart home by extending this security system. To develop this we will use a Raspberry Pi micro-controller board for system development, a pi camera module for face recognition and a programmable stepper motor to open door lock. We will install appropriate linux based Raspberry pi operating system on raspberry pi micro-controller board. For the door unlocking system, we will place a stepper motor at door latch. This motor will be programmed in such a way that when the system authenticates the person in front of the camera, the motor will rotate to open latch. We will use image processing technology to authenticate the person to enter in home. For image processing, we will use pi camera module. Pi camera module is attached to Raspberry pi, and it aids to store various faces in the databases. When someone wants to enter in home, he should stand in front of the camera. Camera will recognize the face and compares with the faces stored in the LFW database [8]. If the face matches, the door will be automatically unlocked [3], otherwise a warning call will be sent to the owner of the house

LITERATURE REVIEW

MULLA.MPATIL, R. 2015 .FACIAL IMAGE BASED SECURITY SYSTEM USING PCA.

Security is one of the utmost requirements of homes and businesses which requires biometric identification. This paper aims to identify a person through face recognition. Face recognition is very complex and multidimensional problem. A MATLAB based Principal Component Analysis is used for face matching decision. The system is designed in MATLAB[14][15][16][17] which converts facial images to feature characteristics of initial training database images. Facial features are extracted from the face and eigenvalues are calculated and represented as a eigen vector. Comparison of unknown face image and database image is done using Euclidian distance method. The recognized facial image has minimum Euclidian distance with the database images. When face is recognized by MATLAB Code it will provide the signal to ARM7 to open Gate and System will send SMS to the authorized person using GSM module. Security system using MATLAB and Embedded system design is cost effective, reliable and highly accurate.

Gubbi, Jayavardhana,. (2013) Internet of Things (IOT): A vision, architectural elements, and future directions. Future Generation Computer Systems 29.7: 1645-1660.

Ubiquitous sensing enabled by Wireless Sensor Network (WSN) technologies cuts across many areas of modern day living. This offers the ability to measure, infer and understand environmental indicators, from delicate ecologies and natural resources to urban environments. The proliferation of these devices in a communicating–actuating network creates the Internet of Things (IoT), wherein sensors and actuators blend seamlessly with the environment around us, and the information is shared across platforms in order to develop a common operating picture (COP). Fueled by the recent adaptation of a variety of enabling wireless technologies such as RFID tags and embedded sensor and actuator nodes, the IoT has stepped out of its infancy and is the next revolutionary technology in transforming the Internet into a fully integrated Future

Internet. As we move from www (static pages web) to web2 (social networking web) to web3 (ubiquitous computing web), the need for data-on-demand using sophisticated intuitive queries increases significantly.

JANUZAJ, Y., LUNA, A., RAMAJ, V. 2015 REAL TIME ACCESS CONTROL BASED ON FACIAL RECOGNITION.

Nowadays the number of thefts and identity fraud has become a serious issue. In order to avoid these thefts and identity fraud, a face recognition system must be established. The scope of this project is to develop a security access control application based on face recognition. The haar-like features is used for face detection and PCA algorithm is used for face recognition. In order to achieve a higher accuracy and effectiveness we use OpenCV libraries and python computer language. Training and identification is done in embedded device known as Raspberry Pi. During our paper we focus on accuracy increment by controlling parameters such as background, light and number of trainings. During our paper we also explicate cost issues of our application compared with commercial applications. ([1], [3], [4]) During the past few years, it has become necessary to have a reliable security system, which can secure our assets in the best and safest way possible. Traditional security systems require the user a key, a security password, an RFID card, or and ID card to have access to the system. However, these security systems have deficiencies, for example, they can be forgotten or stolen from unauthorized people ([2], [6]). As a result, there is a need to develop a software that guarantees a higher security level. Face recognition is one of the most popular methods of biometric technology ([5], [9]). When compared to other biometric technologies, like fingerprint, voice recognition, and retinal scan, face recognition can be considered more natural. Face recognition also allows access to more than one person, while only giving access privileges to certain people. In our device, we will be using a Pi Camera, which will provide our entry data, as images. The pictures taken will be saved in a folder called „positive". After being saved, the images will be converted in numeric images, as XML file. When the camera scans a person trying to be authenticated, it compares the image to the earlier ones saved in the database.

LWIN, H., KHAING, A., TUN, H. 2015.AUTOMIC DOOR ACCESS SYSTEM USING FACE RECOGNITION Authentication is one of the significant issues in the era of the information system. Among other things, human face recognition (HFR) is one of the known techniques which can be used for user authentication. As an important branch of biometric verification, HFR has been widely used in many applications, such as video monitoring/surveillance system, human-computer interaction. This project proposes a method for automatic door access system using face recognition technique by using python programming and from OpenCV library Haar cascade method. Object Detection using Haar feature-based cascade classifiers is an effective object detection method proposed by Paul Viola and Michael Jones. This is the standalone security device has been developed by using Raspberry Pi electronic development board and operated on Battery power supply, wireless internet connectivity by using USB modem. Automatic e-mail notification has been achieved by sending security alert mail to the user e-mail id. This proposed is more effective, reliable, and this system consumes very less data and power compared to the other existing systems In today's world of connectivity and smart devices there is an urgent need to modify our existing day to day objects and make them smart, also it is not the era when we can blindly trust the old and conventional security measures, specifically speaking is our door locks. To change and modernize any object we need to eliminate its existing drawbacks and add extra functionality. Face detection is more challenging because of some unstable characteristics, for example, glasses and beard will impact the detecting effectiveness. Moreover, different kinds and angles of lighting will make detecting face generate uneven brightness on the face, which will have an influence on the detection process. An intensive study of OpenCV platform and its inbuilt libraries has been conducted to generate a code, which does correct and reliable facial recognition with new and efficient use of hardware. This proposed system also acts as a homesecurity system for both Person detection and provide security for door access control by using facial recognition for the home environment. The human body is identified as an intruder within a home environment achieved by capturing live video from web camera and processing will be done on captured video frames. The web camera to capture the series of images as soon as the person press switch.

Y. Janzen. Et al. [4] proposed continuous permissionrights for face identification acknowledgment utilizing,Raspberry Pi rather than GSM. The confinement of the tasknot able to handle the foundation light circumstance andsurrounding light situations.

H.Lwin.et al. [5] has introduced Door lock get to aframework which comprises of 3 partitions: to be explicitface acknowledgment, face identification, along secureentryway gets to control. Someone is needed at the area inverifying unapproved individual's pictures for framework aswell as make more proper move. A (PC) is related to themicrocontroller, the whole framework won't perform ifdevice is slammed.
M. Chowdhury.et al. [6] have actualized privacyframework weather an individual came at the entryway itwas informed to the mortgage holder by means of email aswell as social networking sites then the client could see theindividual remaining at the entryway utilizing the camerafrom a remote area.
G.senthilkumar.et.al.[7] proposed the picture andcontrasted it and the server yet the constraint is theframework that cannot perform the task legitimately over thesurrounding positions.
M. Carrick et al. [8] done research on Face RecognitionSystem dependent on 8 face mechanism by that they canutilize Eigen technique over face acknowledgment andEuclidean separation technique to analyze picture ofindividual worried about the pictures in the database. It wasan extremely effective and quick strategy and furthermoregave high exactness.
S. Jogdand.et.al [9] designed mechanism for developingthe automatic door accessing system that performs facedetection and reorganization mechanism. for face locationand PCA for the correlation of pictures.
U. Sowmiya.et al [10] created in associate any entrywayby the web. Here the client additionally executed a PIRsensor as well as camcorder. PIR sensor used for recognizingindividual along camcorder utilized in catching record datafor individual at entryway.Video was visualised by the 3gdongle to an approved individual. They have additionallytalked about a few favourable circumstances of thisframework. They had closed utilization of this framework inbanks, medical clinics and so on.
J. Karmic et al [11] designed two types of frameworksare proposed, one depends on GSM innovation alongdifferent uses a camera to recognize the gatecrasher.

EXISTING SYSTEM

Before IoT technology came into the existence we areusing CCTV cameras for security purposes for houses,offices, co-operate buildings, showrooms etc., if any incidenthappens the camera captures the incident and stores thatinformation in the form of video on the server. If anyincident happens the police people takes the visuals fromCCTV cameras to find the victim. Sometimes if the personface is with clarity we can find the victim by taking thescreenshot of the victim from the video. Here problem comeswhen the person faces is in appropriate with similarity andblur images.

IMPLEMENTATION

Face recognition is an important application of image processing owing to its use in many fields. An effective face recognition system based on Matlab is developed in the project. Face recognition has been a best choice after problem of biometrics and it has a various type of applications in our present life. An efficient face recognition system can be of great help in forensic sciences, identification for law enforcement, authentication for banking and security system, and giving preferential access to authorized users i.e. access control for secured areas etc. A real time door lock access system by face recognition system based on PCA is presented in the project. The technique used here involves generating the ‘Eigen faces’ then projecting training data into face space and evaluation of a projected test element by projecting it into face space and comparing to training data. The face recognition systems presented here can extract the features of face and compare this with the existing facial images of database[19][20][21]. The faces considered here for comparison are still faces.

CONCLUSION AND FUTURE WORK

In this proposed system door access system by using face recognition and along with the Intruder detection system has been presented. This system has been tested successfully with home door lock access control based on face recognition method by verifying enrolled facial images. The police department control room of a nearby place and concern persons will be informed successfully about the intruder detection via e-Mail and SMS alert generations along with details attached. The proposed system is completely standalone and wireless to form a reliable, robust, easily operable, and low price security system. The internet communication has been achieved by connecting through USB cellular data card. The battery power source has been provided to make this wholesystem as standalone security device successfully. I conclude that various operations are successfully tested and results are documented. This proposed system can be enhanced by using the infrared

image scanner camera to find concealed weapon detection under the clothes of the human body. We can also use this security system by making required modification to the system in an area like banking sector to provide more security to the lockers, based on their facial authentication and keep track of account holders record of information when and who is accessed the lockers. In this way we can enhance the proposed system effectively by making some modifications according to requirements.

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