

**FACE RECOGNITION BASED ATTENDANCE SYSTEM**K. VENKATESH<sup>1</sup>, M. VENKATA SWAMY NAIDU<sup>2</sup>**1. Assistant Professor in DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS, BHIMAVARAM-534202.**Email id: [kornalavenkatesh@gmail.com](mailto:kornalavenkatesh@gmail.com)**2. PG STUDENT, D.N.R. COLLEGE, P.G. COURSES (AUTONOMOUS), BHIMAVARAM-534202.**Email id: [swamynaidumutya32@gmail.com](mailto:swamynaidumutya32@gmail.com)**ABSTRACT**

Nowadays Educational institutions are concerned about regularity of student attendance. This is mainly due to students' overall academic performance is affected by his or her attendance in the institute. Mainly there are two conventional methods of marking attendance which are calling out the roll call or by taking student sign on paper. They both were more time consuming and difficult. Hence, there is a requirement of computer-based student attendance management system which will assist the faculty for maintaining attendance record automatically.

In this project we have implemented the automated attendance system using Deep . We have projected our ideas to implement "Automated Attendance System Based on Facial Recognition", in which it imbibes large applications. The application includes face identification, which saves time and eliminates chances of proxy attendance because of the face authorization. Hence, this system can be implemented in a field where attendance plays an important role.

The system is designed using deep python platform. The proposed system uses Principal Component Analysis (PCA), OpenCv,,Harcascade algorithm which is based on eigenface approach. This algorithm compares the test image and training image and determines students who are present and absent. The attendance record is maintained in an excel sheet which is updated automatically in the system.

**1. INTRODUCTION**

One necessary component of every business system is recording employees' work hours and activities, despite the capacity of the system. This process could be time consuming if it is managed manually. As a result of a rapid growth in information technologies, automatic solutions have become a standard option for these types of business processes.

There are now plenty of systems which differ in many aspects: core technology they are based on, way of use, cost, reliability, security and etc. Many of those depend on employees having to carry specific identification devices. One of the common types of the attendance systems is Radio Frequency Identification (RFID) where employees have to carry appropriate RFID cards. There are also location based attendance tracking systems. The location of an employee can be determined via Global Positioning System (GPS). The presence is determined by calculating the proximity between an employee's and the company's location. Both of the above mentioned types of the attendance systems have weaknesses. Employees could forget the RFID card or the location device, or someone else could check instead of them. This could also be a potential security issue. Therefore, there are systems that exclude the usage of external devices for attendance purposes by exploiting the individual attributes: fingerprints, iris, voice, face and etc. These types of systems are heavily based on computer vision and machine learning algorithms. Recent advances in these areas, especially in deep learning, provide possibilities to use these methods searching for practical solutions. These solutions could be more flexible and could reduce human errors.

The method proposed in this paper provides solution for face recognition tasks combining various modern approaches and

state-of-the-art crafts in deep learning. The rest of the paper is organized as follows: Section II presents the related work, Section III presents the methodology, Section IV presents the results and discussion, and finally, Section V holds the conclusion.

## 2. LITERATURE SURVEY AND RELATED WORK

**1.Title:** Face Recognition based Attendance Management System

**Authors:** Smitha, Pavithra S Hegde, Afshin

**Abstract:** In this digital era, face recognition system plays a vital role in almost every sector. Face recognition is one of the mostly used biometrics. It can be used for security, authentication, identification, and has got many more advantages. Despite of having low accuracy when compared to iris recognition and fingerprint recognition, it is being widely used due to its contactless and non-invasive process. Furthermore, face recognition system can also be used for attendance marking in schools, colleges, offices, etc. This system aims to build a class attendance system which uses the concept of face recognition as existing manual attendance system is time consuming and cumbersome to maintain. And there may be chances of proxy attendance. Thus, the need for this system increases. This system consists of four phases- database creation, face detection, face recognition, attendance updation. Database is created by the images of the students in class. Face detection and recognition is performed using Haar-Cascade classifier and Local Binary Pattern Histogram algorithm respectively. Faces are detected and recognized from live streaming video of the classroom. Attendance will be mailed to the respective faculty at the end of the session

**2.Title:** Face Recognition based Attendance System

**Authors:** Dhanush Gowda H.L, K Vishal, Keertiraj B. R, Neha Kumari Dubey.

**Abstract:** The management of the attendance can be a great burden on the teachers if it is done by hand. To resolve this problem, smart and auto attendance management system is being utilized. By utilizing this framework, the problem of proxies and students being marked present even though they are not physically present can easily be solved. This system marks the attendance using live video stream. The frames are extracted from video using OpenCV. The main implementation steps used in this type of system are face detection and recognizing the detected face, for which dlib is used. After these, the connection of recognized faces ought to be conceivable by comparing with the database containing student's faces. This model will be a successful technique to manage the attendance of students.

**3.Title:** Face Recognition Based Smart Attendance System

**Authors:** A Arjun Raj, Mahammed Shoheb, K Arvind; K S Chethan

**Abstract:** Education institutes today are concerned about the consistency of students ' performance. One cause of this decrease in student performance is the inadequate attendance. There are several ways to mark your attendance, the most common ways to sign or call the students. It took longer and was problematic. From now on, a computer-based student

attendance checking system is required that supports the faculty to keep records of attendance. We have used an intelligent attendance system based on face recognition in this project. We have proposed to implement a "Smart Attendance System for Face Recognition" through this large applications are incorporated. The present implementation includes facial identification that is time saving and eradicates the possibilities of proxy attendance due to the facial authorization. This system can now be used in an area in which participation plays an important role. Raspberry Pi, Open CV and Dlib using python are the basic requirements for this system. The system implemented uses LBPH face recognizer to identify the face of the person in real time. Eigen faces and Fisher faces are affected both by light and we cannot ensure perfect light conditions in real life. An improvement in the LBPH faces recognizer to overcome this problem. This system compares the image of the test and the training image and determines who is and is not present. The attendance data is stored in an excel sheet that is automatically updated in the system. If a student is absent a message will be automatically sent to their parent's phone number using GSM. Student's can check their attendance using an Android application that we have developed using MIT app Inventor.

### **3. EXISTING SYSTEM**

Attendances of every student are being maintained by every school, college and university. Empirical evidences have shown that there is a significant correlation between students' attendances and their academic performances. There was also a claim stated that the students who have poor attendance records will generally link to poor retention. Therefore, faculty has to maintain proper record for the attendance.

The manual attendance record system is not efficient and requires more time to arrange record and to calculate the average attendance of each student. Hence there is a requirement of a system that will solve the problem of student record arrangement and student average attendance calculation. One alternative to make student attendance system automatic is provided by facial recognition

### **4. PROPOSED SYSTEM**

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### **5. METHODOLOGIES**

## MODULE

**This project consists of 4 modules**

1.DATA COLLECTION

2.DATA PRE-PROCESSING

3.FEATURE EXTRATION

4.EVALUATION MODEL

## MODULE DESCRIPTION

### 1.DATA COLLECTION

Data used in this paper is a set of product reviews collected from credit card transactions records. This step is concerned with selecting the subset of all available data that you will be working with. ML problems start with data preferably, lots of data (examples or observations) for which you already know the target answer. Data for which you already know the target answer is called labelled data.

### 2.DATA PRE-PROCESSING

Organize your selected data by formatting, cleaning and sampling from it. Three common data pre-processing steps are: Formatting:

The data you have selected may not be in a format that is suitable for you to work with. The data may be in a relational database and you would like it in a flat file, or the data may be in a proprietary file format and you would like it in a relational database or a text file. Cleaning: Cleaning data is the removal or fixing of missing data. There may be data instances that are incomplete and do not carry the data you believe you need to address the problem. These instances may need to be

removed. Additionally, there may be sensitive information in some of the attributes and these attributes may need to be removed from the data entirely. Sampling: There may be far more selected data available than you need to work with. More data can result in much longer running times for algorithms and larger computational and memory requirements. You can take a smaller representative sample of the selected data that may be much faster for exploring and prototyping solutions before considering the whole dataset.

### 3.FEATURE EXTRATION

Next thing is to do Feature extraction is an attribute reduction process. Unlike feature selection, which ranks the existing attributes according to their predictive significance, feature extraction actually transforms the attributes. The transformed attributes, or features, are linear combinations of the original attributes. Finally, our models are trained using Classifier algorithm. We use classify module on Natural Language Toolkit library on Python. We use the labelled dataset gathered. The rest of our labelled data will be used to evaluate the models. Some machine learning algorithms were used to classify pre-processed data. The chosen classifiers were Random forest. These algorithms are very popular in text classification tasks.

### 4.Evaluation Model

Model Evaluation is an integral part of the model development process. It helps to find the best model that represents our

data and how well the chosen model will work in the future. Evaluating model performance with the data used for training is not acceptable in data science because it can easily generate overoptimistic and over fitted models. There are two methods of evaluating models in data science, Hold-Out and Cross-Validation. To avoid over fitting, both methods use a test set (not seen by the model) to evaluate model performance. Performance of each classification model is estimated base on its averaged. The result will be in the visualized form. Representation of classified data in the form of graphs. Accuracy is defined as the percentage of correct predictions for the test data. It can be calculated easily by dividing the number of correct predictions by the number of total predictions

## 6. RESULTS AND DISCUSSION SCREEN SHOTS

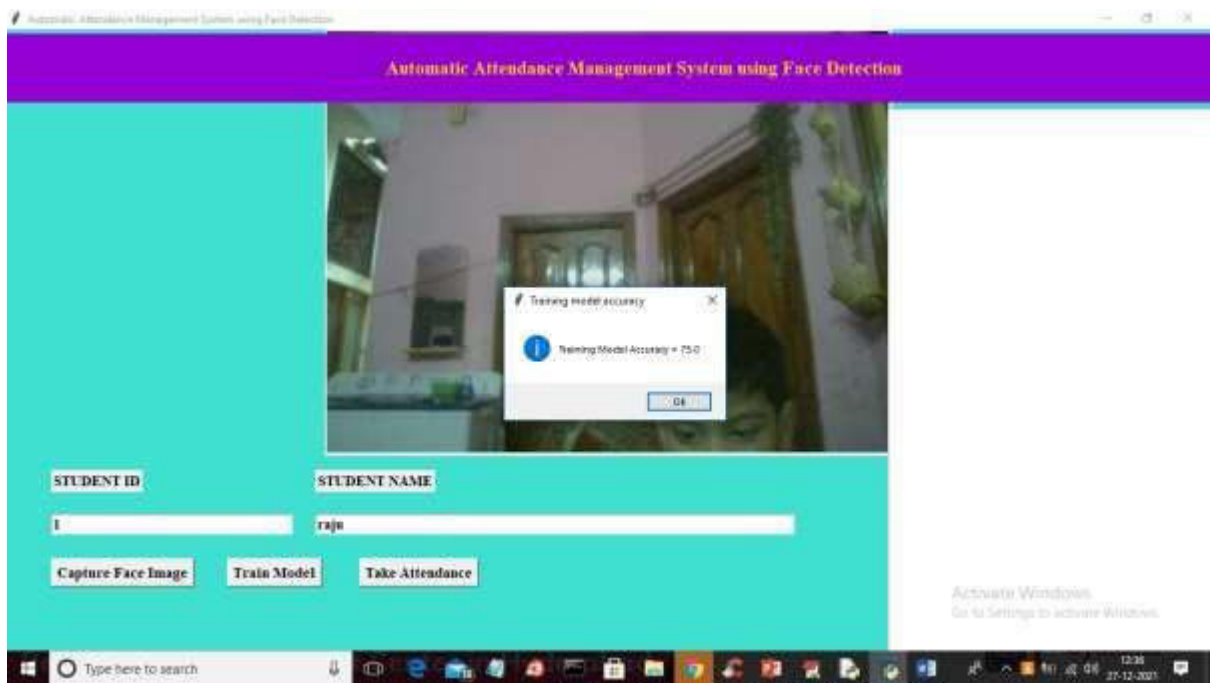
To run project double click on 'run.bat' file to get below screen



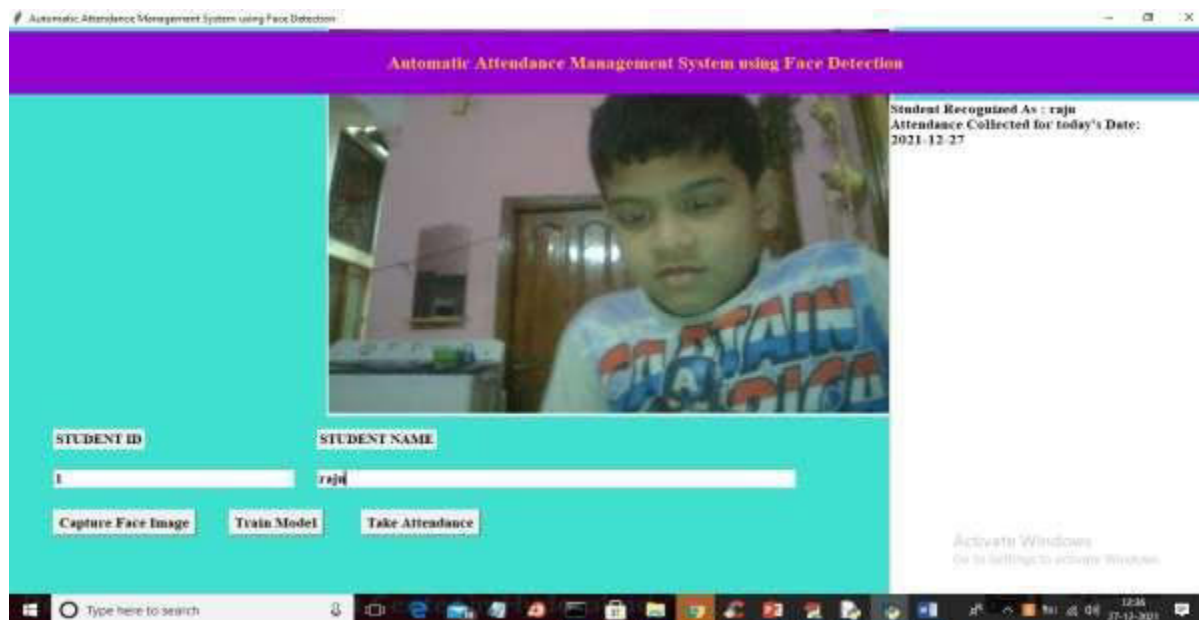
In above screen enter student id and name and then click on 'Capture Face Image' button to capture face like below screen



In above screen face is detected and now click on 'Train Model' button to perform training like below screen



In above screen training completed with accuracy 75% and then any time click on 'Take Attendance' to recognized student and mark attendance



In above screen in text area we can see student identified as Raju. Similarly you can capture N student and take attendance.

Note: this application depend on camera clarity so identifying of student may be correctly recognized 5 times out of 10. This types of application need more refinement to build accuratemodel

**Note:** to train model atleast two students must be added or registered

## 7. CONCLUSION AND FUTURE SCOPE

The system we have developed has successfully, able to accomplish the task of marking the attendance in the classroom automatically and output is obtained in an excel sheet as desired in real-time. However, in order to develop a dedicated system which can be implemented in an educational institution, a very efficient algorithm which is insensitive to the lighting conditions of the classroom has to be developed. Also a camera of the optimum resolution has to be utilised in the system. Another important aspect where we can work towards is creating an online database of the attendance and automatic updating of the attendance into it keeping in mind the growing popularity of Internet of Things. This can be done by creating a standalone module which can be installed in the classroom having access to internet, preferably a wireless system. These developments can greatly improve the applications of the project.

## 8. REFERENCES

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