

# A REVIEW ON ATTENDANCE BY FACE RECOGNITION

Mohammad Azaan  
School of Computing Science and Engineering  
Galgotias University  
Greater Noida, India  
Email: mohdazaan297@gmail.com

Ansh Saxena  
School of Computing Science and Engineering  
Galgotias University  
Greater Noida, India  
Email: saxenaansh93@gmail.com

## Abstract

Face recognition software is designed to match human faces to computer images. Face recognition is one of the most useful image processing applications, and it plays an important part in the technical world. The recognition of a human face is a hot topic for verification reasons, particularly in the context of school attendance. Face biostatistics based on high-definition monitoring and other computer technologies are used to recognise kids in an attendance system utilising face recognition. We will learn how to execute high-accuracy facial recognition in this project. First, we'll go over the theory and learn how to put it into practice. Then we'll make an Attendance project that uses a webcam to recognise faces and automatically record attendance in an excel sheet.

## I. INTRODUCTION

Face detection is defined as finding the position of the face of an individual. In other word it can be defined as locating the face region in an image. After detecting the face of human its facial features are extracted and has wide range of application like facial expression recognition, face recognition, observation systems, human PC interface.

Attendance is prime important for both the teacher and student of an educational organization. So, it is very important to keep record of the attendance.

The problem arises when we think about the traditional process of taking attendance in class room. Calling name or roll number of the student for attendance is not only a problem of time consumption but also it needs energy. So, an automatic attendance system can solve all above problems. There are some automatic attendances making system which are currently used by much institution. One of such system is biometric technique. Although it is automatic and a step ahead of traditional method it fails to meet the time constraint. The student has to wait in queue for giving attendance, which is time taking. This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly essential. This system eliminates classical student identification such as calling name of the student, or checking respective identification cards of the student, which can not only interfere with the ongoing teaching process, but also can be stressful for students during examination sessions. The implementation of an attendance management system using facial recognition for attendance marking is a logical method. Face recognition is more exact and faster than other systems, and it reduces the danger of proxy attendance. Face recognition enables for passive identification, which means that the person being identified does not have to do anything to be recognized.

## II. OBJECTIVE

The objective of study is to implement attendance using face recognition with AI/ML Techniques such as support vector machine Also apply more techniques approach on student data for marking attendance.

## III. METHODOLOGY

AMS undergoes mainly three processes such as face detection, feature extraction and face recognition. modified viola-jones algorithm detects the face. Face detection uses haar classifier with high accuracy, features extraction is obtained using LBP followed by SVM for the classification of features.

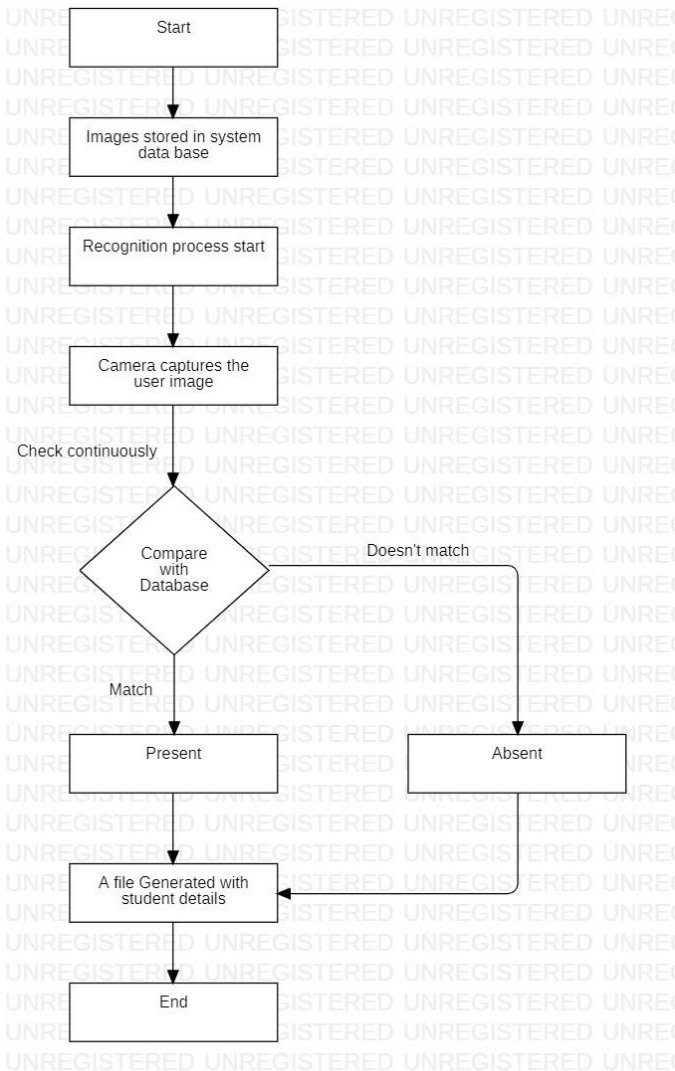


Fig. 2. Methodology

### A. Face Detection

Face detection is a computer technology being used in a variety of applications that identifies human faces in digital images. Face detection step will detect faces in captured images so that these faces can be used for comparison. For face detection Viola-Jones algorithm is used. ▪ Viola-Jones Algorithm: The Viola-Jones algorithm is a widely used mechanism for object detection. The main property of this algorithm is that training is slow, but detection is fast. This algorithm uses Haar basis feature filters. The efficiency of the Viola-Jones algorithm can be significantly increased by first generating the integral image.

### B. Post-Processing:

The post-processing mechanism involves the process of updating the names of the student into an excel sheet. The excel sheet can be maintained on a weekly basis or monthly basis to record the students' attendance. This attendance record can be sent to parents or guardians of students to report the performance of the student.

### C. Machine Learning Algorithms

In this model, we apply a variety of algorithms that are very effective for identifying rainfall forecast and assisting us in obtaining the correct classification outcome for the data in the supplied data set. We use algorithms such as Random Forest, SVM, and others.

#### I - Algorithm of the random forest:

Random Forest is a classifier that combines a number of decision trees on different subsets of a dataset and averages the results to increase the dataset's predicted accuracy.

" Rather than depending on a single decision tree, the random forest collects the forecasts from each tree and predicts the final output based on the majority votes of predictions.

II- Vector support machine: The Support Vector Machine, or SVM, is a popular Supervised Learning technique that may be used to solve both classification and regression issues. However, it is mostly utilized in Machine Learning for Classification difficulties. The SVM algorithm's purpose is to find the optimum line or decision boundary for categorizing n-dimensional space into classes so that additional data points can be readily placed in the correct category in the future. A hyperplane is the name for the optimal choice boundary. Selects the extreme points/vectors that aid in the formation of the hyperplane. Support vectors are the extreme situations, and the Support Vector Algorithm is named after them.

#### *D. Training Testing Model*

Once each algorithm's network is created, the data must undergo training in which we conduct supervised learning. To learn features from the dataset, the algorithm uses trained data. Later, testing is conducted using performance metrics such as accuracy, precision f1 score and recall to analyze the quality of our developed model. It is often called confusion matrix.

#### IV. CONCLUSION

Smart attendance management system is designed to solve the issues of existing manual systems. We have used face recognition concept to mark the attendance of student and make the system better. The system performs satisfactorily in different poses and variations. In future this system needs, be improved because these systems sometimes fail to recognize students from some distance, also we have some processing limitation, working with a system of high processing may result even better performance of this system.

#### V. ACKNOWLEDGMENT

In performing our assignment, we had to take the help and guideline of some respected person, who deserve our greatest gratitude. The completion of this assignment gives us much Pleasure. We would like to show our gratitude MR.S.P. RAMESH, Project Mentor, Galgotias University who introduced us to the Methodology of work, and whose passion for the "underlying structures" had lasting effect and for giving us a good guideline for assignment throughout numerous consultations. We would also like to expand our deepest gratitude to all those who have directly and indirectly guided us in writing this Assignment.

Many people , especially your classmates and team members itself , have made valuable comment suggestions on this proposal which gave us an inspiration to improve our assignment. We thank all the people for their help directly and indirectly to complete our assignment.

#### VI. REFERENCES

1. Kar, Nirmalya, et al. "Study of implementing automated attendance system using face recognition technique." *International Journal of computer and communication engineering* 1.2 (2012): 100.
2. Joseph, Jomon, and K. P. Zacharia. "Automatic attendance management system using face recognition." *International Journal of Science and Research (IJSR)* 2.11 (2013): 327- 330.
3. Joseph, Jomon, and K. P. Zacharia. "Automatic attendance management system using face recognition." *International Journal of Science and Research (IJSR)* 2.11 (2013): 327- 330.
4. Deshmukh, Badal J., and Sudhir M. Kharad. "Efficient Attendance Management: A Face Recognition Approach." (2014).
5. YOUTUBE