KCES's College of Engineering and Management, Jalgaon

Department of Computer Engineering

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PROJECT SYNOPSIS

Group Id:

Name of the Members:1. Pratham Arvind Mahajan

2. Pratik Anil Patil

3. Harshal Raju Puri

4. Siddhesh Manoj Lohar

Project Title:

Automatic Attendance System using Face Recognition.

Introduction:

Attendance management is a critical process in various fields, such as education, workplaces, and events. The traditional attendance system that involves manual processes like calling out names or taking roll calls is time-consuming, and there is a chance of errors. In recent times, face recognition technology has made it possible to automate the attendance process, making it more efficient and accurate. This project aims to develop an Automatic Attendance System using Face Recognition technology that can help to manage attendance more efficiently and accurately. This system can be implemented on a single faculty system of a particular institute. This system is proposed to be based on biometrics .i.e. Face Authentication. Since there is presence of biometrics, this system completely eliminates the chances of fake attendance which is a problem with the traditional methods of attendance.

Problem Definition:

The traditional attendance system involves a lot of paperwork and is time-consuming. It is prone to errors and is not reliable. The manual process of taking attendance can also lead to proxy attendance, which is a severe problem in educational institutions and workplaces. To overcome these challenges, an Automatic Attendance System using Face Recognition can be implemented. The problem with the traditional attendance system that involves manual processes like calling out names or taking roll calls is that it is time-consuming, prone to errors, and can lead to proxy attendance. Manual processes also require a significant amount of resources, such as manpower and paperwork. Moreover, the COVID-19 pandemic has created a need for contactless attendance management systems to maintain social distancing and reduce the risk of infection. To overcome these challenges, an Automatic Attendance System using Face Recognition can be implemented.

Literature Survey:

There have been several studies in recent years on face recognition technology for attendance management. According to a study conducted by Gaurav Sharma et al. (2020), face recognition-based attendance systems are more accurate and reliable than traditional methods. A study by Deyan Cheng et al. (2020) also found that the face recognition-based attendance system has a higher accuracy rate and is more efficient than other methods.

Several face recognition algorithms have been used for attendance management. The most common algorithms used are Eigenface, Fisherface, and Local Binary Patterns Histograms (LBPH). In a study conducted by Mehak Garg et al. (2021), the LBPH algorithm was found to be the most effective algorithm for face recognition-based attendance systems.

Presently Available System:

Currently, several Automatic Attendance Systems using Face Recognition are available in the market. One of the most popular systems is the TimeTec TA Face Attendance System, which uses face recognition technology to record attendance. The system captures an image of the employee's face and matches it with the database to mark attendance automatically.

Another system is the ZKTeco Face Recognition Attendance System, which is a biometric time and attendance management system. It uses facial recognition technology to mark attendance and also has additional features like access control and visitor management**.**

Proposed System:

The proposed Automatic Attendance System using Face Recognition will be designed to capture images of individuals and match them with a pre-existing database to mark their attendance automatically. The system will be implemented using the following steps:

1. Data Collection: A database will be created containing the images of all the individuals whose attendance is to be recorded.
2. Image Processing: The captured images will be processed using machine learning algorithms to extract the features of the face and create a unique face template for each individual.
3. Face Recognition: The captured images will be compared with the face templates in the database to recognize the individuals and mark their attendance.
4. Attendance Management: The attendance records will be stored in a database for future reference and analysis.

Expected Results:

The Automatic Attendance System using Face Recognition will provide several benefits, such as:

1. Time-saving: The system will automate the attendance process and eliminate the need for manual entry.
2. Accuracy: The system will mark attendance based on facial recognition, eliminating any chance of errors.
3. Security: The system will prevent proxy attendance, as only the individual's face will be recognized.
4. Reporting: The system will generate attendance reports that can be used for analysis and future reference.

Software and Hardware Requirements:

The proposed system will require the following software and hardware:

1. Operating System: Windows or Linux
2. Programming Language: Python
3. Libraries: OpenCV, NumPy, face-recognition
4. Camera: A high-resolution camera capable of capturing images of individuals' faces

References:

1. Sharma, G., & Arora, M. (2020). Automatic attendance system using face recognition. International Journal of Advanced
2. Dipti Kumbhar , Prof. Dr. Y. S. Angal Department of Electronics and Telecommunication, Smart Attendance System using Computer Vision and Machine Learning yogeshangal@yahoo.co.in IRJET 1/4/2019]
3. P. Visalakshi, Sushant Ashish Assistant Professor ,Department of Computer Science and Engineering SRM Institute of Science and Technology, Chennai, Tamil Nadu, ATTENDANCE SYSTEM USING MULTI-FACE RECOGNITION , IEEE 27/5/2020
4. Deyan Cheng et al “Face Recognition based Attendance Management System using Machine Learning”. 06, June 2020

5. Ashish Choudhary, Abhishek Tripathi, Abhishek Bajaj, Mudit Rathi and B.M Nandini Information Science and Engineering, The National Institute of Engineering, Automatic Attendance System Using Face Recognition. IRJET 2021]

Submitted On Date:

Guide	**Project Co-ordinator**
Avinash Y. Surywanshi	**Avinash Y. Surywanshi**