AUTOMATIC ATTENDENCE SYSTEM USING FACIAL RECOGNITION

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Abstract - The face is one altogether the only ways to distinguish each and every identity of face. Face recognition may be a private identification system that uses personal characteristics of somebody to identify the person's identity. face recognition procedure basically consists of two phases, namely face detection, where process take place very rapidly in humans,except under conditions where the thing is found at a short distance away, the next is that the introduction, which recognize a face as individuals. Stage is then replicated and developed as a model for face recognition is one altogether the much-studied biometrics technology and developed by experts. There are two kind of module which are currently popular in development of face recognition pattern namely, Eigenface method and Fisherface method. Facial image recognition Eigenface method is based on the reduction of face-dimensional space using Principal Component Analysis (PCA) for facial features.

1.INTRODUCTION

Human use faces as the gift of all might to acknowledge people and advancements in computing capability over the past few years but currently all the things are totally change similar to the recognition mechanically. In earlier days, face recognition algorithms is used easy geometric models, however the popularity method has currently matured into a science of refined mathematical representations and matching processes in face recognition. Big and new initiatives were taken within ten to fifteen years ago have propelled face recognition technology into the spotlight. Face recognition and detection system is used for authentication and identification of human face. In face recognition system, it identifies faces within the images automatically and mechanically. It's classified into 2 modules.

• Face verification (or authentication)

• Face identification(or recognition)

In face verification or authentication there's a matched matching that compares a question face image against a guide face image whose identity is being claimed. In face identification or recognition there's a one-to-many matching that compare question|a question |a question} face image against all the guide face pictures within the info to work out the identity of the query face image. Another face recognition state of affairs involves a watchlist check, wherever a question face is matched to a listing of suspects (one-to-few matches). Performance of face recognition system have improved from primary automatic face recognition and detection system was developed by Kanade in 1973.Furthermore, face detection. Face feature extraction, and recognition will currently be performed in period for pictures captured beneath favorable things. Though progress in face recognition has been encouraging and improving, however still there are some free tasks to do and explore wherever viewpoint, illumination, expression, occlusion, accessories, so on vary significantly. It's simple, natural, non-intrusive, and easy to use. There are several biometrics and face detection systems however among the six far-famed bioscience attributes thought-about by Hietmeyer (R. Hietmeyer, 2000), in an exceedingly computer code Travel Documents (MRTD) system face expression scored the very best compatibility, such enrollment security system, machine necessities, renewal, closed-circuit television. Face recognition may be a visual pattern recognition downside. There is a face as a three-dimensional object subject to varied illumination, pose, expression so on is

to be known supported its two-dimensional image (three-dimensional pictures e.g.,obtained from optical device may be used). A face recognition system and detection has alignment, feature of extraction from database of image, and match them with it, wherever localization and standardization (face detection and alignment) processing steps before face recognition (facial feature extraction and matching) is performed by opencv module in python. Face detection segments detect the face areas from the background. within the case of video, the discover faces may have to be half-tracked employing a face pursuit element.

2. LITERATURE SURVEY

Face detection may be a technology that determines the situation and size of face in digital image. The countenance are detected and rest other background objects are ignored from the digital image. It are often considered a particular case of object-class detection, where the task is to search out the situation and size of all objects in a picture that belong to a given class. In face localization, the task is to search out the locations and size of a known number of faces .There are twoapproaches to detect facial part within the given image i.e. feature based and image based approach .Feature base approach tries to extract features of the image and match against the knowledge of the face features and image based approach tries to urge best match between training and testing images.

3.SYSTEM DESIGN

System design is the method of shaping the coding, modules like computer vision(CV), numpy and python for coding, interfaces and information for a system to satisfy mere needs. The following is that the design for the system Module Description:

- Computer vision

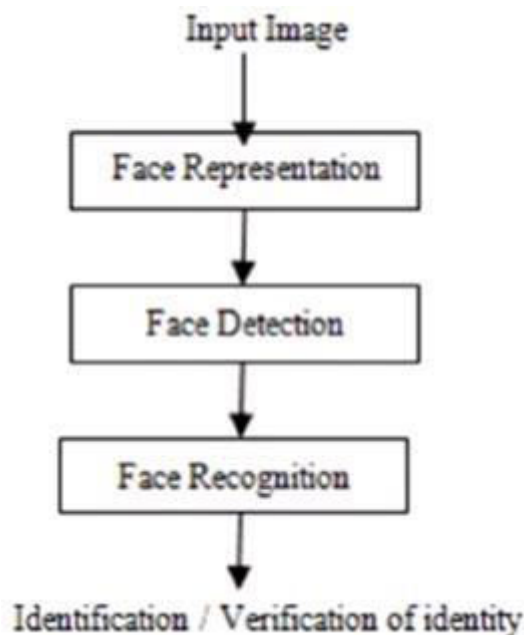- Face Detection

- Face Recognition

- Database

Fig.1: Face Recognition and Detection

3.1 COMPUTER VISION

Computer vision is an important branch of engineering that enables computers to see, identify and process images in the same manner as human vision and then provides appropriate output. CV is comparable to human intelligence and instincts to a computer. In reality as same as what humans does. Computer vision commonly known as CV which only worked in limited capacity. Gratitude to AI for innovations in deep learning and neural networks, the computer vision industry has been able to take great leaps in recent years and has been able to leave behind the humans in some tasks associated with detecting and labeling objects because it work with its full potential. Computer vision's goal is to determine similarly on process and supply useful results supported the observation. A computer vision create 3-D image from a two-dimensional image, like those in cars, and supply important data to the car and its driver. Cars can be fitted with computer vision, which might identify and distinguish objects on and round the road, including traffic lights, pedestrians etc.
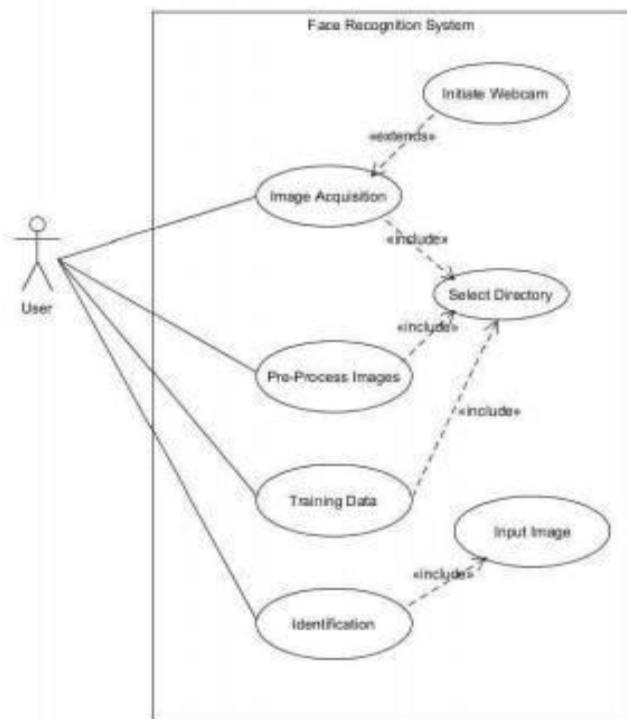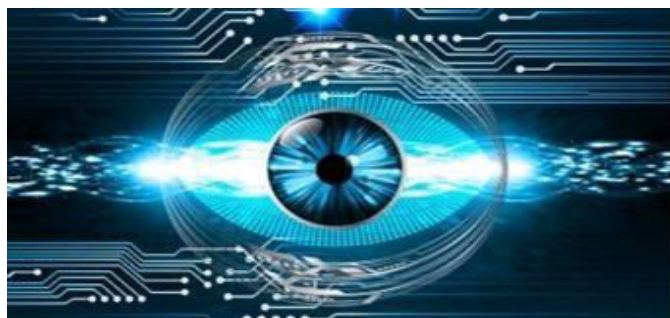
Fig.2: Detail face recognition

Fig.3: Computer Vision (CV

Fig.3: Computer Vision (CV

3.2 FACE DETECTION

Face detection may be a technology that determines the situation and size of face in digital image. The countenance are detected and rest other background objects are ignored from the digital image. It are often considered a particular case of object-class detection, where the task is to search out the situation and size of all objects in a picture that belong to a given class.

3.2.1 FEATURE BASE APPROACH

Active Shape Model (ASM) target complicated features like physical appearance. ASMs are geared toward automatically locating marked points in a picture like the eyes, lips, nose, mouth and eyebrows. The training stage of an ASM involves the building of a numerical object in a picture.

3.2.2 DEFORMABLE TEMPLATES

Deformable templates take under consideration the priority of countenance and improve the performance . Locating a facial feature boundary isn't a straightforward task because the facial edges are difficult to arrange into a logical global body using collective contours. The low brightness contrast around a number of these features also makes the sting detection process challenging. Deformation relies on local valley, edge, peak, and brightness .Apart from face boundary, extracting features like eyes, nose, mouth and eyebrows may be a great challenge of face recognition. represent shapes as vectors, we will apply standard statistical methods to them a bit like the other complex object. These models learn admissible sequence of shape points from training examples and use principal components to make some extent Distribution Model. Ideal Point Distribution Models can have flaws in ways in which are attributes of the thing.

3.2.3 PDM (POINT DISTRIBUTION MODEL)

Without support of computerized image analysis and before ASMs were developed, researchers developed statistical models of shape. the concept is that after we Database in face recognition could be a record of identified images of human faces taken by a face recognition device. When a face recognition device scans somebody's face, it then matches the identified image against the enrolled image that's stored in face recognition database. Sometimes face recognition database gets larger and desires additional space to store other identified images.

3.2.4 MOTION BASE

When use of video progression is out there, motion data are often accustomed detect moving objects. Moving contours like face and body parts are often extricate by simply thresholding collected frame differences.

3.3 FACE RECOGNITION

Face recognition may be a visual pattern recognition downside. There, a face as a three-dimensional object subject to varied illumination, pose, expression so on is to be known supported its two-dimensional image (three-dimensional pictures e.g.,obtained from optical device may be used). A face recognition system, detection, alignment, feature extraction, and matching, wherever localization and standardization.

3.4 DATABASE

3.5 ADVANTAGES

Facial recognition technologies greatly improves your security measures. All corporation's premises would be protected since you'll be able to track both the workers and any visitors that inherit the realm.

● Facial recognition technologies and infrared cameras the method of identification happens to be incredibly accurate and showing great results. It's possible but difficult to fool such system.

● Automation means convenience and reduces the expenses too. Therefore, any entrepreneur would be keen on the actual fact that image identification systems are fully automated.

● Facial recognition technology companies offer is that the time attendance tracking that enables excluding the time fraud among the workers. No more buddy favours from securities for employees members.

4. CONCLUSIONS

We described a component-based system for face detection and identification. The detection and identification modules shared the same two-layered architecture. In the first layer, component classifiers independently detected/identified parts of the face. The second layer contained a single combination classifier which combined the results of the component classifiers and performed the final detection/identification. We investigated several possibilities of including spatial positions of the components. We also described a new method for

learning relevant components for face information about the location of the components in the detection process. The best performance was achieved with a system in which the detection of the components was confined to small regions around the expected detection and identification.

For face identification we used the component-based face detector within the training and testing stages to seek out the face within the image and to locate a collection of reference points within the face. Around these points we extracted components specifically learned for identifying faces and classified them with our two-layered identification module. Two separate tests on a face detection and identification database showed that the component-based detector by itself and the combination of component-based detection and identification modules outperformed the global classifiers.

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