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 ijircce@gmail.com

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Face Recognition Attendance System

Rajamanickam, Rajesh Kumar, Natraj M, Koushik Muthesh P, Mr. Jovin Deglus

UG Student, Dept. of I.T., Sri Shakthi Institute of Engineering and Technology, Coimbatore, India

Assistant Professor, Dept. of IT., Sri Shakthi Institute of Engineering and Technology, Coimbatore, India

ABSTRACT: The main purpose of this project is to build a face recognition-based attendance system for educational institution to enhance and upgrade the current attendance system into more efficient and effective as compared to before. The current old system has a lot of ambiguity that caused inaccurate and inefficient of attendance taking. Many problems arise when the authority is unable to enforce the regulation that exist in the old system. Thus, by means of technology, this project will resolve the flaws existed in the current system while bringing attendance taking to a whole new level by automating most of the tasks. The technology working behind will be the face recognition system. The human face is one of the natural traits that can uniquely identify an individual. Therefore, it is used to trace identity as the possibilities for a face to deviate or being duplicated is low. In this project, face databases will be created to pump data into the recognizer algorithm. Then, during the attendance taking session, faces will be compared against the database to seek for identity. When an individual is identified, its attendance will be taken down automatically saving necessary information into a database system.

KEYWORDS: Face Recognition ,LBPH , face detection.

I. INTRODUCTION

This application shows the details of face recognition attendance system. This system contains Admin, Staff and Student hierarchy. Only The admins can change the values in the database. Admins have the access to add Staffs and Students, they can train the student data or delete the student data, they also have the access to generate attendance. The Staffs can mark the attendance for students and they can grant permission for the prior request for Leave by the Students. Students can view their attendance and ask for prior permission for leave and also they can pay their fine through this application. The attendance module is to generate attendance and Acknowledgement module is to accept or deny the Leave request of the students.

The existing system based on this application is found to have more drawbacks. The system automation is the main drawback of the existing system. But this proposed system is reducing the drawbacks. This system has developed so that the existing system's drawbacks have been enhanced. The system is developed with PYTHON as a front-end language and MS SQL as a back-end language. These two languages are making a best connectivity in offline which makes the current application to be differ from all other existing applications. Along with, interface and backend server interaction are also easy.

As the Face recognition attendance system is integrated with Leave management System the Proposed system Simplifies the procedures for Leave application and reduces a huge amount of pen and paper work.

The purpose of the system is to reduce the work load and simplify the attendance procedures in educational institutions. The Future Enhancement of this system will be to implement this in all kinds of MSME where there is payroll based on the attendance of the employees.

II. LBPH – LOCAL BINARY PATTERN HISTOGRAM

Local Binary Pattern (LBP) is a simple yet very efficient texture operator which labels the pixels of an image by thresholding the neighborhood of each pixel and considers the result as a binary number. **Local binary patterns (LBP)** is a type of visual descriptor used for classification in computer vision. LBP is the particular case of the Texture Spectrum model proposed in 1990. LBP was first described in 1994. It has since been found to be a powerful feature for texture classification; it has further been determined that when LBP is combined with the Histogram of oriented gradients (HOG) descriptor, it improves the detection performance considerably on some datasets. A comparison of several improvements of the original LBP in the field of background subtraction was made in 2015 by Silva et al. A full survey of the different versions of LBP can be found in Bouwmans et al.

Parameters: the LBPH uses 4 parameters:

- **Radius:** the radius is used to build the circular local binary pattern and represents the radius around the central pixel. It is usually set to 1.
- **Neighbors:** the number of sample points to build the circular local binary pattern. Keep in mind: the more sample points you include, the higher the computational cost. It is usually set to 8.
- **Grid X:** the number of cells in the horizontal direction. The more cells, the finer the grid, the higher the dimensionality of the resulting feature vector. It is usually set to 8.
- **Grid Y:** the number of cells in the vertical direction. The more cells, the finer the grid, the higher the dimensionality of the resulting feature vector. It is usually set to 8.

III. ISSUE WITH EXISTING SOLUTIONS

Currently, in many organizations where face recognition attendance system is being used does not support Group attendance, but we have simplified this method by providing group attendance from live feed or through captured image.

Most of the Face recognition attendance systems are not cost effective so MSME and educational institutions does not prefer this attendance method, but we have implemented economically feasible face recognition attendance system integrated with Leave Management System.

In existing systems Face recognition attendance should be taken in a controlled environment but in our model accuracy can be achieved even in uncontrolled environment.

In existing system, There is the possibility that facial recognition systems might not be able to identify women or people of color. Although many think it is just a misconception, some reports have emerged complaining about the same thing happening. This might occur as the problem after the first implementations, where the dataset is not very large and contains information with limited characteristics.

IV. PROBLEM STATEMENT

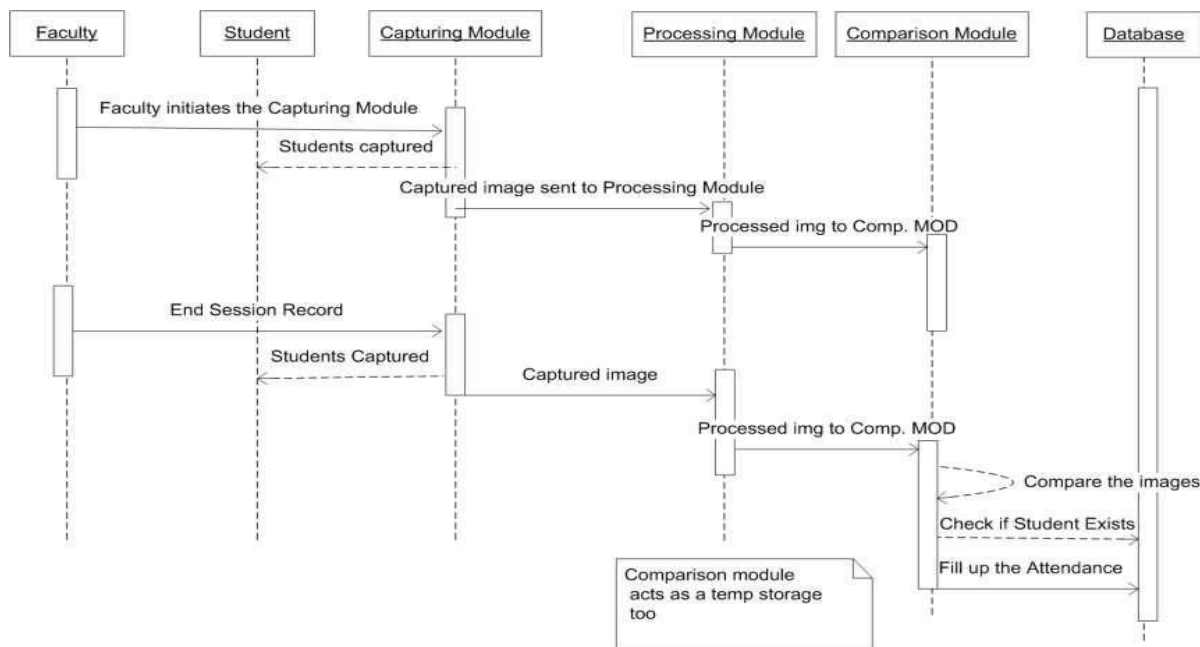
Most of the educational institutions and Daily or weekly laboured factories use pen and paper for attendance, to reduce the complexity and physical work and to automate the attendance system this model is proposed with technical and economical feasibility.

V. PROPOSED SYSTEMS

The objectives for creating this system are:

- Automate the attendance process.
- Admin can easily manage a institutions attendance details.
- Staffs can take attendance with ease using mobile application.
- Students can request Leave through the application priorly.
- Payroll is automatically calculated for staffs.

VI. SEQUENCE DIAGRAM



VII .GOALS

The aim of this model is to implement a Fully automated time tracking or attendance system which will be a cost-effective, one-time investment, currently where world is moving towards virtual working trends this model will provide accurate results.

VIII. ADVANTAGES

- Fully Automated Attendance System integrated with leave management system.
- Secure and Confidential.
- Reduce Contagion.

XI. LITERATURE SURVEY

Plenty of research has been conducted so far on the various available methods for implementation of an effective attendance monitoring system. These methods vary in terms of the types of input method used, the types of data processing employed and the controllers used to implement the systems. In this section looking for the various available solution with the advantages and disadvantages of each system. First system, “Face Recognition under Varying Illumination Using Gradient faces”. Theoretical analysis shows gradient faces is an illumination insensitive measure, and robust to different illumination, including uncontrolled, natural lighting. This information is then transmitted to the database to mark the attendance of the student. However this system is vulnerable to impersonation where one person can sign in for someone else. The other related systems that use biometrics (Fingerprint recognition RFID, etc) to identify end user are time management systems used in many colleges, institutions and schools. However, these system introduce further privacy concerns. These systems are also subject to physical damage from their users. Therefore they need additional maintenance costs. The idea proposed by us, Removes physical access from anyone to the automated system.

1. Authors Adrian Rhesa Septian Siswanto, Anto Satriyo Nugroho, MaulahikmahGalinium Implementation of face recognition algorithm for biometrics based time attendance system



Published in IEEE, ICT For Smart Society (ICISS), International Conference ,January 2015

To get the best facial recognition algorithm (Eigenface and Fisherface) provided by the Open CV 2.4.8 by comparing the ROC (Receiver Operating Characteristics) curve and implement it in the attendance system as the main case study

2. Authors: Nirmalya Kar, Mrinal Kanti Debbarma, Ashim Saha, and Dwijen Rudra Pa Study of Implementing Automated Attendance System

Published in International Journal of Computer and Communication Engineering, Vol. 1, No. 2, July 2012.

This paper describes how to take student's attendance using face recognition. The face recognition is implemented with the help of Principal Component

3. Authors: V. Shehu and A. Dika Using Face Recognition Technique Using Real Time Computer Algorithms in Automatic Attendance Management System

Published in IEEE, pp. 397 –402, Jun. 2010

This paper introduces a new approach in automatic attendance management systems, extended with computer vision algorithms. We propose using real time face detection algorithms integrated on an existing Learning Management System

X. FUTURE ENHANCEMENTS

- The future enhancement development will be concentrating more on MSME labour attendance with payroll.
- We are planning to integrate this model with face recognized security systems..
- We are working to optimize the algorithm to recognize in any kind of environment.

XI. CONCLUSION

By using Face recognition attendance system the process of manual attendance and leave management is automated and human errors are avoided.

- Computerized records give better management and manipulation of data. through searching and report generation.
- Its installation is easy and hence does not require professionals for the same.
- The Leave management system is easy to use.
- Face recognition is reliable and easy to use.

XII. RESULT

The project has been implemented as web application. Also different attributes have been added to the project which will prove to be advantageous to the system.

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