

Facial Recognition Attendance System

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Abstract

In this digital era, face recognition system plays a very important role in nearly every sector. Face recognition is one of the mostly used natural science. it'll used for security, authentication, identification, and has got a lot of blessings. Despite of obtaining low accuracy once compared to iris recognition and fingerprint recognition, it is being wide used due to its contactless and non-invasive technique. what's a lot of, face recognition system can even be used for attending marking in colleges, colleges, offices, etc. This system aims to make a class attending system that uses the thought of face recognition as existing manual attending system is time overwhelming and cumbersome to stay up. And there's conjointly prospects of proxy attending. Thus, the requirement for this technique can increase. this technique consists of four phases- data creation, face detection, face recognition, attending updating. Data is created by the pictures of the students in class. Face detection and recognition is performed exploitation Haar-Cascade classifier and native Binary Pattern chart algorithmic program severally. Faces unit detected and recognized from live streaming video of the room. attending are armored to the individual faculty at the tip of the session. it's standard that marking attending of the scholars is associate degree obligatory half in academe. standard technique of marking the attending is being followed by numerous establishments and Universities with several manual interventions. to scale back time consumption and human effort, the employment of associate degree automatic method of marking attending supported image process may be implemented. Authors have projected a sensible attending observance system through face detection and recognition techniques supported their face expression. a group of pictures of the scholars are antecedently fed to the system against that the live pictures of the scholars are compared and attending would be recorded supported facial characteristics. The projected approach uses CNN rule for coaching the pictures and LBPH visual descriptor for image classification. This models are going to be capable of providing higher degree of accuracy compared to already existing literature work. Authors have compared their experimental results with the present approaches and located satisfactory

Keywords- Deep Learning, Python, Image processing, Face Recognition, Open CV.

I. INTRODUCTION

Face recognition is the task of identifying an already detected object as a known or unknown face.

Often the problem of face recognition is confused with the problem of face detection Face Recognition on the other hand is to decide if the "face" is someone known, or unknown, using for this purpose a database of faces in order to validate this input face. Biometric tools are very effective thanks to people since the users don't have to be compelled to bear in mind or possess something. biometric area unit classified into activity

and physiological. Thanks to the high variance found in readings of activity biometry, physiological biometry area unit a lot of appropriate for identification and may be used as a standalone identification mechanism. In recent times, thanks to the many improvement in private and process quality, biometric identification, specifically, has well-tried to be a awfully convenient and effective biometric methodology of identification and authentication. Face Recognition could be a multi-stage downside. It involves face detection, transformation of the extracted face and eventually recognition victimization either the raw image or a feature vector extracted from the image.

Face detection involves separating image windows into 2 classes; one containing faces (training) the background (clutter). It's troublesome as a result of though commonalities exist between faces, they'll vary significantly in terms older, coloring and countenance. The matter is more difficult by differing lighting conditions, image qualities and geometries, likewise because the risk of partial occlusion and disguise. A perfect face find or would so be ready to detect the presence of any face beneath any set of lighting conditions, upon any background. The face detection task is lessened into 2 steps. the primary step could be a classification task that takes some arbitrary image as input and outputs a binary price of affirmative or no, indicating whether or not there area unit any faces gift within the image. The second step is that the face localization task that aims to require a picture as input and output the situation of any face or faces inside that image as some bounding box with (x, y, width, height).

II. EXISTING SYSTEM

In recent years, varieties of face recognition based attendance management system have introduced so as to improve the performance of students in numerous organization. In [4] Jomon Joseph, K. P. Zacharia proposed a system using image process, PCA, Eigen faces, Microcontroller, supported Matlab. Their system works only with front face pictures and there's would like of a suitable methodology that works with the orientation of the system. Ajinkya Patil with their fellows in [5] planned a face recognition approach for group action marking using Viola jones algorithm, Haar cascades are used to find faces in pictures and recognition performs through Eigen face methodology. Another approach of constructing group action system simple and secure, the have achieved accuracy up to 83% however their system performance decreases due to slightly changes in lightweight condition. Associate Eigen face approach in conjunction with PCA algorithmic rule for marking face recognition group action system have introduced by author in [9], they mention comparison of various face recognition algorithmic rule in their paper. Overall it was smart approach to take care of record of group action.

III. PROPOSED SYSTEM

The task of the planned system is to capture the face of each student and to store it within the information for their attendance. The face of the student has to be captured in such a manner that all feature of the students' face wants to be detected. There's no need for the teacher to manually take group action within the category as a result of the system records a video and through any process steps the face is being recognized and also the group action information is updated.

A. Advantages:

1. Low cost
2. Consistent board format
3. 10x faster processing

IV. PROBLEM STATEMENT

The traditional method of attendance marking like Taking and tracking student attendance manually, losing attendance sheets, dishonesty, wasted time and high error scales are problems facing the lecturers use the existing attendance system is very time consuming, difficult to maintain, and becomes complicated if there are more number of students. As a result, to solve these problem and avoid errors we suggest computerizing this process by providing a system that records and manage students attendance automatically without needing lecturers interference.

V. SYSTEM ARCHITECTURE

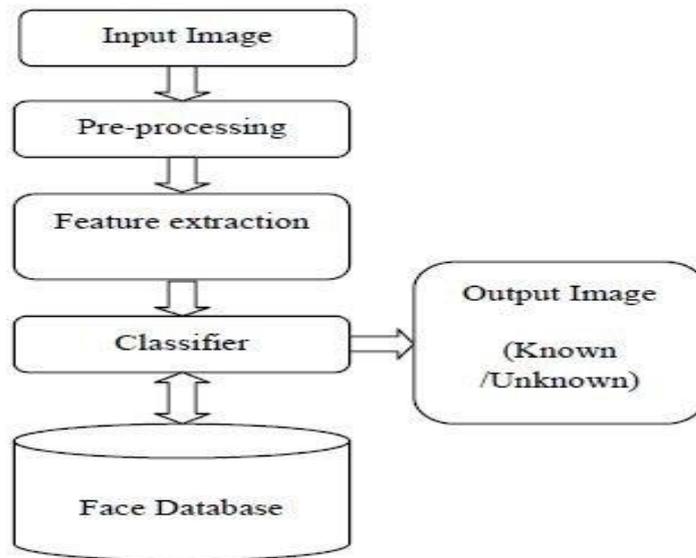


Fig-1: Working of the system

VI. DATAFLOW DIAGRAM

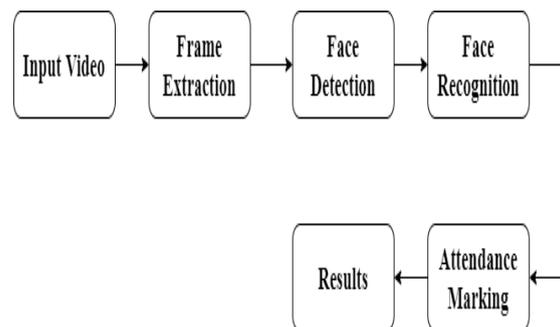


Fig-2: Dataflow of the system

VII. LITERATURE SURVEY

Yanwei Pang et al (2004) have proposed A Novel Gabor-LDA Based Face Recognition Method in which face recognition method based on Gabor-wavelet with linear Discriminant analysis (LDA) is presented. These are used to determine salient local features, the positions of which are specified by the discriminant pixels. Because the numbers of discriminant pixels are much less than those of the whole image, the amount of Gabor Wavelet coefficients is decreased. the market.

Chengjun Liu and Harry Wechsler (2002)[33] have reported in Gabor Feature Based Classification (GFC) using the Enhanced Fisher Linear Discriminant Model for Face Recognition that the feasibility of the proposed GFC method has been successfully tested on face recognition using a data set from the FERET database,

which is a standard 16 tested for face recognition technologies.

In [35], Adrian Rhesa Septian Siswanto researched to get the best face recognition algorithm. The algorithms provided by Open CV i.e. PCA and LDA (eigenface and fisherface) are implemented and the ROC curve is differentiate. Based on previous experiments, the ROC curve demonstrate that the Eigenface accomplish a better result than Fisherface. Eigenface gave 70% to 90% affinity for genuine face images.

Kyungnam Kim (1998)[24] has projected PCA to scale back the big spatiality of the information house (observed variables) to the smaller intrinsic spatiality of feature house (independent variables), that area unit required to explain the information economically in Face Recognition exploitation Principal element Analysis. the initial face is reconstructed with some error since the spatiality of the image house is way larger than that of face house.

Jun-Ying et al (2005) [25] have combined the characteristics of PCA with LDA. This improved methodology relies on the normalisation of the within-class average face image, that has the benefits of enlarging classification distance between different-class samples. Experiments were done on ORL (Olivetti analysis Laboratory) face information. Results show that ninety eight of the proper recognition rate will be nonheritable and a higher a higher be achieved by the improved PCA methodology.

Xiang et al (2004) [31] have rumored in Face Recognition victimization algorithmic Fisher Linear Discriminant with Dennis Gabor moving ridge writing that the constraint on the overall range of options offered from Fisher Linear Discriminant (FLD) has seriously restricted its application to an outsized category of issues. to beat this disadvantage of FLD, a algorithmic procedure of conniving the Discriminant options is usually recommended. Work is presently below achieve study the varied style problems with face recognition, and therefore the objective is to realize a ninety nine accuracy rate for identity recognition for all the wide used databases, and a minimum of eightieth accuracy for facial features recognition for Yale info.

Juwei lutetium et al (2003) [32] have shown in Regularization Studies on LDA for Face Recognition, that the pertinence of Linear Discriminant Analysis (LDA) to high-dimensional pattern classification tasks like face recognition (FR) usually usually from the supposed tiny sample size (SSS) drawback arising from the tiny variety of accessible coaching samples compared to the spatiality of the sample house. The effectiveness of the projected technique has been incontestible through experimentation mistreatment the FERET info.

Chengjun Liu and Harry Wechsler (2002)[33] have reported in Dennis Gabor Feature based mostly based mostly (GFC) mistreatment the improved Fisher Linear Discriminant Model for Face Recognition that the practicableness of the projected GFC technique has been with success tested on face recognition employing a information set from the FERET info, that may be a commonplace sixteen tested for face recognition technologies.

In [36], Nirmalya Kar describes a way for college kids group action System which can integrate with the face recognition technology mistreatment Personal element Analysis (PCA) formula. The system can record the group action of the scholars within the room surroundings mechanically and it'll offer the facilities to the school to access the data of the scholars simply by maintaining a log for clock-in and clock-out time.

In [37], A.H. Boualleg proposes a brand new hybrid technique for the popularity of faces combines with the neural networks with the principal element analysis. By mistreatment the geometrical approach, we feature out a preliminary classification of the faces by PCA before employing a employing a (PMC). The results, compared with those of the PCA and PMC classifiers, provides a clear improvement in terms of classification. to hold out our tests, we tend to used a awfully wealthy info created within the Laboratory of Automatics and information processing of Guelma LAIG ”.

In [38] Shireesha Chintalapati, M.V. Raghunadh, proposes an automated attendance management system. The system, which is based on face detection and recognition algorithms, automatically detects the student when he enters the classroom and marks the attendance by recognizing him. They have used PCA, LDA.SVM, LBP for processing the data.

VIII. CONCLUSION

This proposal is to expand a prototype attendance system using face recognition and make the traditional attendance system automated. In this system, the camera of the PC will capture the image as an input. To generate the database faces are detected using Haar feature-based classifiers. The database images are trained and test using CNN. The attendance of the recognized face were recorded in the excel sheet in specific time row. Also, the automated system is more lead over the traditional method, as it saves time. Face recognition can also be utilize for security purposes

A . Future Scope:

In the future, the system may be created additional sturdy by increasing the info pictures in different light-weight conditions. There's the amount of object detection models square measure obtainable in deep learning techniques to detect the face. This deep learning approaches are going to improve face detection. What is more, face aliveness detection may be used to detect fake and real face.

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