

Attendance System using Face Recognition

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Abstract: - Attendance System is an attendance calculation arrangement of a representative. The presently accessible distinctive mark new group action system features a few disadvantages. In present, face recognition has become one among the key aspects of computer vision. There are a minimum of two reasons for this trend; the primary is that the commercial and enforcement applications, and also the second is that the convenience of practical technologies once every year of analysis. In simple words, it's a pc application for systematically distinguishing a person from a still image or video frame. During this paper we move to projected an automatic attendance management system. This method supported face detection and recognition algorithms, that systematically detects the students once he enters within the category space and marks the group action by recognizing him. we move to used Viola-Jones formula face detection that discovers face victimization cascade classifier and PCA formula for feature choice and SVM for classification. In comparison to ancient attendance marking this method saves the time and conjointly helps to watch the students.

Key Words: Face Recognition; Face Detection; Machine Learning; PCA; SVM

1. INTRODUCTION

Human beings will distinguish a specific face counting on variety of things. One in all the most objective of pc vision is to form such a face recognition system that may emulate and eventually surpass this capability of humans. In recent years we will see that researches in face recognition techniques have gained important momentum. Partially thanks to the actual fact that among the on the market biometric strategies, this is often the foremost unnoticeable. Though it's abundant easier to put in face recognition system in an exceedingly massive setting, the particular implementation is incredibly difficult because it has to account for all doable look variation caused by modification in illumination, face expression, variations in create, image resolution, detector noise, viewing distance, occlusions, etc. Several face recognition algorithms are developed and every has its own strengths. We have a direction to do face recognition nearly on each day. This manageable imitated by machines will get be priceless and will offer for important in world applications like varied access management, national and international security and defense etc. Presently on the market face detection strategies usually consider two approaches. The primary

one is native face recognition system that uses face expression of a face e.g., nose, mouth, eyes etc. To associate the face with someone. The second approach or international face recognition system use the complete face to spot someone. The on top of two approaches are enforced a technique or another by varied algorithms. The recent development of artificial neural network and its doable applications in face recognition systems have attracted several investigators into this field. The involution of a face options originates from continuous changes within the face expression that ensue over time. In spite of these changes, we have a tendency to area unit ready to acknowledge someone terribly simply. So, the thought of imitating this talent inherent in masses by machines will be terribly regardful. Though the thought of developing associate intelligent and self-learning might need offer of sufficient info to the machine. Considering all the on top of mentioned points and their implications we've tried to realize some expertise with a number of the foremost normally on the market face recognition algorithms and conjointly compare and distinction the employment of neural network during this field.

1.1 Scope of the project:

Our attendance System simplifies the taking and maintenance of attending through simple manner whereas students enter the room. This method supported face detection and recognition algorithms, that mechanically detects the student once he enters within the category space and marks the attending by recognizing him. Face recognition systems area unit a part of facial image process applications and their significance as a quest space area unit increasing recently.

1.2 Literature Survey:

Face recognition systems area unit a part of facial image process applications and their significance as a quest space area unit increasing recently. Implementations of system area unit crime bar, video police investigation, person verification, and similar security activities. The face recognition system implementation is a part of golem automaton project at Atılım University. The goal is reached by face detection and recognition strategies. Knowledge-Based face detection strategies area unit accustomed notice, find and withdraw faces in acquired

pictures. Implement strategies area unit type and appearance. Anxious network is employed for face recognition. RGB color area is employed to specify complexion values, and segmentation decreases looking time of face pictures. Facial parts on face candidates' area unit appeared with implementation of LoG filter. LoG filter shows sensible performance on extracting facial component's below totally different illumination conditions. FFNN is performed to classify to resolve pattern recognition drawback since face recognition could be a reasonably pattern recognition. Classification results correct. Classification is additionally versatile and proper once extracted face image is tiny orientated, closed eye, and tiny smiled. planned rule is capable of notice multiple faces, and performance of system has acceptable sensible results.

Face recognition system could be a complicated image-processing downside in planet applications with complicated effects of illumination, occlusion, and imaging condition on the live pictures. It's a mix of face detection and recognition techniques in image analyzes. Detection application is employed to search out position of the faces in an exceedingly given image. Recognition algorithmic rule is employed to classify given pictures with far-famed structured properties, that are used normally in most of the pc vision applications. Recognition applications use normal pictures, and find ion algorithms detect the faces and extract face pictures that embody eyes, eyebrows, nose, and mouth. That creates the algorithmic rule a lot of sophisticated than single detection or recognition algorithmic rule. the primary step for face recognition system is to amass a picture from a camera. Second step is face detection from the noninheritable image. As a 3rd step, face recognition that takes the face pictures from output of detection half. Final step is person identity as a results of recognition half. The input image, within the sort of digital information, is shipped to face detection algorithmic rule a part of a software package for extracting every face within the image. On the market ways may well be classified into two main teams as; knowledge-based and appearance-based ways. Briefly, data- primarily based ways are derived from human knowledge for options that creates a face. Appearance-based ways are derived from coaching and/or learning ways to search out faces.

After faces are detected, the faces ought to be recognized to spot the persons within the face pictures. within the literature, most of the ways used pictures from Associate in Nursinging on the market face library, that is formed of ordinary pictures. once faces are detected, normal pictures ought to be created with some ways. Whereas the quality pictures are created, the faces may well be sent to recognition algorithmic rule. within the literature, ways are often divided into 2 teams as 2nd and 3D primarily based ways. In 2nd ways, 2nd pictures are used as input and a few learning/training ways are

accustomed classify the identification of individuals. In 3D ways, the 3-dimensional information of face are used as Associate in Nursinging input for recognition. Totally different approaches are used for Acquire Image Face Detection Face Recognition Person Identity the three recognitions, i.e., exploitation corresponding purpose live, average 0.5 face, and 3D geometric live. Details regarding the ways are going to be explained within the next section. ways for face detection and recognition systems are often tormented by cause, presence or absence of structural elements, face expression, occlusion, image orientation, imaging conditions, and time delay (for recognition). on the market applications developed by researchers will typically handle one or 2 effects solely, so they need restricted capabilities with specialize in some well-structured application. A strong face recognition system is tough to develop that works beneath all conditions with a large scope of result.

A throughout survey has discovered that varied ways and combination of those ways are often applied in development of a brand-new face recognition system. The recent development of artificial neural network and its potential applications in face recognition systems have attracted several scientists into this field. The elaborateness of a face options originates from continuous changes within the countenance that surface over time. Despite these changes we have a tendency to are able to acknowledge someone terribly simply. So, the thought of imitating this ability inherent in persons by machines are often terribly satisfying. Although the thought of developing Associate in Nursinging intelligent and self-learning might need provide of sufficient data to the machine. Among the various potential approaches, we've determined to use a mix of knowledge-based ways for face detection half and neural network approach for face recognition half. The most reason during this choice is their sleek relevancy and responsibility problems.

2. PROJECT DESCRIPTION:

In this we proposed an automated attendance management system. This system based on face detection and recognition algorithms, which automatically detects the student when he enters in the class room and marks the attendance by recognizing him. Face recognition systems are part of facial image processing applications and their significance as a research area are increasing recently. This system based on face detection and recognition algorithms, which automatically detects the student when he enters in the class room and marks the attendance by recognizing him.

Problem Statement:

In gift days we are able to get the group action victimization biometric device that's mounted at specific place as a result of individuals ought to wait in queues at the Biometric Scanner. the method isn't solely time

intense however additionally generally inefficient in functioning at serious hundreds troublesome to manage. Generally, hardware failures are raised and additional value effective. Within the new technology dominated world, it's laborious to imagine a school student while not a mobile device. Some group action following mobile applications are already accessible within the market. Those applications are semi-automated and instructors still need to mark the group action by job out student names. this technique supported face detection and recognition algorithms, that mechanically detects the coed once he enters within the category area and marks the group action by recognizing him. Face recognition systems are a part of facial image process applications and their significance as an enquiry space are increasing recently.

Proposed Method:

Automated group action Systems supported face recognition techniques so tested to be time saving and secured. This technique can even be accustomed establish associate unknown person. Systems style is that the method of process the design, components, modules, interfaces, and information for a system to satisfy fixed necessities. Systems style may be seen because the application of systems theory to development. Within the planned system, once recognizing the faces of the scholars, the names are updated into associate surpass sheet. The surpass sheet is generated by exportation mechanism gift within the information system. The information additionally has the power to get monthly and weekly reports of scholars group action records. These generated records will be sent to oldsters or guardians of scholars. At the top of {the category the category} a provision to announce the names of all students WHO are gift within the class is additionally enclosed.

The planned machine-driven group action system will be divided into 5 main modules. The modules and their functions are outlined during this section. The 5 modules into that the planned system are split are:

Image Capture: The Camera is mounted at a distance from the doorway to capture the frontal pictures of the scholars. And additional method goes for face detection.

Face Detection: A correct and economical face detection algorithmic program invariably enhances the performance of face recognition systems. Varied algorithms are planned for face detection like Face pure mathematics primarily based ways, Feature Invariant ways, Machine learning primarily based ways. Out of these ways Viola and Jones planned a framework which provides a high detection rate and is additionally quick. Viola-Jones detection algorithmic program is economical for real time application because it is quick and strong.

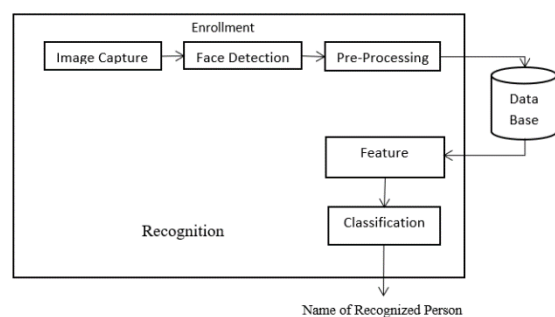
Pre-Processing: The detected face is extracted and subjected to preprocessing. This pre- process step involves with bar chart effort of the extracted face image and is resized to 100x100. Bar chart effort is that the commonest bar chart social control technique.

Database Development: As we tend to selected biometric primarily based system entrance of each individual is needed. This information development section consists of image capture of each individual and extracting the bio-metric feature.

Post-Processing: Within the planned system, once recognizing the faces of the scholars, the names are updated into associate surpass sheet. The surpass sheet is generated by exportation mechanism gift within the information system. The information additionally has the power to get monthly and weekly reports of scholars group action records. These generated records will be sent to oldsters or guardians of scholars.

Principal element analysis: In high-dimensional information, this technique is intended to model linear variation. Its goal is to search out a collection of reciprocally orthogonal basis functions that capture the directions of most variance within the information and that the coefficients ar pairwise decorrelated. For linearly embedded manifolds, PCA is absolute to discover the spatial property of the manifold and produces a compact illustration.

Architecture:



Modules Description:

Face Recognition: It's a way of characteristic or corroborative the identity of a personal victimization their face. Face recognition systems will be accustomed determine individuals in photos, video, or in time period.

Face Detection: It's a technology getting used in a very style of applications that identifies human faces in digital pictures. Face detection conjointly refers to the psychological method by those humans find and attend to faces in a very visual scene.

Database: It's associate degree organized assortment of structured info, or data, generally hold on electronically in a

very automatic data processing system. An information is typically controlled by a management system (DBMS).

Authentication: It's a method of corroborative the identity of someone or device. A standard example is getting into a username and parole once you log in to an internet site. while a username/password combination may be a common thanks to manifest your Identity.

View attending: A attending machine may be a device that is employed to verify the identity of someone. The characteristics accustomed determine someone embrace fingerprints.

Algorithm:

Step 1: Capture the Person Image.

Step 2: Apply Face discovering algorithms to descry face.

Step 3: Prize the Region of Interest in Blockish Bounding Box.

Step 4: Convert to grey scale, apply bar graph exploit and size to 100x100

i.e., Apply pre-processing.

Step 5: If enrollment part also stores in word additional

Apply PCA/LDA/LBPH (For point Birth)

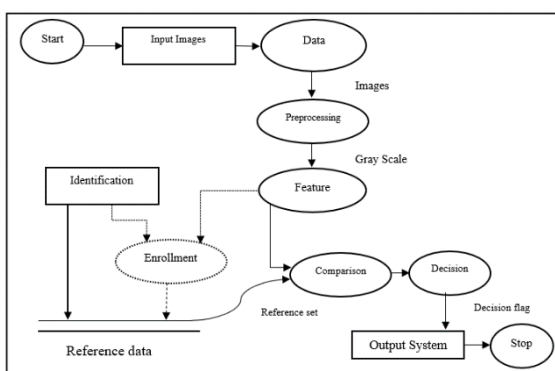
Apply Distance Classifier/ SVM/

Bayesian (for Bracket)

end if.

Step 6: Post-processing.

Flow of data in the System:



3. CONCLUSION:

Automated attending Systems supported face recognition techniques therefore verified to early saving and secured. this technique also can be accustomed establish associate

degree unknown person. In real time eventualities PCA outperforms different algorithms with higher recognition rate and low false positive rate. The long run work is to enhance the popularity rate of algorithms once their square measure unintentional changes in an exceedingly person like tonsuring head, mistreatment scarf, beard. The system developed solely acknowledges approach to thirty degrees angle variations that needs to be improved more. Gait recognition is amalgamated with face recognition systems so as to realize higher performance of the system. Poor lighting conditions could have an effect on image quality that indirectly degrades system performance. Face recognition systems square measure a part of facial image process applications and their significance as a research space square measure increasing recently. Implementations of system square measure crime interference, video police investigation, person verification, and similar security activities. The face recognition system implementation is a part of android golem project at Atılım University. The goal is reached by face detection and recognition ways. Knowledge-Based face detection ways square measure accustomed notice, find and extract faces nonheritable pictures. enforced ways square measure color and countenance. Neural network is employed for face recognition. RGB color area is employed to specify color values, and segmentation decreases looking out time of face pictures. Facial parts on face candidates square measure appeared with implementation of LoG filter. LoG filter shows smart performance on extracting facial parts beneath totally different illumination conditions.

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