Journal of Advanced Research in Image Processing and Applications
Volume 6, Print Issue 1 - 2023, Pg. No. 4-8
Peer Reviewed Journal

Review Article

Ingenious AI Visual Identification

Kanwal Jot Singh

B. Tech-Cse-General Uttarpradesh, India.

I N F O

E-mail Id:
19BCS1683@cuchd.in
Orcid Id:
https://orcid.org/0009-0005-7902-3356
How to cite this article:
Singh KJ. Ingenious AI Visual Identification. *J Adv Res Image Proc Appl* 2023; 6(1): 4-8.

Date of Submission: 2023-03-22
Date of Acceptance: 2023-04-25

A B S T R A C T

In our project, Ingenious AI Visual Identification using Facial recognition we're primarily focused on stating the remaining platform for attendance, in which a person can first provide their required non-public information and be enrolled for Automatic Attendance via our Software. As a result, we want to make this system software well-suited for any organization on the route to replacing the old and out-of-date attendance-taking system with our new output. We're essentially specialized in citing the remaining platform for attendance wherein a man or woman can begin to feed with their required non-public facts and get them enrolled for the Automatic Attendance via our Software. Through this, we have the desire to make this software program well matched for each and every Organization on the way to update the vintage and outdated attendance taking process with our new output.

Keywords: Ingenious AI, Visual Identification

Introduction

The project ingenious ai identification is aimed to provide the best platform for automated visitation without physical processing. The platform will participate with CC camera and master data records for further use. In the attendance sector to monitor the presence of an individual, maintaining the attendance is an important factor. Attendance in the division is accepted in its own way. Many fields use biometric and file systems, updating them with new, more efficient and accurate platform. Computerized biometric software is suitable for identifying or verifying identity by facial recognition system. Face recognition is a computer based digital technology which is a powerful field of research. Facial recognition systems have been upgraded appreciably in managing security and in commercial operations. This technology is vastly used. "To be perfect is to change; to improve is to change." As a result, we must keep ourselves up to date on a regular basis. With reference to this we have updated our previous platform to its latest version which keeps a next step towards perfection. We have filled up all the existing loopholes which were there in our previous platform and equipped it with the latest technologies out there to set a new standard for the entire world. The increasing complexity of attendance management increases the need for faculty or organizations as the number of students in an educational institution or staff in an organization increases. Descriptions of these types of issues are addressed on this platform. Observe the number of people in an organization, identify and maintain the number of people present.

Overveiw

The image of the face of any particular person taken by the face recognition by a biometric technique implies determination matches any of the face images that are stored in a database. Because of the changes due to several factors such as facial expression, ageing and even lighting can affect the image and it is very difficult and tough to resolve this automatically. Facial recognition may not be the most authentic but it may have many advantages over the other biometric techniques. Face recognition does not require assistance and it is natural as well as feasible. Attendance will be taken automatically with the help of

the software that engages the face recognition approach of students or employees without their involvement.

Methods

The following methodology will be followed to achieve the objectives defined for proposed research work:

Accurate information about the Ingenious AI Identification project is that in many work environments such as offices, conferences, classrooms, it will help determine the number of people attending sessions without anyone's assistance. This project takes only 15 photos and creates a website using JavaScript, a facial and eye recognition algorithm with 80-90% accuracy, a cloud server, a database for Python programming, a Python environment, Open CV, to generate screenshots. It consists mainly of and camera control.

In this project, high-bandwidth CCTV cameras are used to scan faces and attendees are automatically tagged in the Ingenious AI identification project. The beauty of this ingenious AI identification project is that you can participate without assistance, which saves time and makes it easier to recognize a person's presence in any situation, for example when changing faces. Along with advantages, there will be disadvantages. For example, in this project, faces are not saved unless the camera scans them. It is possible to turn it over and cover it with another. Comparison of the newly implemented approach in this project - improved management by entering the name and university along with the image captured by the camera.

After registration is complete, no new images are needed and no photos are saved, which saves memory because the person's face coordinates are stored in the database until registration is complete. We use an authentication system to ensure that the secure factor is respected. During registration, facial recognition is used to extract features from the image. A face coding algorithm also uses face recognition algorithm for determining the position of a face to find iiit in images.

Technology Used

Research Objectives

- The proposed research is aimed at making attendance as swift as it can be
- The primary goal of our initiative is to construct a face detection system which reduces manual efforts and provide the most efficient and smooth attendance system
- This research helps to save time
- It is economical and needs a one-time investment and set up
- It prevents mal activities such as proxy
- It provides the record at any instance of time

Hardware Specification

- Working
- Internet
- HD
- Camera

Software Specification

- **PyCharm (Python IDE):** PyCharm (Python IDE) is an integrated development environment (IDE) for the Python programming language. JetBrains, a Czech firm, developed it. It includes code analysis, a graphical debugger, an integrated unit tester, VCS integration, as well as support for web development with Django and data science with Anaconda. Combine SI and CGS units, such as current in amperes and magnetic field in oversteps, as much as possible. Because equations do not balance dimensionally, this frequently causes difficulty. If you must use mixed units, make sure you clearly state the units for each quantity in the equation
- **Cloud Database:** After connecting the python code to the AWS data base, the software begins to recognize when the person clicks over the bottom from where the reorganization starts. It will then create a table, implying that it will send a request to the data table. The produced table will be saved with the appropriate date and time. When any of these faces is identified, it sends a name request to the database and the information is saved in the table's UID section
- **Python is an interpreted high-level general:** purpose programming language (version 3.8). Python's design philosophy places a strong emphasis on code readability, as seen by the frequent usage of indentation. With the help of its features and object-oriented approach, it is designed to help programmers write the logical codes for their projects
- **Compatible Web Browser Chrome:** The project will be deployed to the cloud so the software will be available world wide on any browser

Tentative Plan for the Proposed Work

Phase 1: A registration process that collects data about a member and then uses the data provided to take a picture of the member and store it appropriately. Use the face_recognition.face_locations () algorithm to determine faces in photos. It then extracts the size of the eyes and faces from the image for accurate recognition.
Phase 2: The above data is collected and stored in a cloud database provided with a unique identification number. We are training the data using OpenCV recognizer. We then use NUMPY ARRAY to store the train data used by the recognition process.
Phase 3: As this is a Real time Face Recognition system we are using FACE_RECOGNITION.COMPARE_FACES()

algorithm to recognize the human face and retrieve the face dimensions and match it with the data stored in our database. If the data matches, then we will be retrieving the name as well as Unique Identification number which will be stored to the Attendance List with the status of "Present".

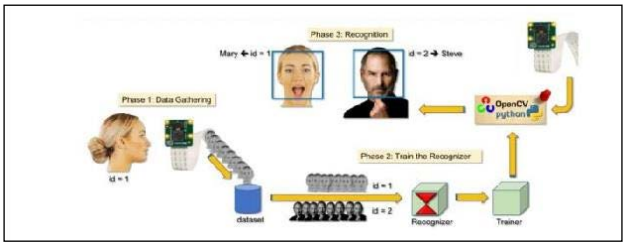


Figure 1

Literature View

Systems used by institutions always lack stability. For example:

1. Biometric system
2. Bluetooth system

The software implemented for the Attendance Tracker includes a face recognition and eye detection system for highly reliable and efficient operation. Currently, this method is considered one of the fastest systems with an accuracy of 99.97%.

Background of Proposed Method

The project is divided into five main parts:

1. Student Registration: The student needs to register providing his/her facial data.
2. Data Gathering: The data of the students will be stored in the Cloud database.
3. Training of the Model: We are training the model using OpenCV and after that the data is saved into the file which is used during recognition.
4. Recognition: It is a Real time application which will be continuously recognizing and comparing with the stored data and shows the result.
5. Storing the Attendance: If the snap matches with the data stored then the Attendance is marked and saved on a .txt sheet. If the snap matches with the data stored, then the Attendance is marked and saved in a .txt sheet.
6. On the website we have a login page where we can log in and make an account as well.
7. Here you read about the guide of using the product and the merits as well.
8. On this landing page the download link for the product to target the wider audience is available for use for any person for free.
9. The contact form is available with an API inbuilt with which anyone can contact with our team for any query and support.

Methodology

The following methodology will be followed to attain the objectives of the project. An elaborated study of AI will be done. This project is equipped with some of the latest technologies and software such as PyCharm and Cloud Database.

Pros

1. Super Stable Performance.
2. Time Saving.
3. High rate of accuracy.
4. Authentication.

Cons:

1. Twins' detection (Major Drawback)
2. Photo Detection

Experimental Setup

In this project the appointed presenter should activate the System so that the camera will be activated, then the faces will be recognized by the camera and if the data does not match then the eye recognition will be activated and then it will be comparing them with dataset we have we have fed the system during registration then the attendance will be marked with the help of the python program that will be running in the background and it will help the camera to switch off without any eternal help. Then the dataset will be updated with the attendance.

Conclusion and Future Scope

It has become terribly obvious that our technology has surpassed humanity." In a fast-growing world, time is our most precious treasure. In this project, we have tried subtly to minimize the amount of time we receive attendance. This decision is greatly beneficial in the long run. Implemented all kinds of content packed with the latest technology to make it the ideal attendance system today.

This project was a great experience and improved our teamwork skills.

However, there are some future opportunities we can work on to overcome our shortcomings and update the system. Example:

1. IRIS detection.
2. Twins found.
3. It detects a person or his image during the face recognition process.

Going forward, we will incorporate the values of our system as we face these three aspects.

Results

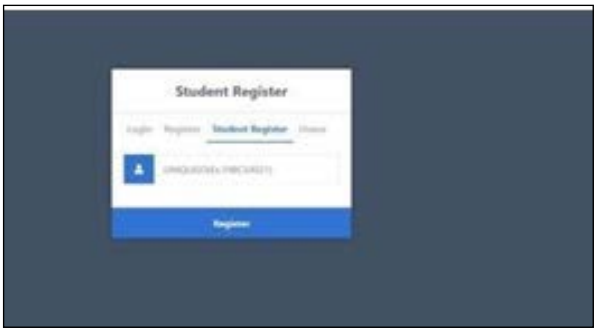
This Software has been proposed for maintaining the

attendance record but it can be modified to be used in several other fields. The main motive behind the implementation of this software is to remove all the drawbacks which have been related to manual attendance procedure. The drawbacks starting from wastage of time and paper, until the proxy problems springing up in a class, will absolutely be eliminated. After all the hardships we faced we had put up great efforts to make this project to meet our objectives and we finally tasted success. Our project on Automatic Attendance System using AI is working as per our expectations and this will turn out to be the most remarkable and pioneering project we have ever made.

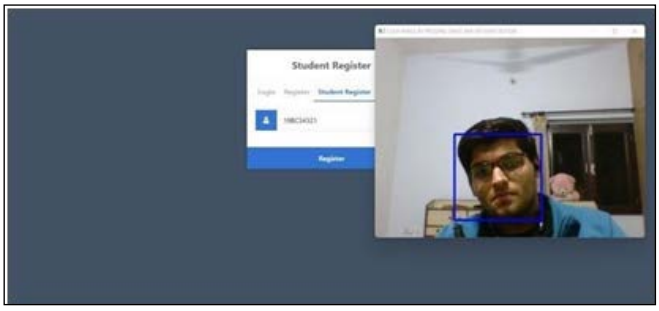
Step 1

Step 2

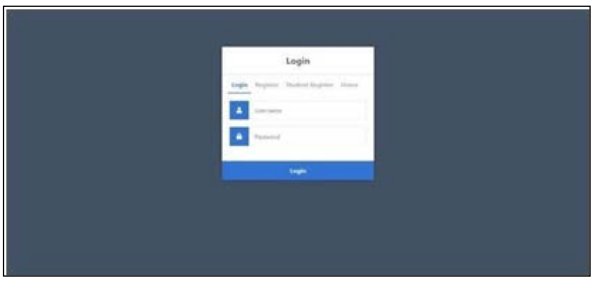
Step 3



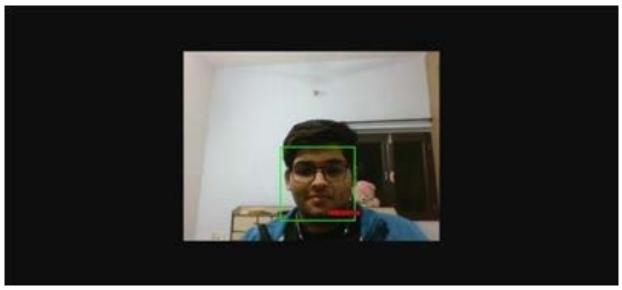
Step 4



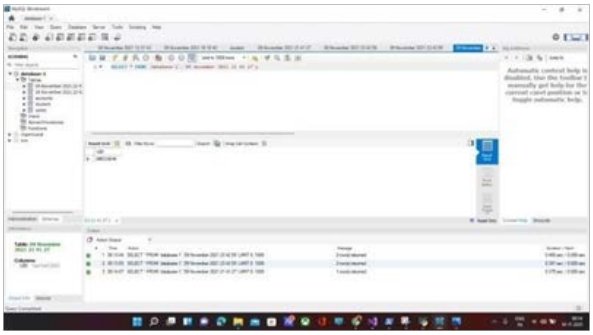
Step 5



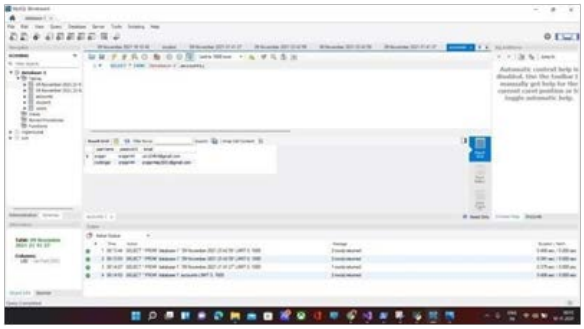
Step 6



Step 7



Step 8



Step 9

Acknowledgement

These are the step-by-step result of the project. In this step-by-step process is: -

- Step 1: The home page of the project
- Step 2: Page to get into the registration page
- Step 3: - Registration page of the project
- Step 4: Registration page for the students
- Step 5: The recognition of the eye of the person
- Step 6: Login page of the project
- Step 7: To show the data is saved successfully
- Step 8: Database to store the attendance of the students with date, time
- Step 9: Database which is for the authorized persons to take the attendance

References

1. https://www.researchgate.net/publication/325819350_Computer_Science_and_ Management_Studies_Development_of_ a_Student_Attendance_Management_S ystem_Using_RFID_and_Face_Recognition_A_Review.
2. https://developer.mozilla.org/en-US/.
3. https://pypi.org/project/face- recognition/.