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WFH on Duty Employee Attendance System

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Abstract: Automatic face recognition (AFR) technologies have seen dramatic improvements in performance over the past years, and such systems are now widely used for security and commercial applications. So Smart Attendance using Real Time Face Recognition is a real world solution which comes with day to day activities of handling students. The task is very difficult as the real time background subtraction in an image is still a challenge. To detect real time human face are used and a simple fast Principal Component Analysis has used to recognize the faces de-tested with a high accuracy rate. The matched faces are used to mark attendance of the student. Our system maintains the attendance records of students automatically. Manual entering of in logbooks becomes a difficult task and it also wastes the time. So we designed an efficient module that comprises of face recognition to manage the attendance records of students. Our module enrols the student's face.
Keywords: Automatic Face Recognition(AFR), Employee Attendance System, Attendance Management System(AMS)

I. INTRODUCTION

Maintaining the attendance is very important in all the institutes for checking the performance of employees. Every institute has its own method in this regard. But as we have seen, during this pandemic situation(COVID-19), many employees have opted for work from home.Even AMAZON has allowed permanent work from home for some employees. Many big MNC's as well as small startups have allowed their to work from home. In such situation, taking the attendance of the employees becomes a crucial task. For that purpose, we came up with our system. Our system uses the face recognition technique to mark the attendance . Some are taking attendance manually using the old paper or file based approach and some have adopted methods of automatic attendance using some biometric techniques. But in these methods employees have to wait till every ones attendance is marked. Many biometric systems are available but the key authentications are the same as all the techniques. Every biometric system consists of an enrollment process in which unique features of a person are stored in the database and then there are processes of identification and verification. These two processes compare the bio-metric feature of a person with a previously stored template captured at the time of enrolment. Biometric templates can be of many types like Fingerprints, Eye Iris, Face, Hand Geometry, Signature, Gait and voice. Our system uses the face recognition approach for the automatic attendance of employee's intervention who have opted work from home.

II. LITERATURE SURVEY

This section of the literature survey eventually reveals some facts based on thoughtful analysis of many authors work as follows.

1) According to research journal "Attendance System Using NFC Technology with Embedded Camera on Mobile Device" (Bhise, Khichi, Korde,Lokare, 2015). The attendance system is improved by using Near Field Communication (NFC) technology and mobile application. According to the research paper, each student is given a NFC tag that has a unique ID during their enrolment into the college. Attendance of each class will then be taken by touching or moving these tags on the lecturer mobile phone. The embedded camera on the phone will then capture the student's face to send all the data to the college server to do validation and verification. The advantages of this method is where the NFC is simple to use, and the speed of connection establishment is very high. It indeed speeds up the attendance taking process a lot. However, this system couldn't automatically spot the violation when the NFC tag is not personally tagged by the original owner.

2) The second research journal "RFID Based Attendance System" (Hasan U. Zaman, Jannatul Siffat Hossain, Tasnim Tamanna Anika, Deboshree Choudhury,2017) is based on RFID technology which is an automatic wireless identification system that works with the help of active and passive cards and a reader. RFID, which stands for Radio Frequency Identification, is an automatic identification technology used for retrieving from or storing data on to RFID Tags without any physical contact. In this work, they have tried to ease the problem of manually taking attendance with the use of RFID technology. This system will help the authority manage the attendance system in a more organized, efficient, and time-saving manner. The proposed method has been implemented in a prototype system that has proved the effectiveness of the system in easing the chores of attendance taking as a result of the automation of the system using the RFID technology. The design of the system is simple, inexpensive, and portable making it a good candidate for commercial and academic purposes.

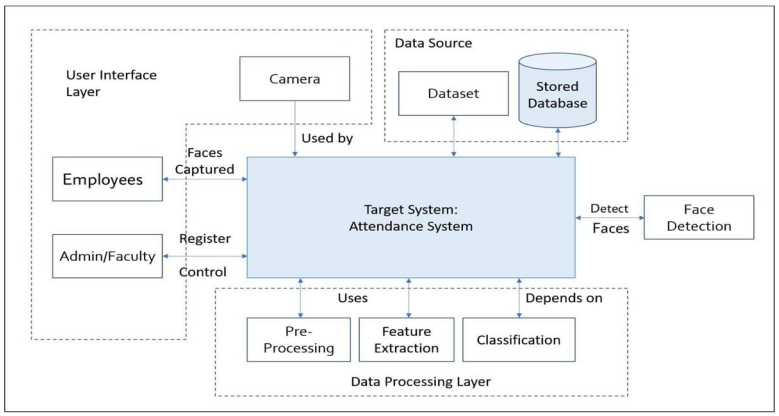
3) According to the third research journal"Face Recognition based Attendance System using Haar Cascade and Local Binary Pattern Histogram Algorithm" (Bharath Tej Chinimilli , Anjali T, Akhil Kotturi, Vihas Reddy Kaipu, Jathin Varma Mandapati,2020). This case of time complexity is nullified in this automated version as it saves time and an additional bonus comes with security as it also helps to prevent proxy of attendance. There are different types of attendance systems like Biometric-based, Radio frequency card-based, face recognition based and old paper-based attendance systems. Out of them all, a Face recognition-based attendance system is more secure and time-saving. There are several research papers focusing on only the recognition rate of students. This research focuses on a face recognition-based attendance system with getting a less false-positive rate using a threshold to confidence. Here they used Haar cascade for face detection because of their robustness and LBPH algorithm for face recognition. It is robust against monotonic grayscale transformations. Scenarios such as face recognition rate, false-positive rate for that, and false-positive rate with and without using a threshold in citing unknown persons are considered to evaluate our system. We got the face recognition rate of students is 77% and its false-positive rate is 28%

4) The paper "Automated Attendance Management System Based on Face Recognition Algorithms" (Shireesha Chintalapati, M.V. Raghunadh,2013) explains Automation of Attendance System has an edge over traditional method as it saves time and also can be used for security purposes, the traditional method of attendance marking is very time- consuming and becomes complicated when the strength is more. The automated system also helps to prevent fake attendance. In this modern era of automation, many scientific advancements and inventions have taken place to save labor, increase accuracy and ameliorate our lives. Automated Attendance System is the advancement that has taken place in the field of automation replacing traditional attendance marking activity. Automated Attendance Systems are generally bio-metric based, smart-card based, and web-based. These systems are widely used in different organizations

5) The research journal "Face Recognition Based Attendance System Using Machine Learning Algorithms" (Radhika C. Damale , Prof.Bageshree.V.Pathak,2018) is based on a facial feature that can be used in different computer vision algorithms like face detection, expression detection, and many video surveillance applications. The input data is the features of the image which represent the image behavior. There are different biometric systems based on face, iris, fingerprint, palm-print, etc. but in most cases, face recognition is used as a prominent technology. In recent years, the government agencies of the country like India are working on the development of security systems development to fight against terrorism. The biometric system processes the raw data like face, fingerprint, iris, etc to the valuable features from it. In this system, an image is captured through the camera, and then the face is detected. If the input image matches with images in the database then and then only the person gives the authentication of this system. The identification of a person from facial features is referred to as face recognition. In this approach, three different methods such as SVM, MLP, and CNN have been presented. DNN is used for face detection. For SVM and MLP based approaches, the features are extracted using PCA and LDA feature extraction algorithms. [6.

III. PROPOSED SYSTEM

By analyzing all the facts through the above section, this research article comes to a conclusion of implementing this system for Attendance system of the employees. The below proposed model marks a perfect solution which helps in successful marking the attendance of the employee with the help of traditional face recognition techniques. By using this model, all the drawbacks of the existing system can be overcomed.



1) *Step 1:* Taking the image.
2) *Step 2:* Detecting the total faces in the image.
3) *Step3:* Cropping the image into total faces.
4) *Step4:* Applying pre-processing algorithms.
5) *Step 5:* Classification of faces as known and unknown faces.

Module for registration/Data feeding into system.

a) *Step 1:* classifying the system as User and Admin.
b) *Step 2:* Admin feeding details.
c) *Step 3:* Admin requesting for system resource.
d) *Step 4:* Capture image for database.
e) *Step 5:* Training the Dataset and storing into database.

IV. OBSERVATIONS

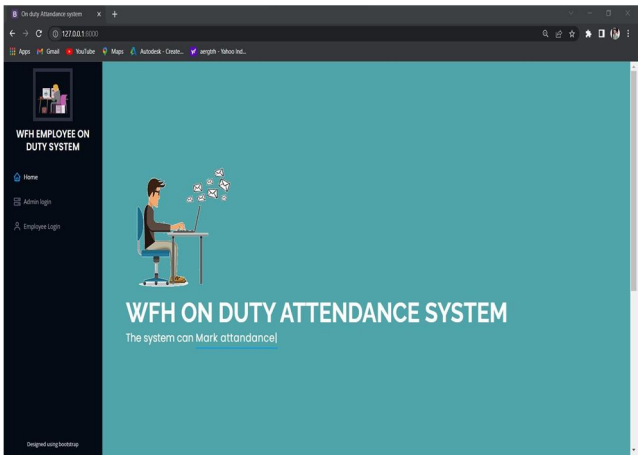


Fig. 1

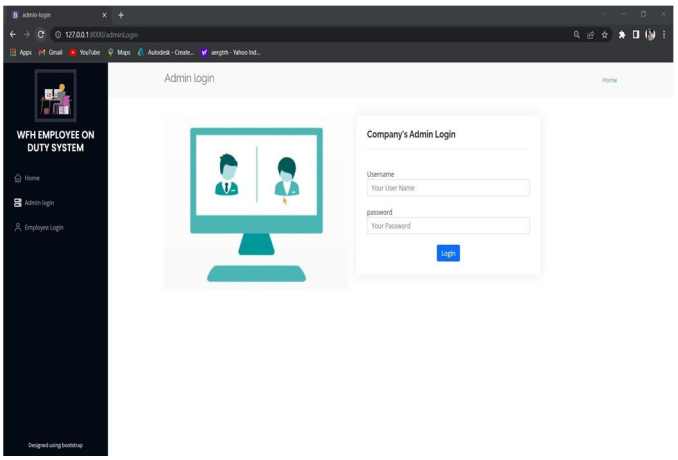


Fig. 2

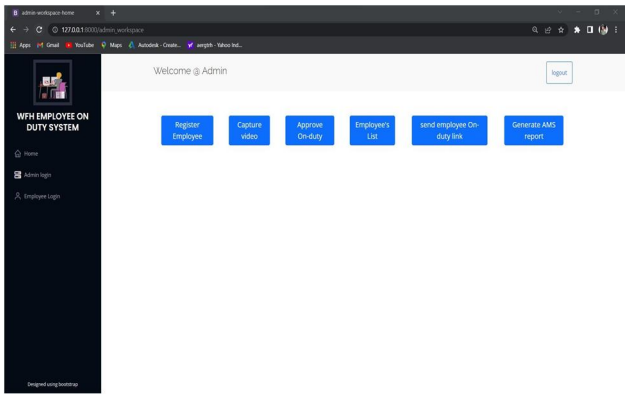


Fig. 3

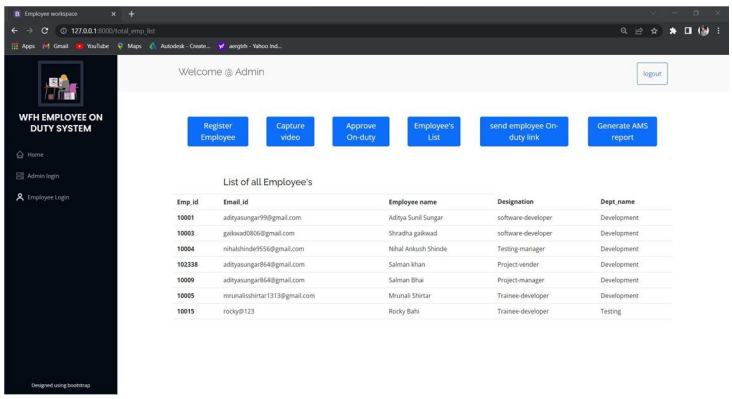


Fig. 4

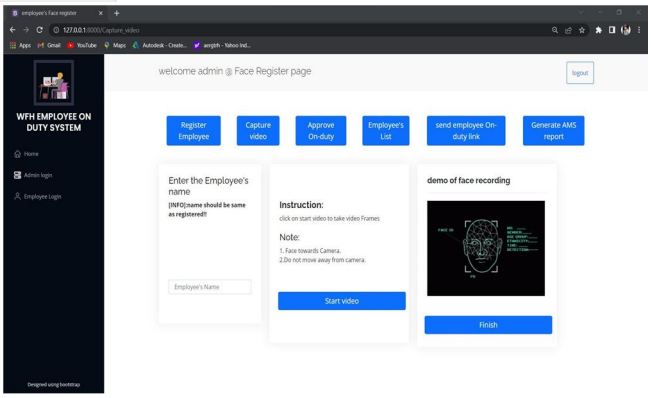


Fig. 5

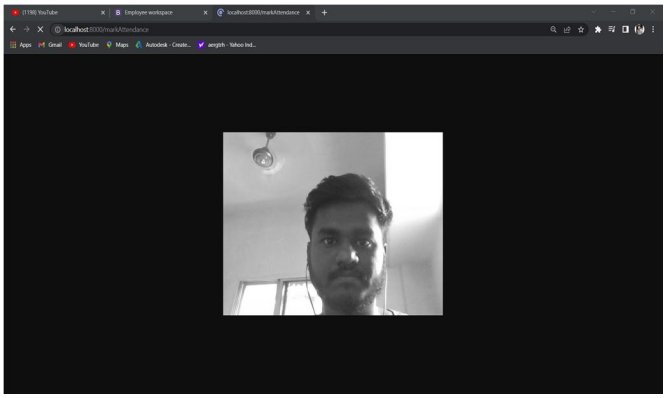


Fig. 6

V. ACKNOWLEDGEMENT

It gives us great pleasure and satisfaction in presenting the final year project research paper on Face Recognition Based Employee Attendance System. We have further more to thank our guide Prof. Govind Pole and our expert Prof. Gopal Deshmukh to encourage us to go ahead and for continuous guidance. We would like to thank all those, who have directly or indirectly helped us during of the work which made this project possible.

VI. CONCLUSION

Automated attendance system has been envisioned to reduce the time complexity and errors in the existing system. As we all have seen , many of the employees have opted work from home during this pandemic situation, keeping in consideration the pandemic situation, we have came along with a system which helps in successful marking the attendance of the employees working from home. By doing this, we can reduce the risk of fraud, along with that, work load and time consumption can also be reduced.This method is secure enough, reliable and available for use. No need for specialized hardware for installing the system in the office. It can be constructed using a camera and computer.

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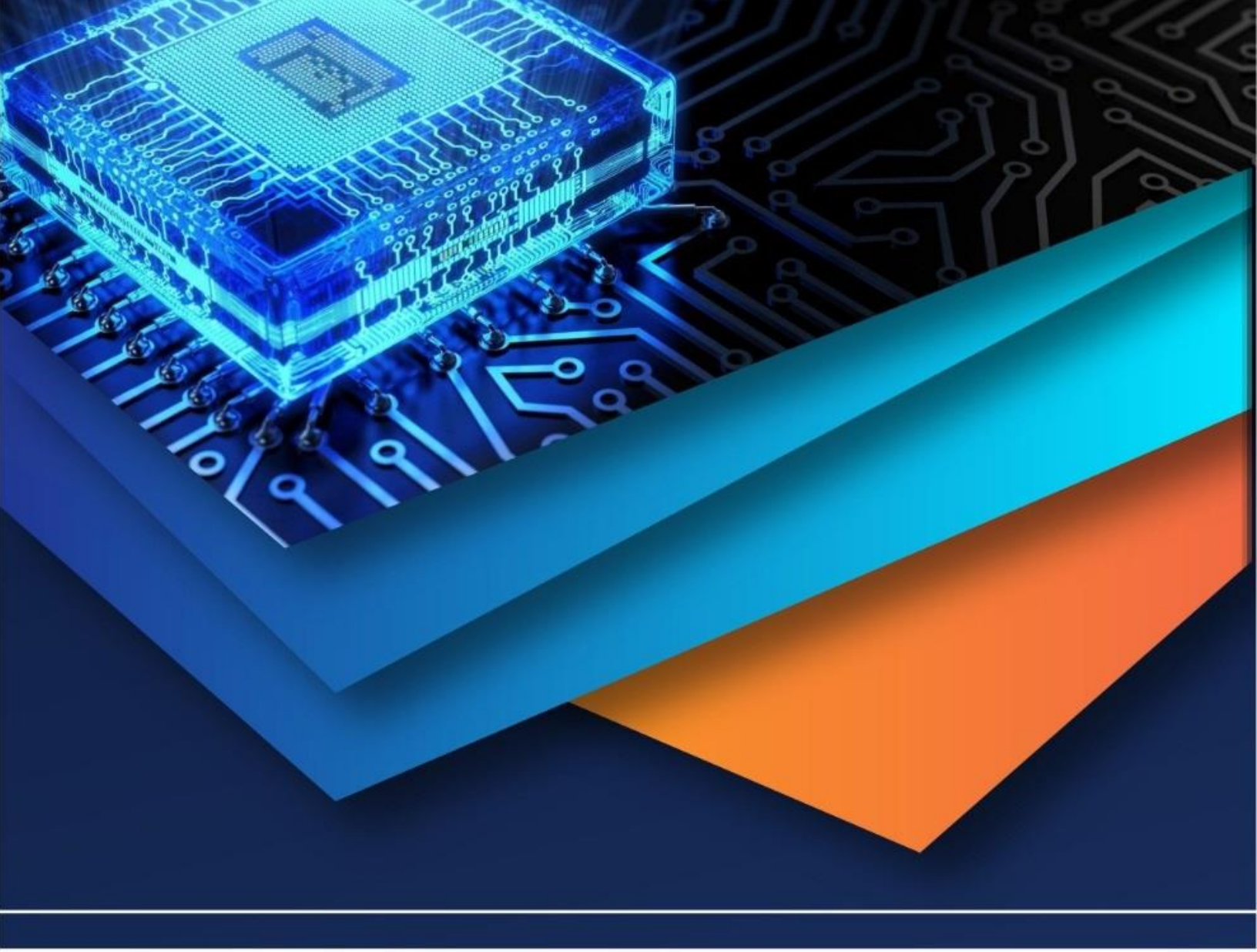

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