AUTOMATED ATTENDANCE SYSTEM USING FACE RECOGNITION TECHNIQUE

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Abstract
The goal of this framework is to introduce an robotized framework for human face acknowledgment for an association or foundation to check the participation of their understudies or representatives. This paper presents face location technique utilizing the Voila and Jones/Haar Cascade calculation and acknowledgment utilizing connection strategy. The framework will record the participation of the under studies/clients in homeroom/industry/educational climate. The above mentioned framework is completely robotized and effectively deployable. Client gets an confirmation to transfer the picture containing record and furthermore to see the participation.
Keywords: Automated, Face Detection, Face Recognition, Haar Cascade, Correlation, Attendance.

Introduction

Face acknowledgment is just about as old as PC vision, both in light of the fact that of the viable significance of the theme and hypothetical interest from psychological researchers. Notwithstanding the way that different techniques of distinguishing proof (like fingerprints, or iris checks) can be more exact, face acknowledgment has consistently stays a significant focal point of exploration on account of its noninvasive nature and since it is individuals' primarymethod of individual ID[1][2]. Face acknowledgment innovation is progressively advancing to aall inclusive biometric arrangement since it requires essentially zero exertion from the client end while contrasted and other biometric choices. Biometric face acknowledgment is fundamentally utilized in three fundamental spaces: time participation frameworks and representative the executives; guest the board frameworks; and last however not the least approval frameworks and access control frameworks. In Existing Method attendances are taken physically by utilizing participation sheet/attendance sheet provided by the employees/Staff in class, which is a old one. In addition, it is exceptionally troublesome to check individually understudy in an enormous homeroom climate with disseminated branches whether the validated understudies are really reacting or not.

Proposed System Architecture

a. Application Layer:
There is the catching stage in this the client catches the edges and utilizing a web application that sudden spike in demand for practically all stages transfer the document to the worker. Validation is given to the clients. This web application is utilized to transfer caught outlines just as to see the participation/attendance.
b. System layer:
This is the layer where the preparing is done that is the disclosure and certification part at the expert side. Viola and Jones calculation is utilized to see pictures from the edges. From the beginning a basic picture is made from the edge which fundamentally assigns numbers to the pixels conveyed by adding up the qualities. Further to see the articles from the edges the Haar-like part is conveyed and as endless highlights being made Adaboost (boosting assessment) is utilized to update the show. The disposed of highlights are passed through a coordinated classifier which perceives the appearances from the objects. These recognized appearances are overseen and gone through the assertion module which by applying relationship with the adjusted pictures and the photographs in the educational files sees the appearance[3].
c. Database layer:

We made our own dataset as we didn't find any dataset internet containing 200 pictures for every individual. There are comprises of n people with 200 pictures of every that have been taken for this undertaking. Extra m people are considered for testing acknowledgment of obscure people. We tried our framework utilizing a live constant video where understudies and obscure people come and remain before the camera. Fig. 3 shows a couple of pictures after the pre-preparing stage.

The Data set layer is a concentrated informational collection structure which contains understudy data base and their investment[4][5]. The understudy data base is modeled by beginning dealing with the housings from which structure recognizes faces crops them and stores it to the data base likewise, these set aside pictures are consequently forward used for the affirmation part. The delayed consequences of the face affirmation module are differentiated and the photos from the understudy informational collection and after the productive assessment the support are invigorated to the informational collection[6][7]. The sheet is made and moved to the web application.

Algorithm

It is an Object Discovery Calculation used to distinguish faces in a picture or an ongoing video. The calculation utilizes edge or line discovery highlights proposed by Viola and Jones in their examination paper "Fast Article Location utilizing a Helped Course of Straightforward Highlights" distributed in 2001. The calculation is given a ton of positive pictures comprising of countenances, and a great deal of negative pictures not comprising of any face to prepare on them. The storehouse has the models put away in XML documents, and can be perused with the OpenCV strategies. These incorporate models for face location, eye recognition, chest area and lower body identification, tag discovery and so forth In the identification period of the Viola–Jones object discovery system, a window of the objective size is moved absurd picture, and for every subsection of the picture the Haar-like component is determined. This distinction is then contrasted with a learned edge that isolates non-objects from objects. Since such a Haar-like element is just a frail student or classifier (its identification quality is somewhat better compared to arbitrary speculating) an enormous number of Haar-like highlights are important to depict an article with adequate exactness. In the Viola–Jones object recognition system, the Haar-like highlights are along these lines coordinated in something many refer to as a classifier course to shape a solid student or classifier. The critical benefit of a Haar-like component over most different highlights is its estimation speed. Because of the utilization of indispensable pictures, a Haar-like element of any size can be determined in steady time (roughly 60 microchip guidelines for a 2-square shape highlight).

Pseudocode for the Framework

Input: Live camera/Video where objects are visible.
Output**:** Participation dominate sheet/XL sheet.
1. Change each casing from RGB to grayscale
2. Apply the Haar Course classifier for face location and get ROI(Region of Interest)
3. Now apply the LBPH algorithm on the face detected to get thefeatures.
4. If for enrolment then features are stored in the database else if for verification then do Post-processing

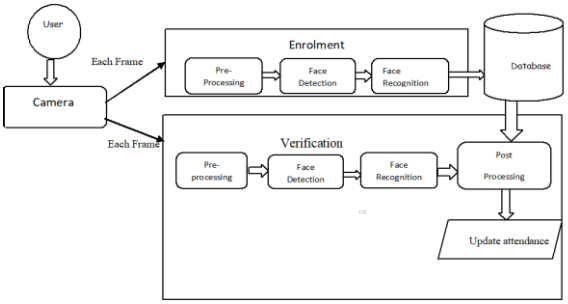

Fig. 1. System Architecture

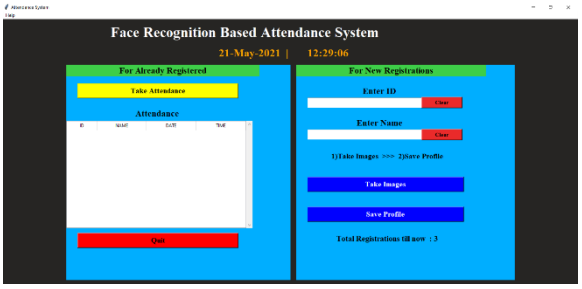

Fig.2. System GUI

Working

a. Pre processing and Face Detection

First we convert the edge from shading to grayscale. To recognize the faces we utilized a haar course classifier which is proposed in where a course work is prepared and identify highlights in different pictures. For this, we use haar highlights like edge, line, and four-rectangle.

For a huge picture or variable size of a picture, it takes a parcel of calculations and highlights and the vast majority of them will be unessential. Be that as it may, AdaBoost figures out how to choose the best out of numerous as demonstrated in Fig. 3. At that point Area Of Interest(ROI) i.e containing faces is separated and shipped off next stage.

Fig.3.Extracted and pre-processed faces of students in the database

b. Face Recognition

For face acknowledgment, we chose to utilize the LBPH calculation in light of its power, the capacity to perceive both front and side faces and better contrasted with Eigenfaces and Fisherfaces . the LBPH calculation is utilized as they find attributes that best depict a face in a picture . They were many face acknowledgment calculations and the LPBH calculation is better. This technique is simpler, inside the sense it describes the picture inside the dataset locally and when a substitution obscure picture happens we play out a same calculation and contrast the outcome with every one of the photos inside the dataset. It works better in various conditions and light conditions than different calculations. Neighbourhood Twofold Pattern(LBP) activity makes a picture which features the qualities of a picture in a superior manner. It utilizes the idea of the sliding window and the boundaries, sweep and neighbours. It is appeared in Fig. 4 .

To start with, we convert the edge into frameworks of 3X3 pixels. on the off chance that a neighbour pixels in a grid is more prominent than the middle pixel of that lattice at that point set worth 1 else 0 in that pixel position. presently note down the upsides of neighbour pixels in a line we get a paired number. convert that double number to decimal number also, supplant it with the middle pixel worth of the lattice as appeared in Fig. 4. As the picture in now changed over into LBP structure, we separate histograms from every network and connect to frame another furthermore, bigger histogram. The connected histogram shows the qualities of the first picture. Every histogram addresses the facial picture from the information base. For the new picture, it plays out the above advances and gets another histogram for the picture.

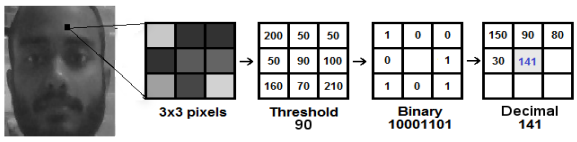

Fig. 4.process of LBP on an 3X3 matrix

c. Post Processing

Presently to perceive the individual in the picture it looks at (by applying Euclidean distance) the new histogram with the histograms from the preparation dataset and pick the histogram having most minimal confidence for example least distance, as lower confidences are better and furthermore remove the ID relating to that histogram[8][9][10]. On the off chance that confidence is under 50, subtleties have a place to the removed ID is appeared on the edge as in Fig. 5, the names are refreshed into a dominate sheet just if the understudy name isn't in the dominate sheet to stay away from copy names as in Fig. 8. Else word "Obscure" is appeared on the edge and if confidence is more prominent than the limit which is given worth 95, at that point the individual's picture is saved in a different envelope. Thishelps in recognizing any interlopers in the class and lessen the wrong classification of understudies to an obscure individual.

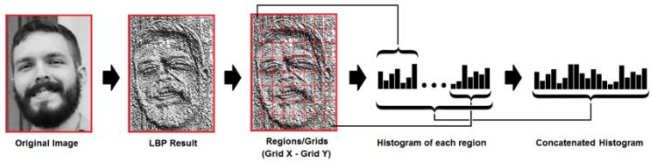

Fig.5. Process of LBPH on a image

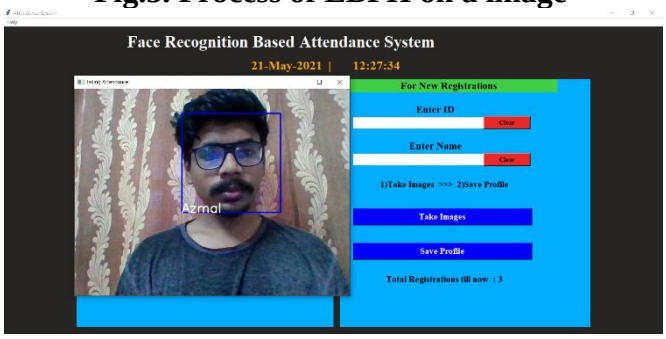

Fig.6. Recognizing Faces

Results and Analysis

We considered 2 feet as the distance of an object detection. As demonstrated in Table 1, the Face acknowledgment pace of understudies is 87% and its bogus positive rate is 28%. This framework is perceiving understudies in any event, when understudies are wearing glasses or on the other hand grown a facial hair growth. Face Acknowledgment of obscure people for both existing and proposed models is 60%. This occurred for the most part because of identifying arbitrary articles behind the scenes as the substance of an individual by face recognition calculation. Its bogus positive rate is 14% and 30% for the proposed and existing model separately. The limit esteem just influenced the bogus positive pace of an obscure individual. In the current framework, it is seen because of when the individual in the video turned his head more noteworthy somewhat then confidence an incentive for that casing may get more prominent than positive filter esteem then the individual in the edge is considered as an obscure individual .favourable filter esteem considered as 50 . Be that as it may, in the proposed framework, on the off chance that confidence is more prominent than 50 and 95, just an individual is considered as an obscure individual and that individual's picture is saved as an obscure individual.

Conclusion

LBPH is one of the conspicuous method for face recognition. Our framework effectively perceives an understudy with unexpected changes like wearing glasses or developing facial hair.Here the issue is the dataset is little. In future, An exertion could be made to fabricate a superior dataset, that may basicallygive a more precise outcome. We can Improve haar course classifiers through the blend of new preparing models which can improve the acknowledgment pace of obscure people. A framework alert(voice and visual) can be incorporated if a gatecrasher is recognized in the class.

References

[1]. Jomon Joseph1, K. P. Zacharia, "Automatic Attendance ManagementSystem Using Face Recognition", International Journal of Science and Research (IJSR), 2013.
[2]. Ononiwu G. Chiagozie, Okorafor G. Nwaji, "Radio-frequency identi-fication (RFID)based Attendance System with Automatic Door Unit",Academic Research International(2012).
[3]. O. Shoewu, PhD, O.A. Idowu, B.Sc., "Development of Attendance Management System using Biometrics.", The Pacific Journal of Science and Technology(2012).
[4]. A. Khatun, A. K. M. F. Haque, S. Ahmed and M. M. Rahman, "Design and implementation of iris recognition based attendance management system", 2015 International Conference on Electrical Engineering and Information Communication Technology (ICEEICT), Dhaka, 2015, pp.
[5].Venkateswara Rao, P., Ramamohan Reddy, A., Sucharita, V.An approach of detecting white spot syndrome of peaneid SHRIMP using improved FCM with hybrid back propagation neural network, International Journal of Pharmacy and Technology, 2016, 8(4), pp. 22351–22363
[6].Sucharita, V., Venkateswara Rao, P., Bhattacharyya, D., Kim, T.-H. Classification of penaeid prawn species using radial basis probabilistic neural networks and support vector machines International Journal of Bio-Science and Bio-Technology, 2016, 8(1), pp. 255–262
[7].Mandava Geetha Bhargava, Modugula TS Srinivasa Reddy, Shaik Shahbaz, P Venkateswara Rao, V Sucharita Potential of big data analytics in bio-medical and health care arena: An exploratory study, Global Journal of Computer Science and Technology 2017/8/5
[8].Will Berger, Deep Learning Haar Cascade Explained, WILL BERGER,<http://www.willberger.org/cascade-haar-explained>.
[9] Kelvin Salton do Prado, Face Recognition: Understanding LBPHAlgorithm, towards data science,<https://towardsdatascience.com/face-recognition-how-lbph-works-90ec258c3d6b>.
[10] R. Samet and M. Tanriverdi, "Face Recognition-Based Mobile Auto-matic Classroom Attendance Management System," 2017 International Conference on Cyberworlds (CW), Chester, 2017, pp. 253-256.
[11]Kadry, SeifedineSmaili, Mohamad. (2010). "Wireless attendancemanagement system based on iris recognition". Scientific Research andEssays. 5. 1428-1435.

