Face Detection and Recognition Employee System (lock /unlock)

Amit Singh[1], Tannu Jain[2], Rohit sharma[3], Miss. ShivaniGaba[4]
[1,2,3]*UG Student, Department of Computer Science & Engineering,Panipat Institute of Engineering & Technology,Samalkha,Panipat,Haryana,India*
[4]*Assistant Professor of Computer Science & Engineering, Panipat Institute of Engineering & Technology,Samalkha,Panipat,Haryana,India*

ABSTRACT-Identifying a person with an image has been popularized through the mass media. However, it is less robust to fingerprint or retina scanning. This report describes the face detection and recognition to detect employee faces for taking attendance undertaken for the visual perception and autonomy module at Panipat institution of engineering and technology. It reports the machineriespresented in the Open-Computer-Vision (OpenCV), Tkinter componentcollection and approach to implement them using Python. For face detect, Haars-Cascades were used and for face recognition Eigenfaces, Fisherfaces and Local dualisticarrangement were used. The approach is described all together withmovementgraphs for each stage of the system. Next, the results are shown involving plots and screenshots followed by a discussion of encountered challenge. The report is determined with the authors' opinion on the project and probable application.

Keywords- Face recognition, Face capturing, Attendance management, Python, Attendance System

1 Introduction

1.1 The purpose of Project

Face detection is a computer technology that determines the location and size of human face in arbitrary (digital) image. The facial features are detected human face and match the face from the face sample that store in the database. In general, there are two method of taking employee attendance. First manually and second is Automatic. Employee locked and unlocked system provide the manual free attendance system. There are no need of paper for taking attendance. Simply by using by face detection it detects faces of employee and taking attendance by matching employee faces from the face sample collected or store in the database of the system.

1.2 Technology and Development Environment

The system uses the PYTHON technology to connect to the development of Local database, the front interface design is to use HTML, CSS.

2 Demand Analysis

2.1 Analysis of Current Situation

The development of Face detection and recognition employee system helps to take attendance in easy way. Because in present time all the things goes digital so manually taking attendance is hard to maintain and consume lots of time. but because of this system the time consumption is decrease and the attendance are easy to main and can be store on online server like google drive, adobeetc. is can save the data and the data.

2.2 System function analysis

Low level analysis

Based on low level visual features like color, intensity, edges, motion etc. Skin Color BaseColor is avital feature of human faces. Using skin-color as a feature for tracking a face has several advantages. Colourhandling is much faster than handling other facial features. Under certain illuminationrequirements, shade is training. This stuffmakerequestassessment much easier for only ainterpretation model is needed for motion evaluation. Stalking human faces used color as a highlight has numerous problems like the color interpretation of a face obtained by a camera is influenced by many factors (ambient light, object movement, etc)

Gray Scale Base:

Gray knowledgesurrounded by a face sampleto be treat as vitalelements. Faceselements such as supercilia, and lips lookusuallydarker than their adjoining facial constituencies. Different CSEnot feature extraction algorithms searchfor local leadensmidgens within segmenteds facial regions. In these algorithms, the input imagesare first enhanced by contrast-stretching and gray-scale morphological routines to improvethe quality of local dark patches and thereby make detection easier. The extraction of darkpatches is achieved by low-level gray-scale thresholding. Based method and consist three levels. Yang and hung presented new approach i.e. faces gray scale behavior in pyramid (mosaic) images. These systemsoperatesclassified Face positionentail three leveling. High two level based on mosaic images at unique resolution. In the lower level, edge detection method is proposed. Moreover, this algorithm gives fine response in complex background where size of the face is unknown.

3 System feasibility analysis

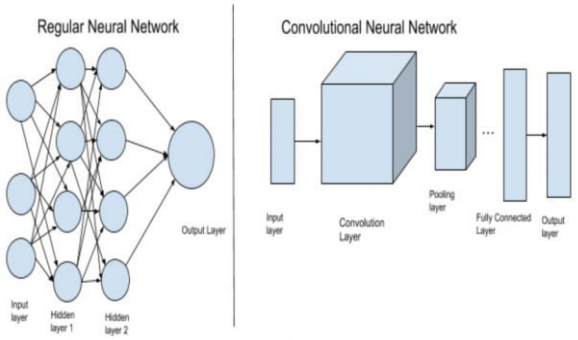
3.1 Economic viability

Anmonetarypossibilityevaluation is a standard for influencing the final market situation of a website. Terrificmonetarypracticability analysis is beneficial for designexecution and management.

In this system expansionprocedure, the expertise used, from the file to the educationinstruments, and then to the server are free, so the cost ofthe development of the system is only invested in time and effort, therefore, the system is efficient.

NETWORK DIAGRAM:

A CNN (Convolution Neural Network) uses a system like a multilayer perceptron that has been designed to process the requirements faster. The CNN layer consists of an input layer, an output layer and a hidden layer that includes multiple convolution layers, pooling layers, fully connected layers, and normalization layers. The removal of limitations and increase in efficiency for image processing results in a system that is far more effective, simpler to trains limited for image processing and natural language processing.In summaryThis system is completely feasible.



4 The System Design

4.1 System function design

1.Login: All user who already employee have to log in. By entering the user id or password.

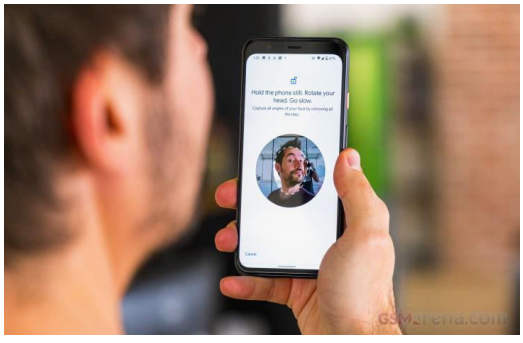
2.Register: In this section employee has to fill his/her info and can become new member whatever they want to read.

3.Forget password: If the employee forget his/her password they can make new password by using the security question and answer they were provide when they registered new account.

4.Employeedetails: In employee the employee easily fill his/her information such like emp id, name, contact etc.

5.**Face collecting sample**:First the system collecting the face sample and store the data in the open cv file when the system start scanning the face it compared the real time face sample to the store the face data in the system.

6.Face unlocked: In face recognition the system recognized the face and scanning the face from the collecting sample of face in the database. If the data sample of image same as real time face detection it shows unlocked message on the screen.

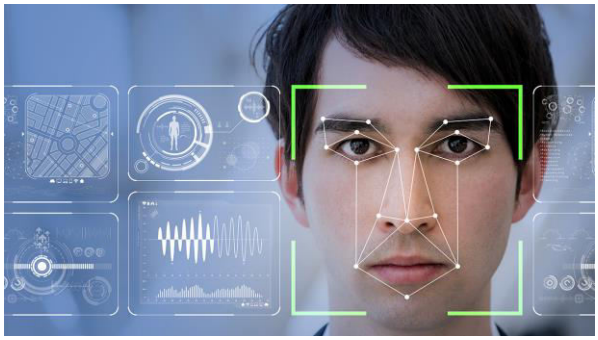


7.Home page: Home page is the junction of all the pages like trained, recognition, details etc. you can easily go to next page from Home page.

8. View photo: view photo is module in much user can easily view the photo that store in local database or server database

9.Trained Data: Trained data is a module in which the photo sample trained by the system that are stores in local database.

10.Face recognition: After the trained the image sample the system is ready for recognized the face in real time. The system scanning the face sample to real face detection after the apply the logic it gave the result.



11.Attendence: After the recognition, the system take attendance. Attendance system using face recognition is the method of recognize employee by using face biostatic based on the high-definition monitoring and other computer technologies.

12.Data in excel: After taking the attendance the data save in Excel file.

4.2Logical Structure Design of System Database

Permitting to the operationallayout of the structure, by examining the structurearrangement and constraints, we can know that the system should ha the difference between the five tables, linked with each other, together comprise the organization'scatalogsection.

5 Methodcompletelayout and implement

5.1 Build the Development environment

(1) Operating System: Windows 7 or later

(2) Software: PyCharm, Python

(3) Disk space: 30MB

5.APPLICATION OF OPENCV OpenCV's application areas include:

- 2D and 3D feature toolkits
- Egomotion estimation
- Facial recognition system
- Gesture recognition
- Human–computer interaction (HCI)
- Mobile robotics
- Motion understanding
- Object identification
- Segmentation and recognition
- Stereopsis stereo vision: depth perception from 2 cameras
- Structure from motion (SFM)
- Motion tracking • Augmented reality

6. Conclusion

Thus, the aim of this paper is to capture the video of the employees convert it into frames, relate it with the image sample that store in the database. By the using of this system, it saves the time and cost. And it also helps to secure the data in local disk, cloud server etc.

This paper describes the mini project for visual perception and autonomy module. Next, it explains the technologies used in the project and the methodology used. Finally, it shows the results, discuss the challenges and how they were resolved followed by a discussion. Using Haar-cascades for face detection worked extremely well even when subjects wore spectacles. Real time video speed was satisfactory as well devoid of noticeable frame lag. Using open cv in the place of TensorFlow is much efficient and easy for small data.

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