



Automatic Face Recognition Based Attendance System

Ms. Sonam¹, Assistant Professor Gautam kumar²
Swami Devi Dyal Institute of Engineering and Technology, Panchkula
sonamrohilla@gmail.com¹, gautamkumar11352@gmail.com²

Abstract— A person's face represents his or her uniqueness or individuality. In this project, the face of a person is employed for the goal of automatically calculating attendance in real-time. Every college, university, and school relies heavily on student attendance. The student's name or roll number is called, and the attendance is recorded. The amount of time it takes to accomplish this is a major worry. For example, let's say a class lasts 60 minutes or an hour, and recording attendance takes 5 to 10 minutes per class. This is a waste of time for any tutor. An image-processing-based automatic technique is employed in this research in order to avoid these losses. Facial detection and face recognition are employed in this research. Facial detection is used to find a face's location, while facial recognition is used to note the attendance of the understudy. The database of all the pupils in the class is saved, and attendance is registered when the student's face matches one of the faces in the database.

Keywords— *AFR, Automatic Attendance System, Face Recognition, Face Recognition Based Attendance System.*

I. Introduction

Face Recognition is a system which can identify or verify the face of a person using digital picture or video masking. In face systems, there are so many ways. Visual recognition employs biometrics to map image or video facial characteristics. Face acknowledgement can help to authenticate an individual's personal identity. We believe that facial recognition can allow people to validate their presence with these characteristics. Face recognition is highly helpful at this time in today's digital world. In particular for employment sectors requiring certification of attendance. Perhaps certain areas now rely on technology for attendance verification. However, others still use long-term, traditional methods. Facial recognition is therefore highly helpful in checking attendance to accelerate the recording and verification process. Face recognition is one of the most frequently investigated computer vision technologies with novel approaches and good annual outcomes. Main approaches to face recognition are often categorised as

holistic approaches based on features. In holistic techniques, recognition is done on the basis of global characteristics from faces, while face is recognized with local aspects from faces in functional approaches. In many schools and universities, the traditional approach to attendance is a tiresome chore. It also constitutes an additional load for the professors to attend by calling the names of the students manually, which may take about 5 minutes for the full session. It takes time. It takes time. It is possible to attend a proxy. Various institutes have therefore begun to implement many more recording systems, such as RFID, iris recognition, and the recognition of fingerprints. These methods are reliant on tails, however, which may take longer and are intrusive in nature. An important biometric feature has been set, which can easily be acquired and does not interfere. Various facial expressions are relatively unavoidable in face recognition systems. Two forms of facial recognition technology are verification and facial identification. Face checking is a 1:1, it compares the face picture to the face image template and a 1:N issue comparing photos in a query. This method is designed to provide an attendance system based on techniques of facial recognition. An individual's face here is considered as a signature. Presently, face acknowledgement has been more popular and widely used. We presented in this work a system for the identification of the faces of pupils from live streaming classroom videos and attendance, if the faces recognized are in the database. Compared with conventional procedures, this innovative system takes less time.

II. Literature Review

Akash Singh et. all (2021) Automatic attendance system for facial recognition is easy, accurate and efficient. Once each student record has been established, the system operates automatically. Some appearance-proof algorithms should be utilized to enhance system performance and accuracy. The face shows a person's identity. Therefore, the authors built an autonomous student support system based on facial recognition. [1]

Debadrita Ghosh (2021) The system provides automatic support. The use of these technologies proved time savings and great security. It can identify unknown people too. Future extraction is a technology for increasing recognition rates. The technology has produced just 30 degree facial

recognition that needs additional refinement. Inadequate lighting can alter the image and lack clarity reduces system performance indirectly. [2]

Dr. Asif Ali et. all (2021) By comparing the images in photographs in a folder, the author approach allows individuals to be recognized. This model allows students to recognize their faces and automatically register their attendance in real time without any manual intervention. By renting cloud storage details, we can improve the model's feasibility. The old system consists of records of teachers that can lead to human errors and lengthy retention. In this system, time consumption is a major problem. [3]

Ankur Singh Bist et. all (2020) Signy Advanced Technologies has made a breakthrough in the area of artificial intelligence with AttendX's artificial intelligence design that records student attendance data that are deemed able to prevent attendance fraud. There are 49 people in this trial, including seventeen men and 32 women, in the 13-day AttendX 1.28 test from 5-18 August 2020. Of the 1,000 participants chosen, 1,764 participated. The success rate reached 56 percent of 882 mask absenteeism trials. The research results will provide an alternative to academic activities and the use of technology that needs improved in order to cater to an increasing era of artificial technology based on intelligence. [4]

Samiksha Malhotra et. all (2020) The technology functions as a smart system that reduces workload and eliminates manual errors. It is more effective because it is completely automated. Traditional logbooks, RFID-based devices, and biometric fingerprinting are all eliminated in this manner. Because many intelligent systems have been developed utilizing a range of approaches and methodologies, it can be determined that hair-like features are best suited to the system because the model takes less time. [5]

Soumitra Chowdhury et. all (2020) Carry out automatic classroom scoring and storage. The procedure comprises data entry, training data, face-to-face and automatic assistance. Even if the camera is not looked at directly, the CNN model in this study detects and identifies an individual using facial traits. The proposed technology can detect and identify pupils with an accuracy of roughly 92 per cent. [6]

Aparna K S et. all (2020) The proposed method is to recognize the student's photos on the basis of facial features and attendance when positioning the webcam in the classroom. The accuracy of the student pictures recognition system is 84%. Faces in outside situations are recognized by authors. This face recognition system can be implemented on mobile devices. Classes in real time are a time-consuming effort. Teachers experience various issues while monitoring attendance manually. [7]

Payal Chaudhari et. all (2020) The facial recognition management system aims at solving currently existing challenges in the existing management systems. To prevent agents presence, data bases and datasets security is highly vital. Manual support can be deleted and saves time. Because the system has little to do with the spread of microorganisms, it also removes the risk. All organizations are compelled, due to Covid-19, to comply with government social separation. We can ensure that social distances are respected when a such gadget is deployed on campus. [8]

Rupali Satpute et. all (2020) In this paper authors Explain how the projects are using techniques and methods. Finally, the findings and how they were resolved are displayed and then discussed. Haar-Cascades have a very good effect for face detection. The video speed in real time without obvious frame delay is satisfactory, even if the subject wears glass or has a beard or some other facial feature. The combination of

LBPH and Haar-Cascades as a cost-effective platform for facial recognition can be considered extensively. [9]

Dr. R.S. Sabeenian et. all (2020) The project was finished to be more intelligently involved. A deep learning algorithm is Mobile Face net. The accuracy of the marking faces in a given data set is 85% and the accuracy of marking faces in a given data set is up to 90%. This helps managers reduce the manual attendance time and replace the system of RFID cards with the corresponding identities assigned to each student. [10]

III. Methodology

METHODOLOGY

3.1 Proposed Block Diagram

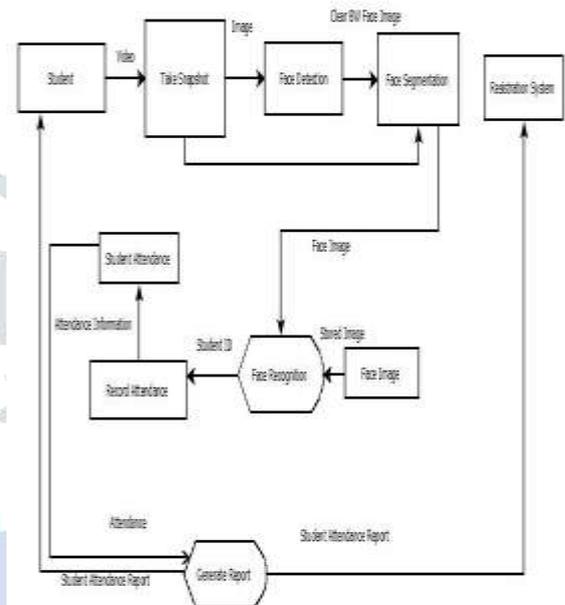


Figure 1 Proposed Block Diagram

Above image shows the our methodology block diagram in proper way.

3.2 Algorithm Flow chart:

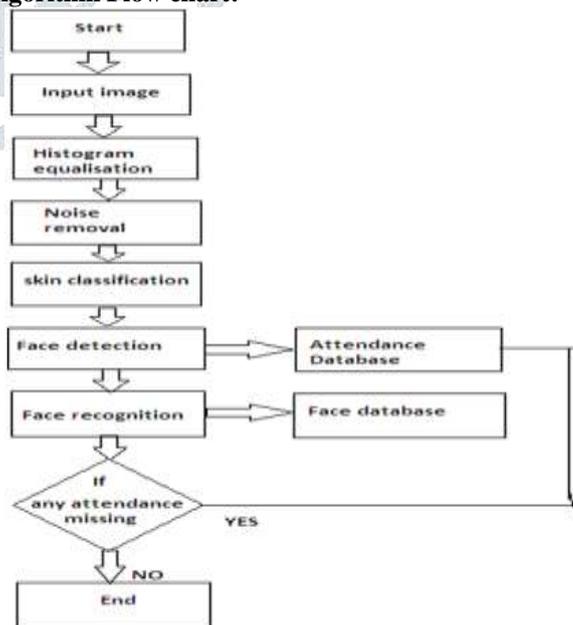


Figure 2 Flow Chart

Face detection is the process of determining the position of a person's face. If you want to be more specific, you might describe it as finding the face region in a picture. In order to

extract facial features from a human face, it is necessary to detect the individual's face... Finding the face in a picture of a single person is straightforward, but finding the face in a picture of many people is more challenging.

Face detection is a crucial first step in the application of face recognition. Once the face has been detected, the facial recognition system can begin to function properly. Face detection is a sophisticated process that takes into account a variety of factors, such as the environment, postures, illumination, and so on.

There are a number of methods for detecting faces that are now in use. These include color-based, characteristic-based (such as mouth, nose, and eyes) as well as neural network-based methods. Of the various methods, the skin-based process is the most straightforward. The skin colour based face detection method is the method that was planned and implemented in this thesis. Since multiple faces can be recognised from a large group of people in a single shot, the method is quite dynamic. Human skin can be detected by using the RGB colour model, which uses the YCbCr model.

IV. Results

4.1 Training Images Data



Figure: 3 Training Image Set (1)



Figure: 4 Training Image Set (2)

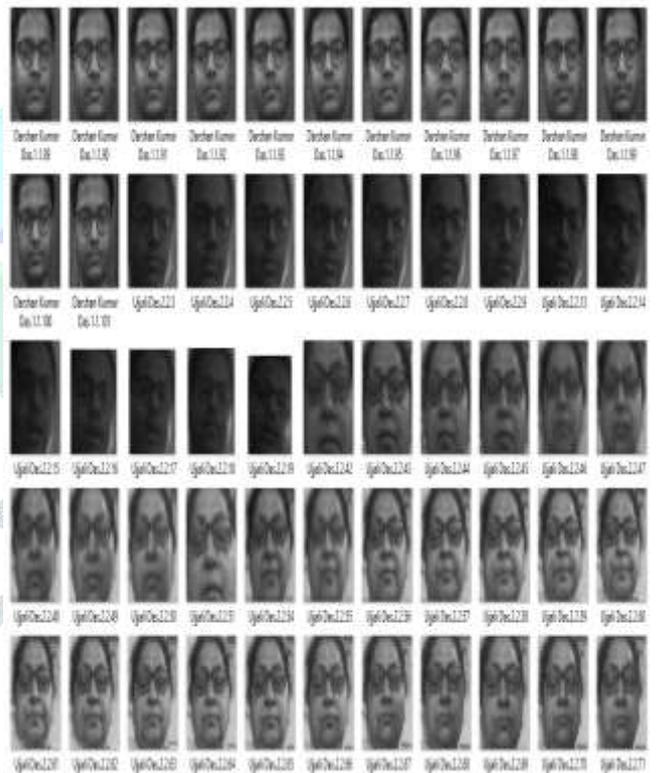


Figure: 5 Training Image Set (3)



Figure: 6 Training Image Set (4)



Figure: 7 Training Image Set (5)

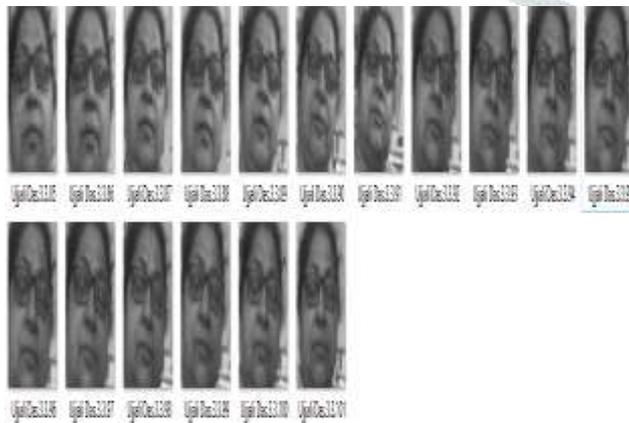


Figure: 8 Training Image Set (6)

	A	B	C	D	E	F	G	H
1	Id		Name		Date		Time	
2								
3	1		Darshan Kumar Das		4/3/2021		21:17:28	
4								
5	1		Darshan Kumar Das		4/3/2021		21:17:42	
6								
7	1		Darshan Kumar Das		4/3/2021		21:22:55	
8								
9	1		Darshan Kumar Das		4/3/2021		21:28:41	
10								
11	1		Darshan Kumar Das		4/3/2021		21:46:13	
12								
13	2		Ujjali Das		4/3/2021		21:55:34	
14								
15								

Figure: 9 Output Attendance Sheet Result

V. Conclusion

This system tries to construct an efficient class attendance system using techniques of facial recognition. The technology proposed can mark the presence through face Id. It detects faces with a camera and recognizes faces. Following acknowledgment, the recognized student will attend and the attendance record will be updated. The effort was proposed to build a system for recognizing the presence of students in schools and institutions. Here is an automatic student attendance system based on face recognition. By comparing input photos from recorded video frames with training images, persons can be identified with the new approach. An input face image from a video frame can be utilized to detect and locate the face of an individual using the approach proposed.

VI. Future Scope

Good cameras and sources of lighting will be used for better results in the future. The environment is less dependent, especially in the places where images are taken in tests and training. A face recognition system can also be constructed which detects numerous faces besides simply one. The efficiency of the system can be improved in this way. In this technology, testing and training images are closely linked, and the image capture device has an important impact on both. Instead of LBP there are several algorithms available, such as a facial recognition AI system.

VII. REFERENCES

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