

Face Recognition Attendance System

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Abstract

For every corporation, these days attendance is the maximum crucial aspect to document the presence of a person. The presence of someone in an organisation is an indication that the character is wearing out their duties to come to the corporation or company. Usually, attendance is carried out manually. It can be signed or called separately. In this digital age, there aq1 have to be a alternate from this absence so that it will boost up and provide time efficiency. We can use face reputation to file attendance from everyone present in an organisation. On this face popularity, many algorithms are performed to dissect and seize snap shots of someone's face, such as gadget mastering and deep studying. With this set of rules, the gadget can apprehend someone's face and document attendance from that individual in order that attendance sports are greater green and faster.

Keywords:- Attendance system · Face recognition · Attendance management · Machine Learning · Face capturing

1.INTRODUCTION

Conventional method of attendance marking is a tedious project in masses of schools and faculties. It's also a in addition burden to the schools who have to mark attendance by means of manually calling the names of college college students which might take about five mins of complete session. This is time consuming. There are a few possibilities of proxy attendance. Consequently, many institutes commenced out deploying many other strategies for recording attendance like use of radio frequency identification (rfid) [3], iris popularity [4], fingerprint recognition, and so forth. However, those structures are queue based totally absolutely which would possibly devour more time and are intrusive in nature. Face recognition has set an vital biometric feature, which can be resultseasily acquirable and is non-intrusive. Face recognition based structures are pretty oblivious to diverse facial functions. Face recognition system includes training: verification and face identification. Face verification is an 1:1 matching technique, it compares face picture in opposition to the template face pictures and even as is an 1:n issues that compares a query face photographs [1]. The cause of this device is to build a attendance device this is primarily based totally on face reputation strategies. Right here face of an man or woman might be taken into consideration for marking attendance. These days, face reputation is gaining greater reputation and has been broadly used. On this paper, we proposed a device which detects the faces of students from live streaming video of study room and attendance might be marked if the detected face is observed in the database. This new machine will eat much less time than compared to conventional techniques. ii. Literature survey authors in [3] proposed a version of an automatic attendance device. The model focuses on how face recognition included with radio frequency identity (rfid) come across the legal college students and counts as they get in and get out shape the study room. The device keeps the genuine record of each registered pupil. The machine also continues the statistics of every student registered for a specific course within the attendance log and gives essential facts in step with the want. On this paper [4], authors have designed and implemented an attendance device which makes use of iris biometrics. Initially, the attendees have been requested to sign in their details at the side of their particular iris template. At the time of attendance, the device routinely took magnificence attendance by way of shooting the attention picture of each attendee, recognizing their iris, and attempting to find a fit in the created database. The prototype become internet based totally. In [5], authors proposed an attendance device based on facial recognition. The algorithms like viola-jones and histogram of orientated gradients (hog) features together with aid vector system (svm) classifier had been used to put in force the system. Various real time situations along with scaling, illumination, occlusions and pose changed into taken into consideration by the authors. Quantitative analysis become completed on the basis of peak sign to noise ratio (psnr) values and turned into applied in matlab gui. Authors in [6] researches to get nice facial reputation algorithm (eigenface and fisherface) supplied with the aid of the open cv 2.4.8 by using evaluating

the receiver operating characteristics (roc) curve and then carried out it within the attendance system. Based at the experiments performed on this paper, the roc curve proved that, eigenface achieves higher end result than fisherface. System implemented using eigenface set of rules achieved an accuracy charge of 70% to ninety%. In [7], authors proposed a technique for student attendance system in study room the use of face recognition technique by way of combining discrete wavelet transforms (dwt) and discrete cosine transform (dct). Those algorithms had been used to extract the functions of pupil's face observed with the aid of applying radial foundation function (rbf) for classifying the facial gadgets. This system executed an accuracy fee of 82%.

2. Theoretical Background

In line with literature, pupil attendance device by means of way of face detection, keeping attendance is very crucial and obligatory in all the institutes for checking the performance of college students. Every institute has its technique in this regard. A few are taking attendance manually the use of the old paper antique record-based totally definitely technique and a few have followed strategies of automated attendance the use of a few biometric strategies [3]. An automated attendance device primarily based on face popularity is a biometric machine wherein commonly, it registers the attendance of every scholar found in a category via detecting and identifying all in their faces, after which this recorded records is ideally transmitted to a server tool which may also compute the attendance of each student and save and update the corresponding information in a database. Automated attendance structures are more reliable, inflexible, and green than the conventional attendance structures and distinctive biometric attendance systems, main to higher productivity and output of each the lecturers and university students, as well as better intake of time [13]. An automatic attendance system the use of photo processing, retaining attendance could be very crucial and obligatory in all of the institutes for checking the performance of students. Each institute has its technique on this regard. A few are taking attendance manually the use of the vintage paper or record-based totally method and some have followed techniques of automatic attendance the usage of a few biometric strategies. There are numerous computerized strategies available because of this i.E. Biometric attendance. Maximum of these techniques also waste time due to the fact college students must make a queue to the touch their thumb at the scanning device [2]. Face detection and recognition section hit upon face from the photograph capture by way of the digicam, and the image of the face is crop and keep. The element recognizes the images of pupil's faces, that have been registered manually with their names and identity code in the file. Face recognition records and face identity statistics are verification into the file. Automated face popularity (afr) technology has seen a amazing improvement in presentation over the last years, and such structures are simply widely used for safety and marketable packages. An automated system for human face popularity in a real-time surroundings for a college to mark the attendance of its personnel [14]

3. PROPOSED SYSTEM

All of the university college students of the magnificence should join up themselves through getting into the required info and then their pix may be captured and stored inside the dataset. In some unspecified time in the future of every consultation, faces is probably detected from stay streaming video of lecture room. The faces detected is probably in contrast with pics present in the dataset. If fit located, attendance can be marked for the respective student. On the surrender of each session, listing of absentees can be mailed to the respective faculty dealing with the consultation. The device structure of the proposed system is given under,

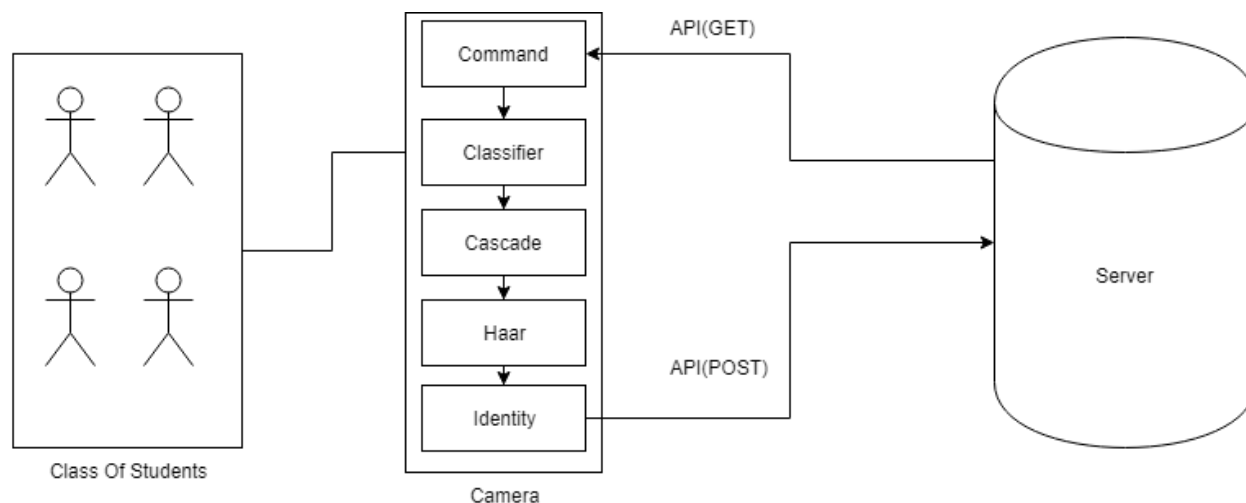


Fig.1. System Architecture Typically this process can be divided into four stages,

1.Dataset Creation

Photos of college students are captured the usage of a web cam. A couple of photographs of single scholar can be received with various gestures and angles. Those pictures undergo pre-processing. The photos are cropped to acquire the location of interest (roi) so that you can be in addition used in popularity system. Subsequent step is to resize the cropped pix to unique pixel position. Then the ones pix can be converted from rgb to gray scale pics. And then these snap shots is probably stored because the names of respective student in a folder.

2. Face Detection

Face detection right here is finished the use of haar-cascade classifier with opencv. Haar cascade set of policies wishes to benefit understanding of to come across human faces earlier than it may be used for face detection. This is referred to as feature extraction. The haar cascade training information used is an xml filehaarcascade_frontalface_default. The haar features proven in fig.2. May be used for characteristic extraction.



Fig.2. Haar Features

Right here we're the use of detectmultiscale module from opencv. This is required to create a rectangle around the faces in an photograph. It has were given 3 parameters to recollect- scalefactor, minneighbors, minsize. Scalefactor is used to signify how lots an photograph want to be decreased in each photo scale.

Minneighbors specifies how many friends every candidate rectangle have to have. Better values normally detects much less faces but detects immoderate pleasant in image. Minsize specifies the minimum object duration. By way of default it's miles (30,30) [8]. The parameters used on this device is scalefactor and minneighbors with the values 1.Three and 5 respectively

3. Face Recognition

Face popularity technique may be divided into 3 stepsprepare schooling facts, teach face recognizer, prediction. Here schooling information may be the photographs present in the dataset. They will be assigned with a integer label of the student it belongs to. The ones pictures are then used for face reputation. Face recognizer used in this system is close by binary sample histogram. To start with, the list of neighborhood binary styles (lbp) of whole face is obtained. Those lbps are converted into decimal quantity and then histograms of all of the ones decimal values are made. At the stop, one histogram may be fashioned for each pics within the training data. Later, in some unspecified time in the future of reputation method histogram of the face to be diagnosed is calculated and then compared with the already computed histograms and returns the fine matched label associated with the student it belongs to [9].

4. Attendance Updation

After face reputation manner, the diagnosed faces can be marked as gift within the excel sheet and the rest may be marked as absent and the list of absentees may be mailed to the respective faculties. Faculties is probably updated with monthly attendance sheet on the cease of every month. Iv. Results and discussions the clients may have interplay with the device the use of a gui. Here customers might be in particular provided with 3 different options which incorporates, student registration, college registration, and mark attendance. The students are alleged to enter all the required information inside the student registration form. After clicking on sign in button, the web cam begins mechanically and window as tested in fig.3. Pops up and starts offevolved detecting the faces in the frame. Then it mechanically starts offevolved clicking pictures until 60 samples are collected or ctrl+q is pressed. Those pictures then can be pre-processed and stored in training photographs folder. The schools are imagined to test in with the respective path codes at the side of their email-identification within the university registration form provided. This is important due to the truth the list of absentees can be in the long run mailed to the respective colleges.

4. RESULTS AND DISCUSSIONS

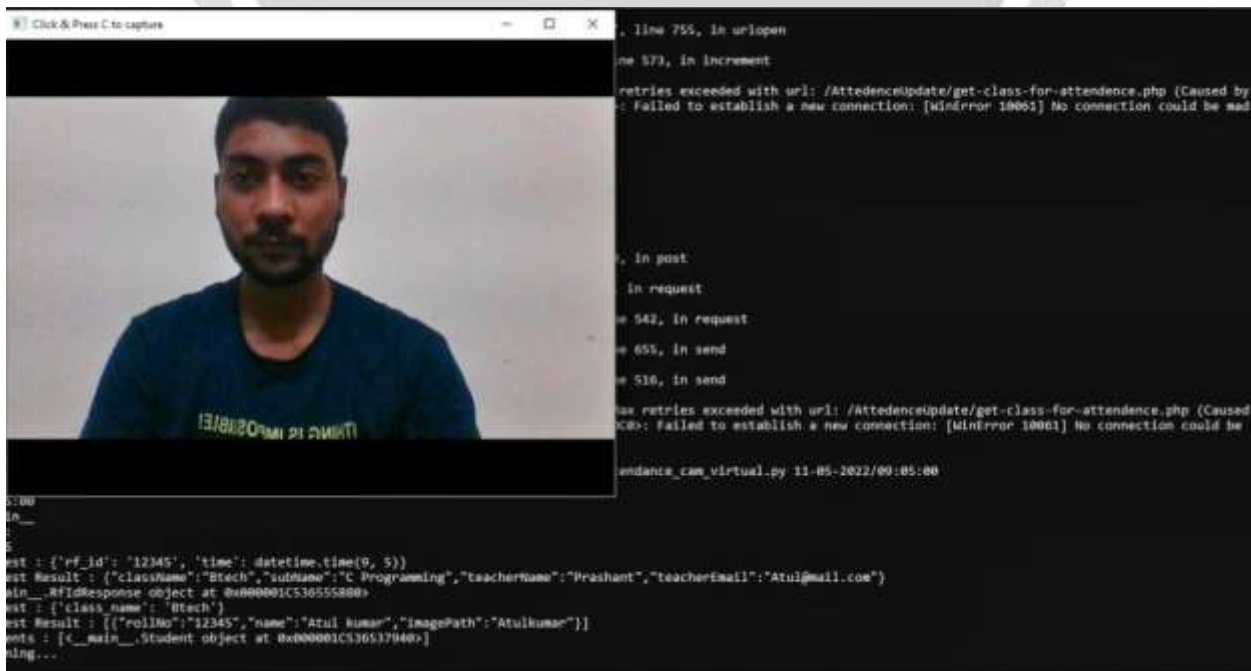


Fig.3. Face Detection

The customers may have interplay with the device using a gui. Proper proper right here customers might be in particular furnished with three brilliant alternatives collectively with, scholar registration, faculty registration, and mark attendance. The scholars are presupposed to input all of the required statistics inside the pupil registration form. After clicking on be a part of up button, the net cam begins offevolved robotically and window as established in fig.3. Pops up and begins offevolved detecting the faces inside the frame. Then it automatically starts offevolved offevolved clicking pictures until 60 samples are amassed or ctrl+q is pressed. These pics then can be pre-processed and saved in training snap shots folder. The schools are alleged to register with the respective course codes together with their electronic mail-identity in the school registration shape furnished. This is vital due to the reality the listing of absentees might be ultimately mailed to the respective faculties. In every session, respective faculty must enter their course code. Then after submitting the course code, the camera will start automatically. The Fig.4. shows the face recognition window where two registered students are recognized and if in case they were not registered it would have shown 'unknown'. By pressing CTRL+Q, the window will be closed and attendance will be updated in the excel sheet and names of absentees will be mailed to the respective faculty.

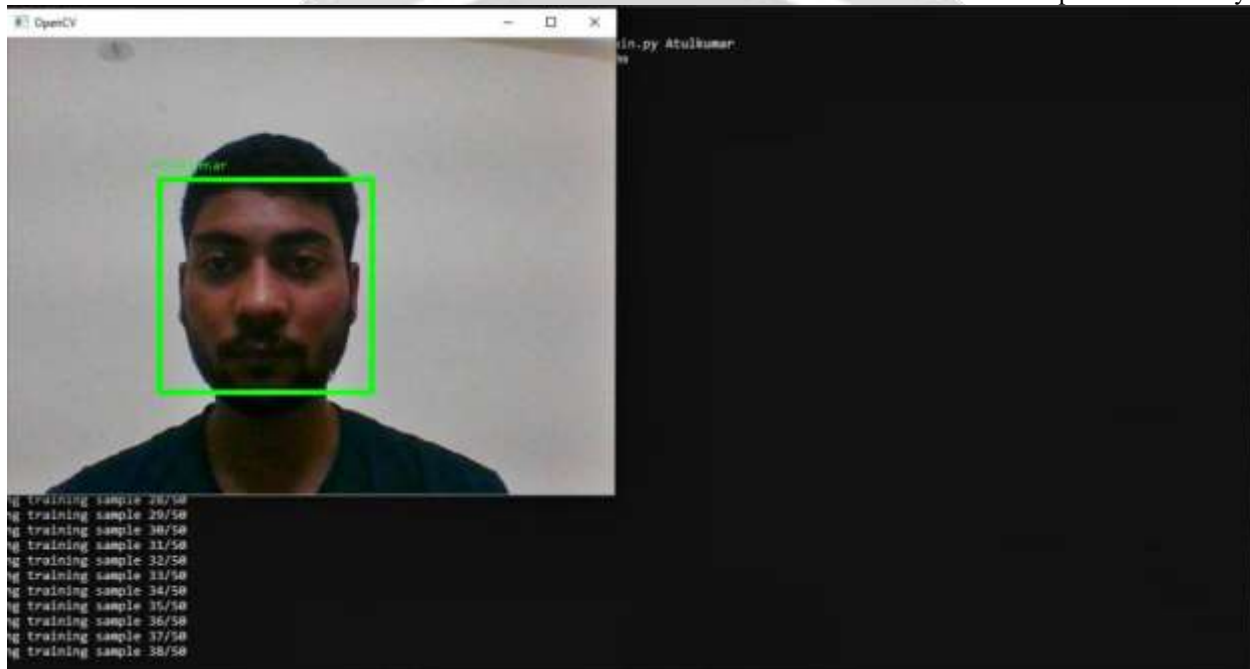


Fig.4. Face Recognition



Fig 5. Set of 50 images for Learning.

Attendance of class Btech							
Roll No	Student Name	2022-06-01	2022-06-02	2022-06-03	2022-06-04	2022-06-07	2022-06-08
12345	Alul kumar	P	P	P	P	P	P

Fig.6. Attendance sheet

5. Conclusion

This systematic literature evaluation observes and identifies the attendance machine with face reputation. This systematic literature evaluation based totally on the deep reading technique, beginning with many initial studies collected from on line databases. Via the item selection method obtained 37 articles are eligible then analyzed. This look at goals at developing and understanding of the attendance machine with face popularity. Statistics of the framework and crucial success factors inside the implementation of deep learning is important to the a success implementation. Facenet returns a 128-dimensional vector embedding for every face. The face uses the concept of triplet loss. For rq to answer the set of rules for face detection their’s ten algorithms are used. We obtained ten algorithms that have been diagnosed primarily based at the results of the principle research that have been extracted. We classify the principle studies which will provide statistics approximately the algorithm for face recognition. Every set of policies has its use for face popularity. And until now the extent of accuracy of the set of rules this is exquisite used for face detection is a deep reading set of regulations.

References

1. Agrawal, s., khatri, p.: facial expression detection techniques: primarily based totally on viola and jones set of policies and essential element assessment. In: 2015 5th global convention on advanced computing & communication era, pp. 108–112. Ieee (2015)
2. Ahmedi, a., nandyal, s.: an automatic attendance machine the usage of image processing. Int. J. Eng. Sci. (ijes) four(eleven), 1–eight (2015)
- Three. Bodhe, v.M., bhakre, s.M., ikhar, s.D.: scholar attendance device thru face detection. Int. J. Innov. Res. Comput. Commun. Eng. Five(3), 3958 (2017)
- Four. Chintalapati, s., raghunadh, m.: automated attendance management machine primarily based on face recognition algorithms. In: 2013 ieee global convention on computational intelligence and computing research, pp. 1–five. Ieee (2013)
- Five. Deshpande, n.T., ravishankar, s.: face detection and reputation the use of violajones set of rules and fusion of pca and ann. Adv. Comput. Sci. Technol. 10(five), 1173–1189 (2017)
6. D’silva, adequate., shanbhag, s., chaudhari, a., patil, m.P.: spot me-a clever attendance device based totally on face popularity. Int. Res. J. Eng. Technol. (irjet) 6(three), 4239 (2019)
7. Elias, s.J., hatim, s.M., hassan, n.A., abd latif, l.M., ahmad, r.B., darus, m.Y., shahuddin, a.Z.: face reputation attendance device the use of community binary sample (lbp). Bull. Electr. Eng. Inf. 8(1), 239–245 (2019)
- Eight. Fei-fei, l., fergus, r., perona, p.: one-shot analyzing of item classes. Ieee trans. Pattern anal. Mach. Intell. 28(4), 594–611 (2006)
9. Jee, h., lee, k., pan, s.: eye and face detection the usage of svm. In: complaints of the 2004 intelligent sensors, sensor networks and facts processing convention, 2004, pp. 577–580. Ieee (2004)
10. Lawrence, s., giles, c.L., tsoi, a.C., lower back, a.D.: face reputation: a convolutional neural-network technique. Ieee trans. Neural networks 8(1), 98–113 (1997)
- Eleven. Li, s.Z., zhang, z.: floatboost analyzing and statistical face detection. Ieee trans. Pattern anal. Mach. Intell. 26(nine), 1112–1123 (2004)
12. Lu, j., plataniotis, adequate.N., venetsanopoulos, a.N.: regularization research of linear discriminant assessment in small sample period scenarios with software program to stand popularity. Pattern recogn. Lett. 26(2), 181–191 (2005)
- Thirteen. Shrivastava, ok., manda, s., chavan, p., patil, t., sawant-patil, s.: conceptual version for gifted computerized attendance gadget based totally mostly on face popularity and gender kind the use of haar-cascade, lbph algorithm together with lda version. Int. J. Appl. Eng. Res. 13(10), 8075–8080 (2018)
14. Shrivastav, s., jain, d.C.: a evaluate on face reputation attendance machine. Int. J. Comput. Appl. 143(eight), 19–22 (2016)
15. Stelea, g.A., gavrila, c., zamfir, s., curpen, r.: face recognition for education in the cloud. Elearning softw. Educ. 2, 181–188 (2017)