

Face Recognition Attendance System Using LBPH Algorithm

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Abstract – The world is getting refreshed quicker and quicker however a few things are not being refreshed; one of them is the Attendance framework. In ancient days the attendance is taken by signature on the paper. This process is a time consuming and burdensome process. Now some techniques came like RFID based attendance system but there is a chance to cope with the occurrence of malpractice. In this project, new technology is proposed namely Face recognition attendance system. In this system, a camera is placed, that camera will take a picture of the person and compares it with the database. If the image matches the database then attendance is given to that person. In this, the comparison is done by using the Local Binary Pattern Histogram(LBPH) Algorithm. Previously Principal Component Analysis(PCA) is used, compared to PCA, LBPH is the most efficiently working algorithm. By using the LBPH algorithm this system gives the best results.

Keywords - Face recognition, Attendance system, LBPH

INTRODUCTION

In everyday life, we are searching for simple and easy ways to complete our works. In our daily life, from a student to working professionals attendance is a common thing. For this attendance, we don't have to waste a lot of time, because current techniques are time consuming processes.

Later a few systems appeared like RFID and Biometrics. Here face recognition is utilized which is a biometric strategy. The facial recognition system is an innovation equipped for distinguishing or confirming an individual from a computerized picture or a video outline from a video source. Already face recognition is finished by utilizing the PCA which is a measurable method that utilizes a symmetrical change to change over a lot of perceptions of conceivably associated factors into a lot of estimations of straightly uncorrelated factors called head segments.

There are various advances that are finished during the procedure of this face acknowledgment system, yet the fundamental steps of these are face identification and face acknowledgment. Initially, to stamp the participation, the pictures of understudies' countenances will be required. This picture can be caught from the camera, which will be introduced in the study hall at a situation from where the whole study hall is unmistakable. This picture will be considered as a contribution to the framework. For productive face ID, the image ought to be redesigned by using some picture preparing techniques like grayscale transformation furthermore, histogram adjustment. After the picture quality overhaul, the picture will be passed to perform face recognition. The face distinguishing proof procedure is

trailed by the face acknowledgment process. There are various systems open for face acknowledgment like Eigenface, PCA and LDA half and half calculation. In the Eigenface, when countenances are distinguished, they are cut from the image [1]. With the help of the component extractor, diverse face features are separated. Using these appearances as Eigen includes, the understudy is perceived and by planning with the face database, their participation is checked [1]. Building up the face database is required with the ultimate objective of the examination

LITERATURE REVIEW

The principle goal of this paper is to build up shrewd participation in the board framework utilizing facial acknowledgment that will deal with the issues which are being looked in other robotized frameworks that are inactivity in the present cutting edge world. The fundamental methodology which should be followed is to count a genuinely ongoing picture of an understudy to that of certain pictures taken intentionally and put away in a database, which further be utilized to check the participation if the pictures in database match to the continuous picture.

Authors in [2] proposed a technique to computerize the participation framework by coordinating the face acknowledgment innovation utilizing the Eigen face database and Principal Part Analysis (PCA) calculation with MATLAB GUI. The design of the framework first, catches the understudy picture, pre-process it, applied Eigenface created database at that point test the caught face picture with Eigenface picture. At the point when the comparability separation test scored more than the limit estimation of 0.3 then the face was not perceived at long last participation stamping, was put away in a Microsoft Excel sheet coordinated with the MATLAB GUI. The first face database comprises of pictures for 15 people every ha 10 pictures with various position and heading.

In [3] the authors concentrated on changing the conventional manual participation to a digitized framework utilizing facial acknowledgment. For the face acknowledgment module, the framework utilized MATLAB programming to execute the PCA calculation. The code was stacked on an installed equipment framework utilizing Microcontroller PIC, which likewise associated with a servo engine to open the entryway once the facial validation was fruitful. From the analysis, the outcome was discovered that the framework was so delicate when there was an adjustment out of sight and with various head direction.

METHODOLOGY

The working procedure of the



Fig-1 , traing set

In the dataset, all the preloaded persons images are stored in the database to recognise the persons the loaded database. For that detection, firstly we are going to take images of the each person. Here, we are using LBPH algorithm we follow the LBPH procedure for the creating a dataset.

In our dataset for every person it'll take upto 30 images and it store about 160KB for every person.



Fig-2, Normalized training set

Mean Image



Fig-3, Mean image

B. Training Dataset

A training dataset may be a dataset of examples used for learning that's to suit the parameters (e.g., weights) of, for instance, a classifier.

Most approaches that search through training data for empirical relationships tend to overfit the info, meaning that they will identify and exploit apparent relationships

within the training data that don't hold generally.

First, we'd like to coach the algorithm. To do so, we'd like to use a dataset with the facial images of the people we would like to acknowledge. we'd like to also set an ID (it could also be variety or the name of the person) for every image, therefore the algorithm will use this information to acknowledge an input image and provides you an output. Images of an equivalent person must have an equivalent ID. With the preparation set previously developed, how about we see the LBPH computational advances.

C. Recogniser

This is the main idea of the whole process. Here we are using LBPH algorithm. In this we take a picture from the live cam and we check the picture with the dataset to match the person from the Dataset to find the person.

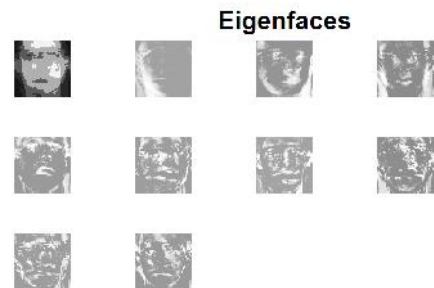


Fig4: Face recognition- Eigen face

In this progression, the calculation is now prepared.

With the readiness set recently grew, we should see the LBPH computational advances.

- So to search out the picture that coordinates the information picture we just had the chance to think about two histograms and return the picture with the nearest histogram.

- We can utilize different ways to deal with coordinate the histograms (figure the space between two histograms), for instance: euclidean distance, chi-square, unmistakable amount, and so forth during this model, we will utilize the Euclidean distance (which is kind of known) upheld the ensuing equation:

$$D = \sqrt{\sum_{i=1}^n (hist1_i - hist2_i)^2}$$

- So the calculation yield is that the ID from the picture with the nearest histogram. The calculation ought to likewise restore the determined distance, which might be utilized as a 'certainty' estimation. Note: don't be tricked about the 'certainty' name, as lower confidences are better since it implies the space between the 2 histograms is nearer.

- We would then be able to utilize a limit and consequently the 'certainty' to naturally assess if the calculation has accurately perceived the picture. we will accept that the

calculation has effectively perceived if the egotism is not exactly the edge characterized.

FUTURE SCOPE

In future we can use Tensor flow to Detect the Object and to test where the person is live there or a photo i.e.,Photo card,Picture on Mobile screen.To remove all those malpractises and make the system more efficient.

CONCLUSION

This system is meant for the aim of taking the attendance of the scholars inorder to scale back the time taking process of manual attendance system. the entire system is implemented in Python programing language . face recognition techniques uses within the system for the aim of the scholar attendance.

REFERENCES

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