SECURITY USING FACE RECOGNITION AND ALERT SYSTEM

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Abstract: ***Unauthorized access, which means when someone enters into your device, system or your house without your permission is said to be unauthorized access. Several methods are being used to handle these unauthorized access problems. This study demonstrates to increase the capability of the devices we have constructed***

Our proposed method integrates a better approach, intended to advance the cooperativeness of the explore operation. In this work, we develop the application with a device to eradicate the unauthorized access of unknown persons into our premises. Our application can be able to alert the persons whenever any unknown person is trying to enter into our premises.We propose a method in which a device is built by simply providing facial recognition of the person and the device that can be considered a useful system since it helps to reduce the limitations obtained from existing system. By providing support to these types of devices, we will prevent ourselves from the unknown persons.This framework is comprises of two sections: hardware part and programming part. The hardware part comprises of a camera module and the software part has coding part.

At the point when an individual goes into the spot of inquiry, an arrangement of snaps are taken by the camera which are saved and afterwardssent to the software where they are compared and matched with the pre-existing data set of snaps of trusted individuals. If it matches, the user will be authenticated or an alert will be sent to the client on the off chance that it isn't perceived.

Even though there are numerous types of security systems available on the market today, the theft rate is quite high. We propose a technology that prevents burglary in high-Security zones while consuming less energy. Face-recognition technology is used in this system, allowing only authorized

persons to enter the spaceOn the off chance that others attack the spot without access or utilizing some other implies, then, at that point, the framework cautions the security staff by calling and transfers the video caught by the surveillance camera.

Keywords: ***Face detection***, Face ***recognition, Security, Alarm, Unauthorized, Access.***

INTRODUCTION

The distinctive face traits of humans can be used to precisely identify them. The majority

of biometric data must be obtained with specialized hardware's such as fingerprint scanners, palm print scanners, and DNA analysers. As a result, face recognition has become popular in the field of biometrics. Face recognition has applications in biometrics, law enforcement, and surveillance.

We'll start by detecting human movements in order to detect the face. The person's authority to allow access is then determined using face recognition. If the authorized person or owner of the device does not recognize the person whose face is not recognized, the device will ring constantly until he observes it to turn off. We are avoiding any security breaches that may occur if the electronic equipment falls into the wrong hands by doing so.

OBJECTIVES

Face recognition identifies the image that comes in front of the camera module from the pre-stored dataset.The biggest challenge is to make it happen in reality.

Face recognition can be done in two types:

• In this procedure, the system addresses a faceand registers it and then compares it with the pre-stored dataset this procedure is also known as face recognition digital on boarding.

• The user is authenticated first and the data is compared with pre-stored data. If the user's face matches with the pre-stored face of the users the system grants the permission to access.

RELATED WORK

Paul viola et al [8] describes in the viola-jones algorithm that the image is detected in gray-scale and then starts finding location on coloured image .There are three key contributions. The features of this algorithm are: Robust, Real-time, Face Detection. It has four level: Firstly, in selecting the Haar-like feature which is used in recognizing an object. It helps in recognizing and differentiating the feature of the face whether the region is lighter or darker with help of pixel and give a value to features. Secondly, to perform computations on these pixel we use "integral image". Thirdly, we have Ada-boost algorithm which is used to pick the best features out of the features that are available. Finally, with the help of cascade classifier image is detected.

M.A Turaket al [1] have developed acomputer framework whichcan find and track the subjects, and afterwards recognizing individual by comparing attributes of the face with those of authorised people.Their approach was to design a computational models which is fast, simple, accurate which can be used in home, office environment so instead of using multidimensional they used two dimensional recognition which are described by a small set of two dimensional characteristic views. When the system captures an image it processes it and we get the significant variations among known face images. The significant features are known as "Eigen faces," because they are eigenvectors of the set of faces which are used in computer vision issue of face recognition, they do not necessarily correspond to features as eyes, ears, and noses. First, a group of authorised characteristic face images are taken, then calculate eigenvectors, eigenvalues using matrix, combining normal calculate training set of images, calculate class vector, pattern vector, if any new image is identified as known individual then it is added to pre-stored data set , these are the steps for Eigenfaces approach to face recognition.

Mayak Chauhan et al [9] have described that in the present world, the biggest problem is

identification and authentication so, face detection has an important role in today's reality. Manyseveral existing face detection methods are analysed and discussed here. Each and every method is explained in detail and compared with the other in terms of key assessment parameters. As human face detection is acquiring interest as an important research in field like automatic face detection, automatic authorization, interaction of human and computer etc. The other part of paper it comprise how the face detection is evolved. The main aim of this paper is to come up with an approach that is a good technique for face detection.To improve the performance of face detector, various standards are used like requirement of number of samples in training, learning time etc.

HariyangZhag et al [10] describes Principle Component Analysis (PCA) is the most vital and successful, efficient method in extracting featuresfor face recognition and compression. The main aim of using PCA is, the image always needs to be transformed into 1-D vector constructed from 2-D facial image .This paper mainly consists of the method of face recognition on the basis of PCA and K-nearest Neighbor and comparison of Nearest Neighbor and K-Nearest Neighbors explained

METHODOLOGY:

1) Capture:

• To get an live video of a person using a camera module

• Face localization is a process of extractingcertain part of the image area in form of aframe, once a face is found in the image captured by camera it goes to next part of the process

• Face normalization is image preparation for feature extraction. Some similar properties are: geometry, conditions (like lighting effect, expressions), occlusions

• It will crop the image and it will only focus on the vectors of the geometrical features of the face so that we can easily focus the face

• It will extract the unwanted images

2) Extraction:

• Required data is extracted from the video using convolution

•many algorithms are implemented to extract the feature out of the face

• In this stage a subset is created from the features that matches original data by applying certain rules we have different algorithms like CNN

• Based on this algorithm we will be extracting the image

3) Comparison:

• The extracted data is compared with the images that are pre-stored as valid users.

• Identified facial components are going to reduce that selection and compare with the original feature set to make the decision.

• Security system allows to detect based upon the features like eyes nose or distance between eyelids.

4) Matching:

• The program then resolves whether the features extracted are matched or not.

• The image is matched with all the existing database with all the registered users that the system has and it will come up with a decision whether the person is authenticated or not.

• It is scanned before or not basically it classifies the huge database of users with their facial component

5) Alert:

• In alert basically if the data and the face that is already stored is recognized then it will get the access
• If it is not matched admin will be alerted via text.

LIMITATIONS:

If the user is in some remote places wherethe network is out of range or has difficulty connecting to the network, the message will not be delivered.

The threshold value may improve with light normalization and good facial segmentation. The precision pace of face acknowledgment programming is still not 100% . Changes in lighting, face situating, cosmetics, hairdo, beard growth, glasses, and different extras decline the exactness rate.

CONCLUSION

We propose a method in which a device is built by simply providing facial recognition of the person and the device that can be considered a useful system since it helps to reduce the limitations obtained from existing system. By providing support to these types of devices, we will prevent ourselves from the unknown persons. The computational models utilized in this undertaking were chosen after exhaustive examination, and the positive testing results show that the choices were OK. It is useful as a regular household item to take preventive measures from unknown persons and enhances safety for the people especially if they are living alone. The number of eigen faces were confined so it didn't accomplish face acknowledgement precision over close to 100%.
In this trial examination, the situation was assessed under incredibly thorough circumstances, and it is normal that genuine execution would be fundamentally more exact. The totally computerized front facing view face recognizable proof framework showed somewhat close exactness.

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