**Project on**

**Integrated attendance system using face Recognition**

ACKNOWLEDGEMENT

It gives me a great sense of pleasure to present the internship report undertaken after the completion of first year course. I owe special debt of gratitude to the instructor for his constant support and guidance throughout the course. His sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only his cognizant efforts that our endeavours have seen light of the day.

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**Introduction of the Project**

A python GUI integrated attendance system using face recognition to take attendance.

In this python project, I have made an attendance system which takes attendance by using face recognition technique. I have also integrated it with GUI (Graphical user interface) so it can be easy to use by anyone. GUI for this project is also made on python using tkinter.

**Technology used:**

1. tkinter for whole GUI
2. OpenCV for taking images and face recognition (cv2.face.LBPHFaceRecognizer\_create())
3. CSV, Numpy, Pandas, datetime etc. for other purposes.

**Features:**

1. Easy to use with interactive GUI support.
2. Password protection for new person registration.
3. Creates/Updates CSV file for details of students on registration.
4. Creates a new CSV file every day for attendance and marks attendance with proper date and time.
5. Displays live attendance updates for the day on the main screen in tabular format with Id, name, date and time

**What is Face recognition?**

Attendance system using face recognition is a procedure of recognizing students by using face biostatistics based on the high-definition monitoring and other computer technologies.

**How Facial Recognition Works?**

A facial recognition software captures and compares patterns on a person’s face and analyses the details to identify and verify the individual. While the underlying system is complex, the whole technology can be broken down into three steps:

1. Face Detection: An essential step is locating human faces in real-time.

2. Transform Data: Once captured, the analogue facial information is transformed into a set of data or vectors based on a person’s facial features

3. Face Match: The system matches the data above with the one in the database for verification.

Almost every big tech company including Amazon, Google, Microsoft, and Cisco is leading the effort to make face recognition more mainstream. There are many reasons to adopt the technology.

## Advantages Of Using Face Recognition Attendance System

Apart from being efficient, self-managed, and highly scalable, these systems offer unmatched advantages.

### 1. Automated Time Tracking System

Entry and exit time monitoring done manually or with other biometric systems can be fully automated with facial recognition attendance systems. There is no need for human intervention or physical validation as the system’s advanced algorithms can locate and identify faces autonomously. It is effortless to track time for employees with facial recognition.

### 2. Cost-Effective

A [facial recognition attendance system](https://truein.com/face-attendance-system/) can save business resources by automatic employee time tracking. A solution like Truein can be used on mobile devices making it more affordable for small-scale and medium businesses. Irrespective of the business size, such an attendance system can:

* Increase employee productivity by 10%
* Cut administrative costs by 5-10%
* Save 15% supervision time, helping supervisors with attendance control
* The cost savings are even higher as data received from the face recognition-based [employee attendance system](https://truein.com/) is in real-time and valid

### 3. Touchless Sign in System: A Post Pandemic Requirement

Pandemic like Covid 19 can be better managed by minimizing physical contact in public places and work environments. Post pandemic there has been a significant increase in demand and adoption of contactless technologies. The industry has recognized the benefits of facial recognition and the adoption of attendance systems like Truein. Workplaces and multi-tenant environments can greatly reduce the frequency of contact between individuals, thus minimizing the risk of virus transmission.

### 4. Facial Recognition with Ageing Changes and Accessories

Face recognition attendance systems are not dependent on a few facial features, but they are highly robust and identify a face on several data points. Therefore, these systems can screen for [face masks](https://truein.com/covid-compliant-entry/) and identify people without removing the mask or any change of facial attributes like beard, specs etc. It is a major advantage over any other biometric system as employees don’t have to take off their masks. Modern-day attendance systems use highly accurate face recognition algorithms that can also track changes in facial attributes like glasses, beards, hats, etc.

### 5. More Accurate and Better Worker Attendance

Industrial floor time frauds are common worldwide and one of the most common work ethics violations. While a vast majority of workers are honest, but the nuisance of [buddy punching](https://truein.com/what-is-buddy-punching-and-how-to-prevent-it/) cannot be ruled out. Teaming up with staff members or security personnel, some workers skip work and still get paid. Such time fraud is not only detrimental to companies but is also unfair towards honest contributing workers.

With a face recognition attendance system, the entire environment is automated. You won’t just take the attendance but also automatically record the entry-exit time of the employees. It also adds to the security of the workplace as the system can recognize who left the designated area and when accurately.

### 6. The Ubiquity of Cameras on Mobile Devices

Systems like Truein make use of mobile devices for [time and attendance using facial recognition](https://truein.com/time-and-attendance-system/). Nearly all smartphones, tablets, and laptops have built-in front-facing cameras. This implies there is no need for any additional hardware to implement a facial recognition attendance system. This is cost-effective and convenient as compared to other biometric systems like fingerprint scanners. As every employee is already accustomed to the use of the front-facing camera on their mobile device, there is no need for any training or orientation for work-from-home employees. These systems have intuitive UI, easy for anyone to use.

### 7. Easy to Manage

As compared to manual attendance systems, AI-based attendance systems are highly automated. These systems store and update day-to-day records in real-time. From maintaining daily attendance to preparing high-accurate timesheets of individual employees, facial recognition attendance systems are programmed to handle it all on a very large scale. Imagine handling a large crowd of 10,000 people without any fuss and recording the attendance in an organized manner. Such is the efficiency of AI facial recognition systems.

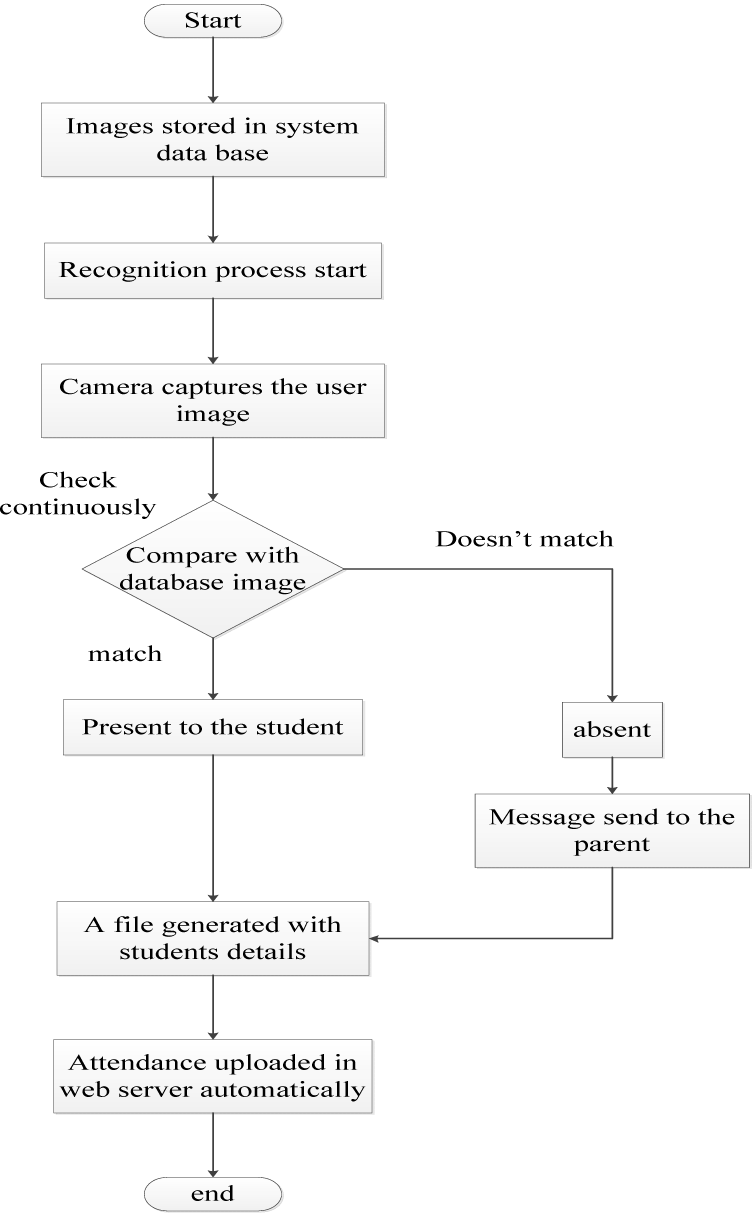
### 8. Smart Integration

Integrating a face recognition attendance system with any other HRMS or Payroll system is quite easy. As these systems are modular and highly customizable, the time-in time-out and date formats can be customized to be compatible with other systems implemented in an organization. It makes organizing data a lot easier. Also, the time zone settings can be easily changed as per geo-location that making it possible to use software worldwide without any additional requirement. A company with geographically distributed offices can implement [GPS based attendance system](https://truein.com/geofencing-attendance-system-for-remote-employees/) for attendance monitoring in all the offices.

## Conclusion

Face recognition attendance systems are modern utilities that are a requirement of even the post-pandemic era. These systems make employees’ attendance tracking accurate while saving costs. Such a system also adds a layer of security in the workplace. The Face recognition system are beneficial in school and colleges also as it reduces the works of teacher and its easy for the admin to maintain the records of each and every student, it also reduces the waste produced by attendance registers. It also prevents student from making proxy attendance of there friends. Facial recognition can also be used to make a teacher less examination hall. Facial recognition systems are the best modern-day solution for tracking employee hours.

**FLOWCHART OF THE PROGRAM:**

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