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Student Smart Attendence Management System

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ABSTRACT:

In this paper's overview, several research work considers it based on intelligent presence systems for recording participation in facial recognition. Efficient and ac curate attendance management is a critical task in a variety of educational and organizational settings. Traditional methods for persecuting a manual existence are time consuming and errorprone. The proposed system uses computer vision and deep learning techniques to recognize and verify the identity of people in a partic ular environment. It provides facial recognition algorithms and enables seamless and efficient attendance tracking by using existing data records in the database to accommodate facial features.

Keywords: opencv, dlib, rennet, pca, modified locllbinärmär-histogram (mlbp)), deep metric learning, CNN, self worth, hair castsade classifier

INTRODUCTION :

Traditional existential management methods can be a huge burden for teachers if done manually. They take the time and are a great help to the lieutena nt. Therefore, a computeraided student phenomenon management system is required and supports faculty members of automated maintenance of attend ance files. Intelligent attendance systems can streamline the existence management process, reduce administrative burdens, and improve the accuracy of various educational and organizational environments. The Smart View Management System for Projects Using Face Recognition is the latest solution i n which tracking tracking is streamlined and automated using the latest facial recognition technology. This system provides accurate and efficient prese nce management in real time. Collecting and adapting face functions with preregistered individuals eliminates the need for manual presence processes, reducing administrative workload, and improving total accuracy. The project is promising in a variety of settings, from educational institutions to corpo rate offices where accurate persecution of visitors is essential. The paper published by Dhanush Gowda H.L [1] used the face recognition model of DLI B via the traditional image classification pipeline. DLIB's facial recognition module is based on a CNN architecture called ResNet and Deep Metric Lea rning. This is a class of techniques that uses deep learning. Define a small reset network for registration. The network has also completed training. The paper published by T. from [2] implemented an effective system that automatically marks student participation by recognizing faces as soon as the class enters and showing absent students, presence, and student databases. Binary Patterns - Histogram (LBPH) Local Algorithm Technology is a simple solution to facial recognition problems.Something that can be seen on both the front and s ides. However, the identification rate of the LBPH algorithm under certain conditions decreases. To solve this problem, a modified LBPH algorithm is proposed based on pixels of the gray median (MLBPH) of neighbors. M.H. Modh Kamil [3] developed an effective presence system based on face and face mask detection, achieving an accuracy of approximately 81.8% based on a pre-built model of face detection and 80% for face mask detection. The integration of Python and PHP scripting programs allows the developed system to p erform operations on an online server, and is accessible to users of any device. G.B. Harish [4] highlighted the use of the Viola-Jones algorithm, the most popular algorithm for finding facial segments of static images or video frames. The first part is called hair. The second part cr eates an integrated image. Separately, local binary patterns (LBP) are used. This is a simple but very efficient texture operator. The hardware used is the Nvidia Jetson Nano Developer Kit, a small and powerful computer that can run several neural networks for applications such as image classification, o bject recognition, segmentation, and language processing. Neela A. Kumar [6] deals with the need for fast faces and robust recognition algorithms, so t he Violajones algorithm uses PCA for feature selection, and SVM for classification for face recognition. The Violajones recognition algorithm has a hig h identification rate and is efficient for real-time applications for its efficiency. PCA is used to extract multidimensional data for the main component. A paper published by E Charan Sai [9] highli ghted the use of hair cascade systems that train machine learning to recognize objects in images. Local binary patterns are used for facial recognition. T he basic idea behind a hair-based face detector is that the area is darker with the eyes than the forehead, and you need to check most frontal images.

REQUIREMENTS :

- **Hardware requirements:** To run the system you need a computer with a webcam and an internet connection. A webcam requires a resoluti on of at least 720p to capture transparent photos.

Software Requirements: The system is written using the Python programming language. The software you need includes Python such as P ychorm or Spyder, OpenCV libraries, Face_Recognition Library, and Numpy libraries. The algorithm should be able to recognize faces and extract facial features..

- **Face Recognition Algorithm**: The system uses face recognition algorithms to recognize faces. The algorithm should be able to recognize fa ces and extract facial features..

LITERATURE REVIEW :

Title: Max-margin object detection
Author: King, Davis
Abstract:Most methods for recognizing objects apply a binary classifier to image debilitating properties followed by a maximum suppression step of an on where overlapping recognition is removed. The number of possible subwindows is very large in large image datasets, so classifiers are usually only l earned from a subset of windows. This avoids the arithmetic difficulty of dealing with an entire set of Unterstern. As shown in this article, this leads to suboptimal detector performance. In particular, the main contribution of this paper is the introduction of Maximum Margin Object Recognition (MMO D), a new method involving learning to recognize objects in images. This method optimizes all subwindows rather than performing subsenerie. MMOD can be used to improve linear object detection methods with trained parameters such as pigs and visual words.

Title: Face Recognition-Based Mobile Automatic Classroom Attendance System
Author: Samet, Refik, and Muhammed Tanriverdi
Abstract: Classroom Visitor Exams are factors in student participation and ultimate success in the course. The presence of calling names or handing over a presence sheet takes time, and the latter in particular is open to simple scams. Alternative, RFID, wireless, fingerprint, iris and facial recognition methods. Deficiencies. This paper aims to propose facial use management for mobile mobile automatic classrooms. Â¢The Software Requirements Specification (SRS) is intended to define the required functions and uniform resource locators (URLs) of intelligent network backup tools. We intend to determine a clear understanding of the properties and specifications of the final product, as both the development team and the customer intends. Requirement declarations are prioritized and explained in detail in this document. It is aimed at project developers, managers, users, testers and document authors, providing information on design and implementation limitations, external interface requirements, system features, non-functional requirements, and dependencies. Recognizing needs is extremely important for businesses and organizations to assess market performance and maintain a competitive advantage.

System Design :

The system is defined as a process that uses different requirements and enables physical implementations. To develop the system, we follow a variety o f structural functions. The design specifications describe the functions of the system, partners, or elements of the system, and the appearance of the end user.

Moduels:

Client: This application is run by a teacher whose camera is opened and the video video is recorded on the screen. Details of each frame are sent to othe r modules for processing and analysis using the trained model.
Server Module: This module is run to pursue student details and analyze actual performance. Each frame is sent to the facial processing module to veri fy the trained model. The server module is used to process data between the client and the facial processing module.
Face Processing Module: This module is used as an input model model to get different aspects of functions such as Jawline - Pages ratio, mouthpiece, head pose, etc. After calculating these values, the server module is sent**.**

Testing of project
Test cases:

Sl # Test Case :	TC1
Name of Test:	Accuracy calculation
Item being tested:	If accuracy of each algorithm is calculated
Sample Input:	Test x and test y
Expected output:	Accuracy of each algorithm
Actual output:	Accuracy of each model
Remarks:	Pass.

S2 # Test Case :	TC2
Name of Test:	**Check student face detected**
Item being tested:	**If eye, pose detected**
Sample Input:	**Live video**
Expected output:	**Yawn, eye, pose Detected**
Actual output:	**Student face detected with matched features**
Remarks:	Pass.

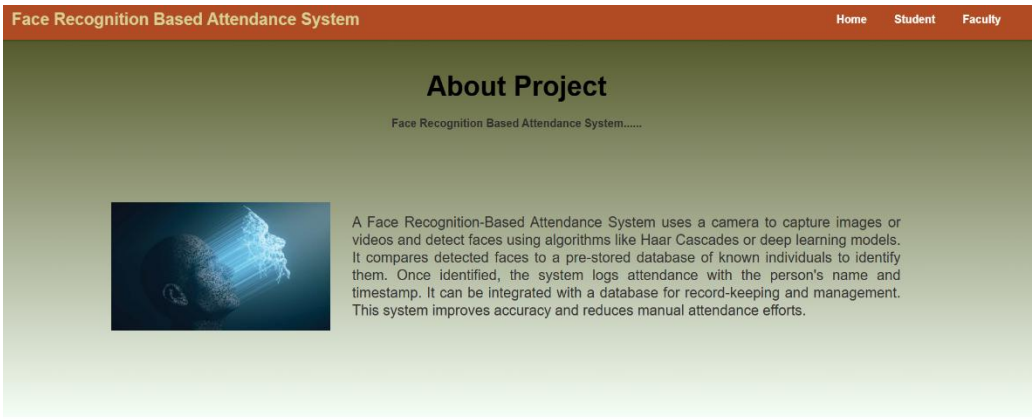

fig -1: interface

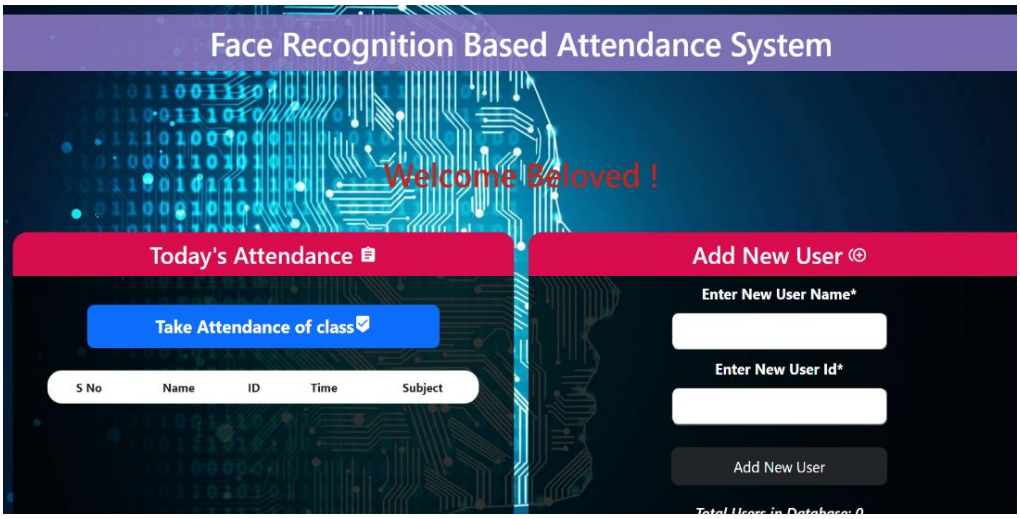

fig 2: Register the user and take attendance

The proposed system attempts to automate existing manual presence systems using facial recognition techniques. The main goal is to record and preser ve each student's face for attendance purposes. It is extremely important to accurately recognize all facial features during the image recording process. With facial recognition steps. A proposed system for a visitor system for facial recognition infrastructure. The system requires a camera installed in the classroom in a position where all students in the classroom can be recorded. This image is processed to achieve the desired result.

Evolution of Attendance System :

In the manual attendance system of the early 19th century, companies began to use methods to accept employee participation. This included the use of t ools such as time clocks and written registers to document when employees began and ended the working class. In the second half of the 19th century, t he introduction of punch cards revolutionized the number of visitors. Employees use punch cards to set out when they arrive at work and when they are cut. This system has been improved compared to the manual method, but it has its drawbacks. An important issue was error sensitivity, as manual data entry and calculations are susceptible to errors and errors. Additionally, a common problem known as "buddy panning" occurred, leading to a false rec ord of existence as one employee had to struggle in the name of someone else. Furthermore, managing and processing the data collected by these punch cards was a labor-intensive task that required important management efforts. System testing should not require knowledge of internal design of code or logic, as it falls under the scope of black box testing. System testing is important for the following reasons.System testing is the first step in the software developm ent lifecycle, with the overall application being tested.

»The application has been thoroughly tested to ensure that it meets functional and technical specifications. â»The application has been tested in an envir onment that is very close to the production environment in which the application is used.

• System testing allows you to test, check, and verify both business requirements and application architecture. Performance is measured based on the e ditions provided by the application. Requirement specifications play an important role in the analysis of a system. Only when requirements are properly specified can a system be designed to suit the environment you need. It provides requirements specifications, mainly because they are people who ultimately use the system based on users of existing systems. This is because the initial phase requirements must be very well known and therefore the s ystem must be able to be interpreted according to these requirements. It is extremely difficult to change the system as soon as it is designed, while desig

ning a system that does not meet the requirements of the user is useless. It records the essentials of the framework and its substantial highlights. An SR S is essentially a visit (when composes) that visits (typically) a customer or potential customer framework and conditions (typically) before actual confi guration or improvement work. This is a two-way protection approach that ensures that both clients and associations understand the need for alternatives from this perspective at a particular time. H owever, SRS has not spoken about the article about the company that created it. As a result, SRS acts as a prerequisite for improvement after the finishe d object. Although there may be cases where you need to change the SRS, there are facilities that will continue to evaluate the creation. In complex ter ms, programming decisions are the early stages of product improvement actions. SRS means deciphering the thoughts of the customer's brain with a for mal archive of prerequisites. Levels are officially a specific essential that ideally ends and steady ends, and the data does not have these properties.

Results :

Implementation of intelligent presence mark systems using application facial recognition technology illustrates a variety of applications in differen t sectors. The versatility of this system goes beyond traditional visitor tracking and offer innovative solutions for improved security, optimized processe s and overall efficiency. Students should eliminate the need for manual roller calls simply by being present in the field of view of the camera. This no t only reduces administrat-ive workloads, but also provides real-time presence data, and educators support monitoring of student visitor patterns.

Conclusion :

in summary, intelligent presence marking systems with facial recognition technology represent a paradigm shift in nonexistent tracking methods, combi ning high accuracy and versatility to place them as a conversion solution for a variety of applications. the literature review provided a comprehensive o verview of the current research status, highlighting future exploration progress, challenges and potential opportunities. looking ahead, it is clear that the integration of facial recognition technology in presence systems will continue to shape an automated presence tracing landscape. continuing improveme nts to algorithms, progress in hardware functionality, and establishment of ethical guidelines play a central role in technology decisions. finally, this rev iew not only contributes to the academic understanding of intelligent visitor branding systems, but also serves as a guide for practitioners, political deci sion makers, and researchers involved in the development and implementation of facial recognition techniques in various fields.

Recommendations For Future Research:

The convenience in the security and finance sectors has allowed facial recognition to spread. The rapid development of science and technology will furt her develop facial use and make application scenarios more diverse. However, facial recognition can easily lead to technical, legal and ethical issues. T he automated functionality of facial recognition technology allows similar relatives to be processed or determined by automation.

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