



SMART ATTENDANCE SYSTEM USING PYTHON

^{*1} B. Goutam, ² M. Kamala

Assistant Professor, Department of Computer Science Engineering

CMR College of Engineering & Technology, Kandlakoya, Medchal Road, Hyderabad, Telangana, India

goutambomma@yahoo.in

mkamala@cmrcet.ac.in

ABSTRACT: Face recognition technology's prospects are very bright, and there is a lot of demand in the market, given the world's big data age and the technology's economic value. Utilizing constant video handling, the reason for this paper is to foster a facial acknowledgment participation framework. This article revolves around four issues: the accuracy speed of the face affirmation system during certifiable enlistment, the security of the face affirmation support structure with progressing video taking care of, the misconduct speed of the face affirmation investment system with consistent video dealing with, and the association point settings of the face affirmation cooperation structure with nonstop video taking care of. By examining the situation of these difficulties, the possibility of a participation framework in view of facial acknowledgment innovation is offered, and research on a participation framework in light of continuous video handling is done. The video facial recognition system appears to have an accuracy rate of up to 82%, according to the results of the experiment. When compared to the conventional check-in method, the face recognition attendance system has the potential to save up to 60% of time. The problem of students missing classes or leaving early has decreased significantly. The face acknowledgment time and participation framework with continuous video handling can rapidly finish the responsibilities of understudies in the time and participation registration framework, kill the complicated naming peculiarity, altogether increment class effectiveness, and assume a significant part in directing the advancement of the time and participation framework on account of the previously mentioned trial certificate.

Keywords – Video Processing, Face Recognition Technology, Face Recognition Attendance, Attendance System, Video Recognition.

1. INTRODUCTION

Nowadays of the Web, PC innovation has saturated numerous parts of individuals' lives and professions. The recurrence with which individuals interface with PCs is consistently rising. People are using computers even more much of the time these days. Quite possibly of the most difficult undertaking in the locale has various applications because of its elevated degree of imagination. As a vital identifier for recognizing individuals, face acknowledgment innovation has slowly entered individuals' lives. Computer programming and man-made thinking are combined in face affirmation. It has emerged as the most challenging problem in this field due to its extensive application potential and extremely difficult development. Face acknowledgment application framework has in short order developed as a PC security innovation in the globe as of late, especially now, when psychological oppressor exercises are normal, and this innovation has gathered expanding consideration. Face acknowledgment innovation has a few normal purposes in open security, community financial matters, and home diversion [1-2]. As a fundamental requirement of the organization, the pipeline of general businesses must monitor employee attendance. However, numerous unnecessary errors occur during the creation of these attendance systems. The current fingerprint attendance system was used

as an example in the study, and it was found to have an error rate of about 5%. In addition, there will be instances in which fingerprints cannot be hit, which has a significant impact on attendance efficiency, particularly in large attendance sites that are more likely to result in congestion. Be that as it may, continuous participation can't be gotten because of the card participation framework's issue with workers swiping cards for other people. Since there are more focuses for face recognizable proof, which is more precise than in different frameworks, face acknowledgment gives more exactness and strength than the other two participation techniques. Since it has enormously improved, it is hard to become blocked [3-4]. Our sensible experts have up to speed, and a couple of focal members have spread out their own business positions in the field of face unmistakable verification, despite China's unfortunate begin to defy affirmation development research. The fate of this innovation research is brilliant and there is a ton of interest in the market in light of the business meaning of facial acknowledgment innovation and the coming of the huge information age [5].

portrayal by falsely obscuring clear still photograph preparing information to compensate for the absence of real video preparing information. CNN is asked to thusly encourage cushioned coldblooded features using getting ready data involves still photos and delivered cushy data. Second, CNN suggested a trunk branch CNN model (TBE-CNN), which removes complementarity from the full-scale face picture and fixes around the face sections, in order to deal with the flexibility of CNN features to arrange changes and obstructions. 6] Interesting points. The problem of recognizing appearances without features has been the subject of research by specialists like Nemirovskiy V B. Gathering the closeness of the major appropriations of the splendor groups of the isolated images is necessary for the recognition. Nemirovskiy V B uses three types of distances to estimate proximity: Euclidean distance, cosine distance, and Leibler distance. Picture division and proximity measure bunching are carried out using a recursive neural network programming model [7].

2. LITERATURE REVIEW

Using Real Time Computer Algorithms in Automatic Attendance Management Systems:



Fig.1: Example figure

A clever way to deal with mechanized participation the board frameworks that utilizes PC vision procedures is portrayed in this review. To recognize and enlist understudies going to a talk, we propose coordinating constant facial acknowledgment calculations into a current Learning Management System (LMS). The framework, which joins versatile methodologies with ML calculations for following face changes over the long haul, fills in as an extra device for teachers. The goal of this new approach is to be less intrusive and unobtrusive than previous methods while also taking up less time. The application claims to offer accurate statistics and a more comprehensive reporting system that shows classroom activity and attendance.

Occlusion, posture shifts, and severe picture blur often affect faces in surveillance recordings. Ding C provided a comprehensive system based on convolutional neural networks (CNN) to overcome the challenges of video-based face recognition (VFR). Ding C makes a fluffy and dependable face



OpenCV Real-time Face Recognition Attendance System to Online-School Attendances:

Participation at school turns out to be more troublesome while the spelling of a name and the quantity of understudies in the class are thought about. During this scourge, every teacher's day is a dreary matter that is a fight to pressure and avoid. This could be an issue on the off chance that you monitor participation physically. An OpenCv Real-time Face recognition-based attendance system can not only measure participation attendances, but it will also provide security when the nature and time of a specific student's entrance should be perceived by the system. Since you can telecommute nevertheless see who is in your group, it saves time. At last, the completely computerized process makes it a lot less complex than the manual cycle to deal with the records that will be sent out into a Succeed document and to monitor the understudies or visitors who are joining in. Utilizing OpenCV, this task planned to foster a constant facial acknowledgment framework for school participation that would gather data on understudies who were available preceding or after class hours. Understudies should enlist and make a secret phrase for the framework. Facial acknowledgment will naturally record an understudy's participation, which will be saved as a text or Succeed document. By changing the manual methodology into a framework, the examination of OpenCV Constant Face Acknowledgment likewise lays out the framework's ease of use and materialness in each organization confronting troubles during the pandemic. The system is made to help with more efficient attendance management and to solve a problem that already exists. In order to accomplish this kind of desired objective. A descriptive developmental study design was used by the researcher. A prototype model was used to develop the system, which uses a novel strategy or idea for using facial recognition to achieve its objectives. While the system's usability, applicability, and efficiency were evaluated using McCall's Software Quality model.

Human Face with Mask Detection and Recognition for Smart Attendance System in a Pandemic Scenario:

Technology plays a significant role in face recognition and detection, particularly in the field of security. We will demonstrate in this article how to use a mask to identify the face and how the identified face is intelligently recognized and tagged as present. Face recognition and distinguishing proof with veils is progressively basic in the current pandemic emergency. In the event of a pandemic, this strategy is crucial to maintaining service and education without difficulty.

Automated Attendance System Using OpenCV:

The Student Attendance centralized server structure utilizes open PC vision and face discovery and ID to deal with the understudy participation records. The essential objective of carrying out this approach is to further develop the current participation arrangement of different foundations to try not to sit around idly and assets. The pointing-sides of the mechanized world have driven changing from customary participation frameworks to computerized frameworks that utilization face location and acknowledgment procedures. This is the manner in which the Student Cooperation structure is being outlined by adding an individual's dataset. The fundamental job for encouraging this system is to grow the versatility and execution of the support structure methodology, as well as to reduce the really long time weight, work, and disposables required. The essential goal of the Understudy Participation markup structure is to consequently compute the quantity of presentees and truants in light of the subject and amiability of the class, then, at that point, yield the mechanized report or bookkeeping sheet, by adding and changing individual participation notes. Python, a universally useful programming language in which we utilize the idea of open PC vision, is the sole underpinning of this procedure. For face acknowledgment, we utilized the LBPH model and the haarcascade face recognition framework; then individual student

planning occurred, all in all the system created an estimation sheet that gave the amount of students present in the homeroom with an image or video get live.

3. METHODOLOGY

Before, we utilized techniques, for example, roll numbering, calling, and marking against a specific roll number. These methods take a lot of time and are likely to use proxy. In order to achieve a classroom that is well-organized and disciplined, we came up with the idea of automating this procedure with modern technology.

DRAWBACKS:

1. These procedures take a lot of time and are likely to use proxy.

The project's goals will be helped along by the Smart Attendance system and the right hardware and software. The Smart Attendance system is a breakthrough in image processing. The extraction of useful data from digital images is the focus of image processing, which contributes significantly to technological advancement. Our essential accentuation will be on getting computerized photographs and afterward utilizing projects and calculations to extricate pertinent data from them. Image processing works on the visual data as it is sent in to make it usable for human interpretation. Image processing has many uses and can be used in almost any situation where imaging data and predetermined methods can be matched.

ADVANTAGES:

1. A practical choice for daily management of student attendance systems is Smart Attendance with Real-Time Face Recognition.

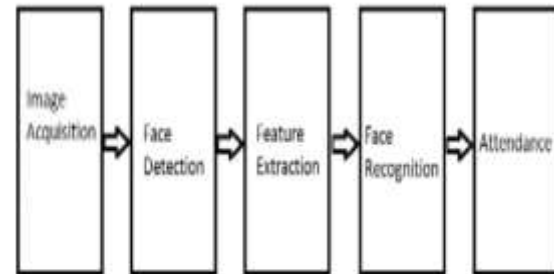


Fig.2: System architecture

MODULES:

We made the accompanying modules for this venture.

In this undertaking, we are utilizing the accompanying modules:

1. Get a Sample Image: This module gathers examples of photos.
2. Train a Sample Image: In this module, examples of photos are used to train.
3. Follow the Person: This module monitors the individual.
4. Upload to Excel and Record Attendance: This module records attendance and sends it to Excel.

4. IMPLEMENTATION

An ML method in light of deep learning and artificial neural networks is deep learning, otherwise called deep organized learning. Learning can happen unattended, to some degree regulated, or under oversight. In fields such as PC vision, speech affirmation, customary language handling, machine understanding, bioinformatics, drug plan, clinical picture assessment, material survey, and tabletop game projects, deep learning models such as deep neural networks, deep conviction organizations, deep support learning, recurrent neural organizations, and convolutional neural networks

have been utilized, delivering results comparable to, and occasionally astounding, human execution.

A powerful method for finding things that makes use of an ML-based approach is to make use of Haar feature-based course classifiers, which create a course limit from a large number of positive and negative images. Haar spills over Wise Cooperation in OpenCV Using Haar Wellsprings Article Circumstance Then, finding shows in various pictures is used.

- To develop the classifier, the calculation necessitates a large number of car images, both positive and negative. We ought to zero in on the elements by then. This is done with the haar highlights showed in the image under. Our convolutional section is very similar to them. Each part has a unique value that is calculated by subtracting the total number of pixels in the white square shape from the number of pixels in the dull square shape.

By and by, each possible size and district of every single part is used to choose many parts. How much computation is required, do you think? There are more than 160000 components in a 24x24 window. We should uncover the entire arrangement of pixels underneath white and dark square shapes for every part estimation. To address this, they provided the necessary images.

- Each component is now applied to each of the preparation images. It determines the best limit for each component, which will determine whether the faces will be positive or negative. Regardless, there will without a doubt be blunders or misclassifications. The elements that best organize the auto and non-auto images are the ones we select because they have the lowest error rate.

- So you snap a photograph right away. Examine each 24 x 24 window. It should have 6,000 parts in it. Determine if it is automatic or not.

Face detection • Utilize the cascadeClassifier() method on the generated haar cascade following the detection of a face.

- The zero-countdown timer has now begun.
- The genuine face is found involving the proportion in the image for every cm crossed by the recognized picture and continuously.

For face recognition, we used the lbph face recognizer.

LBPH (Nearby Paired Example Histogram) is a Face-Acknowledgment strategy that can perceive an individual's face. It is well-known for its performance and capacity to distinguish between the front and side faces of an individual. They are used in section control, reconnaissance frameworks, cell phone opening, and different applications. In this post, we will match faces in the system's database to features extracted from an input test picture using LBPH. By treating the result as a double whole number and thresholding the area around each pixel, the Local Binary Pattern (LBP) surface administrator marks the pixels in a picture. It is a simple yet extremely powerful surface administrator.

5. EXPERIMENTAL RESULTS



Fig.3: Output



Fig.4: Output



Fig.8: Output



Fig.5: Output



Fig.6: Output



Fig.7: Output

6. Results and Discussions

(1) College student management ought to be improved because college attendance management has emerged as one of society's most contentious issues. The majority of college students, on the other hand, continue to use paper signatures or teacher orders for daily attendance. However, as technology advances, some new methods suggest that punch card fingerprints and smart attendance methods will eventually be used by a small number of colleges and universities. Despite the fact that there are a few strategies for expanding participation, the outcome is insufficient. Attendance There is a flaw in all of these systems: extortion will happen, expanding the level of nonattendance. Besides the fact that this intermittent peculiarity adversely affects the brain science and physiology of understudies, however it additionally keeps the ordinary control of college guidance and brings down the nature of instructing. Likewise, it will be in very negative circumstances for preparing and the development of college discipline and soul. 2) With the end goal of continuous registration and review of understudy participation, this study fosters a face acknowledgment based constant participation framework in light of video handling and chooses two common establishments. This article revolves around four issues: the accuracy speed of the face affirmation system during certifiable enrollment, the trustworthiness of the face affirmation interest structure with consistent video taking care of, and the wrongdoing speed of the face affirmation cooperation system with progressing video dealing with. The face



acknowledgment participation framework's point of interaction settings are hard to dissect utilizing continuous video handling. By looking at the circumstance of these hardships, the chance of a support system considering facial affirmation development is offered, and research on a cooperation structure considering nonstop video taking care of is finished. The video facial acknowledgment framework has a precision of generally 82%, as indicated by research. When contrasted with the benchmark group, the pace of class skipping is essentially lower — around 13% — and the face acknowledgment time participation framework and manual unique mark punching are more solid and precise at distinguishing registrations. When contrasted with the benchmark group, the proficiency is essentially higher, which might keep understudies from missing illustrations and leaving early. 3) Facial acknowledgment innovation and a PC are utilized by the participation framework to accomplish the expected participation results, which impeccably matches the calculation's doable plan. Understudies who finished the participation sign-in framework achieved the tasks quickly, disposed of the troublesome roll call sign, and quickly understood the indication of activity and capability. The conversion of future time and attendance systems has made significant progress, significantly increasing face recognition technology's reliability and attendance rate. Our scientists ought to conduct additional research into it and come to its conclusion.

CONCLUSION

The reduced problem of students missing classes or leaving early is another positive outcome of using a face recognition attendance system. By accurately tracking attendance, the system can help ensure that students are attending classes regularly, which can contribute to their academic success and performance. With the help of CNN (Convolutional Neural Network) Algorithm. I have train and test the data to get accurate rate of up to 82% for the video facial recognition system is a promising result, which indicates that the system can accurately and efficiently identify students and record their

attendance. Moreover, the time-saving potential of up to 60% compared to conventional check-in methods is a significant advantage, as it can help reduce administrative burden and improve overall efficiency in college attendance management.

REFERENCES

- [1] Solanki, K., Pittalia, P. "Review of face recognition techniques", *International Journal of Computer Applications.*, vol. 133, no. 12, pp. 20-24, 2016.
- [2] Stoll Chloé, Richard, P. G., Roberto, C., Junpeng, L., Dye, M. W. G., & Florent, A. "Face recognition is shaped by the use of sign language", *Journal of Deaf Studies & Deaf Education.*, vol. 23, no. 1, pp. 1-9, 2018.
- [3] Deng, W., Hu, J., Guo, J. "Face recognition via collaborative representation: its discriminant nature and superposed representation", *IEEE Transactions on Pattern Analysis and Machine Intelligence.*, vol. 40, no. 10, pp. 1-1, 2017.
- [4] Pei, T., Zhang, L., Wang, B., Li, F., & Zhang, Z. "Decision pyramid classifier for face recognition under complex variations using single sample per person", *Pattern*



Recognition., vol. 64, no. C, pp. 305-313, 2016.

[5] Shi, H., Wang, X., Yi, D., Lei, Z., Zhu, X., & Li, S. Z. "Cross-modality face recognition via heterogeneous joint bayesian", *IEEE Signal Processing Letters.*, vol. 24, no. 1, pp. 81-85, 2017.

[6] Ding, C., Tao, D. "Trunk-branch ensemble convolutional neural networks for video-based face recognition", *IEEE Transactions on Pattern Analysis & Machine Intelligence.*, vol. PP, no. 99, pp. 1-1, 2016.

[7] Nemirovskiy, V., B., Stoyanov, A. K., Goremykina, D., S. "Face recognition based on the proximity measure clustering", *Institute of Cybernetics of Tomsk Polytechnic University.*, vol. 40, no. 5, pp. 740-745, 2016.

[8] Taniya, K., Nidhi, M., Nandini, T. "Automated human resource and attendance management system based on real time face recognition", *IJSRSET.*, vol. 16, no. 4, pp. 847-853, 2016.

[9] Wu, D., Tang, Y., Q., Lin, G., H., & Hu, H. "Roboust face recognition based on significance local directional pattern and

deep learning", *Guangdianzi Jiguang/Journal of Optoelectronics Laser.*, vol. 27, no. 6, pp. 655-661, 2016.

[10] Sun, Y., Zhao, J., Hu, Y. "Supervised sparsity preserving projections for face recognition", *Proceedings of Spie.*, vol. 8009, no. 4, pp. 357-366, 2017.

[11] Best-Rowden, L., & Jain, A., K. "Longitudinal study of automatic face recognition", *IEEE Transactions on Pattern Analysis & Machine Intelligence.*, vol. PP, no. 99, pp. 1-1, 2018.

[12] Valentine, T., Lewis, M., B., & Hills, P., J. "Face-space: A unifying concept in face recognition research", *Quarterly Journal of Experimental Psychology.*, vol. 69, no. 10, pp. 1996-2019, 2016.

[13] Duan, Y., Lu, J., Feng, J., & Zhou, J. "Context-aware local binary feature learning for face recognition", *IEEE Transactions on Pattern Analysis & Machine Intelligence.*, vol. PP, no. 99, pp. 1-1, 2017.

[14] Nemirovskiy, V., B., Stoyanov, A., K., Goremykina, D., S. "Face recognition based on the proximity measure clustering", *Institute of Cybernetics of*



IJARST

International Journal For Advanced Research In Science & Technology

A peer reviewed international journal

ISSN: 2457-0362

www.ijarst.in

Tomsk Polytechnic University., vol. 40, no. 5, pp. 740–745, 2016.

[15] Chakraborty, S., Singh, S., K., & Chakraborty, P. “Local gradient hexa pattern: a descriptor for face recognition and retrieval”, *IEEE Transactions on Circuits & Systems for Video Technology.*, vol. PP, no. 99, pp. 1-1, 2016.