INTERNATIONAL RESEARCH JOURNAL OF ENGINEERING AND MANAGEMENT STUDIES (IRJEMS)
VOLUME: 03 ISSUE: 04 | APRIL -2019 ISSN: 1847-9790 || P-ISSN: 2395-0126

Automated face recognition system with image processing

PANGULURI SNL SUBHASH[1]
School of Computer Science And Engineering
Hindustan Institute of technology & science
p.subhash616@gmail.com

TEPPA PRASANTH[2]
School of Computer Science And Engineering
Hindustan Institute of technology & science
tprashanthabu@gmail.com

S SHAM KUMAR[3]
School of Computer Science And Engineering
Hindustan Institute of technology & science
kumarsham74@gmail.com

Dr.K.PADMAVENI Ph.D.
School of Computer Science And Engineering
Hindustan Institute of technology & science

***Abstract*- In the present academic system attendance plays a major role in performance assessment and quality monitoring. The conventional methods practiced in most of the institutions are by calling names or signing on papers, which is highly time consuming and insecure. This article presents the automatic attendance management system for convenience or data reliability .The system is developed by integration of ubiquitous components to make a portable device for managing the student's attendance using Face Recognition technology.**

Keywords—matching, digital processing, filtering, attendance Monitoring, Face Quality assessment, Face recognition.

I. INTRODUCTION

Recognizing gadgets instructions in actual international image is a long status goal in computer vision. Conceptually, this is difficult due to big look versions of gadgets times belongs to the similar organization. Additionally, distortions from heritage muddle, scale and perspective variant can render appearances of even the same items instance to be hugely distinctive .Further demanding situations arise from interclass similarity in witch instance from distinct magnificence appear vey in addition .Model for object class must be flexible enough to sieve out real item instance in cluttered pictures.

The identification of the object in an image possibly start with techniques of photograph processing like as undesirable noise removal, accompanied with the aid of (low-degree) extracting of functions to find traces, regions and a few areas with sure textures. The smart bit is to interpret collections of these shapes as unmarried items, e.g. Automobiles on a street, containers on a conveyor belt or cancerous cells on a microscope slide. A principal drawback in AI hassle is that an item can seem very distinct while regarded from specific angles or beneath distinctive lighting. Another downside is figuring out what feature belonging to what object and that are background or shadows and so forth. The human visible machine performs these responsibilities normally unconsciously but a pc calls for skilful programming and plenty of processing energy to technique human overall performance. This picture is usually interpreted as -dimensional array of the brightness values, and is most familiarly represented by using such styles as the ones of a photographic print, slide, television display, or film screen. Any image may be processed optically or digitally with a computer.

The time-honoured nature of line segments and ellipses gives snap shots and capability to symbolize complicated shapes and systems. While in my view much less exceptional, by using combining some of these primitives, aggregate is sufficiently discriminated. Here, every mixture is a -layer abstraction of primitives: pairs of primitives (termed shape tokens) at the primary layer, and a discovered number of shape tokens at the second one layer. There is not any constraint to have a set quantity of form-tokens, but it is allowed to automatically and flexibly adapt to an item class. This range influences a aggregate's capability to symbolize shapes, where easy shapes want fewer form-tokens than complicated ones. Consequently, discriminative mixtures of varying complexity can be exploited to represent an object elegance. Shape constraints describe the thing visually of form tokens, at the same time as geometric constraints describe its spatial format

(configurations). Structural constraints put in force possible poses/structures of an object with the aid of the relationship between shape-tokens.

II. METHODOLOGIES

Having a chain of video because the machine input the information of face detection, facial extraction features, ordinary state of no activity of facial capabilities and nice score task are described inside the following subsections.

A. Face Detection

The better accuracy of face log era, we employee face monitoring method. All we did turned into first come across the face the use of Viola & Jones idea as defined in and then, we used the correlation tracker from the library to preserve music of the face from body to frame. This approach additionally saves computational strength due to the fact that we don't must hit upon the face after reworking to a new body within the real-time video collection. This helps to generate a face-log that may be a concise representation of the face of the problem within the form of the video collection.

B. Parameters

Since people pass round and examine exceptional way of instructions in the front of the actual-time digital cam, it's miles viable to have a huge range of head poses orientated at one-of-a-kind angles. But for the sake of bio metrics, it's far critical to have least rotated face as a standout within the entire face-log. Thus it's miles vital to include this selection in face first-rate evaluation. We decided the head pose the usage of three angles: Roll, Yaw and Pitch. All those angles are usually among - ninety to + ninety. The roll and pitch are adjusted by using aligning approach for the duration of face-log era, so our only difficulty is yaw angle. Using face landmarks detection, we calculated the coordinates of nose tip and additionally the factor among the eyebrows.

III. LITERATURE SURVEY

Face Description with Local Binary Patterns[1:]

Face Description with Local Binary Patterns Presents a green facial photograph illustration based on neighborhood binary sample (LBP) texture features. The facial photo is divided into local regions and texture descriptors are extracted from each place independently. The descriptors are then concatenated to shape a global description of the face, from which the texture descriptions are extracted. The texture description of a single place describes the appearance of the region and the aggregate of all vicinity descriptions encodes the worldwide geometry of the face. This local feature-based and hybrid method seem to be greater strong in opposition to variations in pose or illumination. The texture extraction technique is considered from this paper amendment is made to extract and discover the face based on Hear classifiers and Ad boosting approach.

Fast Face Detection Using Adobos[2:]

Face detection is a tough undertaking in photo evaluation which has each day more and more packages. The present strategies for face detection can be divided into picture based techniques and characteristic based totally strategies. An intermediate system, the use of a boosting algorithm to train a classifier which is capable of processing photos swiftly even as having excessive detection prices. The main concept within the building of the detector is a getting to know set of rules based on boosting Adobos. Adobos is an aggressive gaining knowledge of algorithm which produces strong classifier through choosing visual features in a own family of simple classifiers and mixing them linearly. The family of simple classifiers incorporates easy rectangular wavelets which might be paying homage to the basis. The simplicity and a new image illustration known as Integral Image allow a very quick computing of those functions. Then a shape in cascade is brought on the way to reject speedy and to categories history regions and focus on the more difficult to categories home windows. For this, classifiers with an increasingly complexity are mixed sequentially. This improves both, the detection velocity and the detection performance.

Face Recognition as an Authentication Technique in Electronic Voting[3]:

"Identity Authentication" commonly entails two ranges: the primary is Face Detection and Recognition, wherein a photo is searched to locate any face in it. Next, an image processing algorithm is applied to smooth up the facial photo for easier reputation. The 2nd level is Face Matching, wherein the detected face is compared to an picture retrieved from the SCE database using a country wide ID. A matching set of rules is carried out to verify the man or woman for each matching. The voter's picture which is captured the use of a webcam is used as the enter to the face detection set of rules. Before coming into photo to Gabor filters, it must be normalized. Input photo is resized to 128×128. Pixel adjustment, in this step, Image Pixel intensities are used, such that the standard deviation of Image Pixel is one. Borders are smoothed, throughout band 30 pixels wide and they're weighted by an issue d= 30, in which d is distance of image edge. Gabor filter set of rules includes 40 filter used to discover faces from the captured picture; the proposed system applied special Gabor filters at the image to generate 40 images with distinctive angles and orientation. Next, most depth points in each filtered image are calculated and marked as fiducial factors. If the space is minimal among those face points then gadget reduces the points.

Local Gabor Binary Pattern Histogram Sequence[4]:

Histogram proposes face recognition based on Local Gabor Binary Pattern Histogram Sequence (LGBPHS). In this approach, a face image is modelled as a "histogram sequence" by concatenating the histograms of all the local regions of all local Gabor magnitude binary pattern maps. For recognition, histogram intersection is used to measure the similarity of different LGBPHS and the nearest neighborhood is exploited for final classification. Additionally, different weights for each histogram piece is assigned when measuring two LGBPHS, so this approach is robust to the variations of imaging condition with much discriminating power and noise. Image transformations due to variations in lighting, occlusion and pose are also recognized. Additionally, instead of directly using the intensity to compute the spatial histogram, multi-scale and multi-orientation Gabor filters are used for the decomposition of a face image followed by local binary patterns (LBP). From this paper the histogram approach is analyzed and modified based on Weber local descriptor technique. WLD descriptor represents an image as a histogram of differential excitations and gradient orientations, and has several properties like robustness to noise and illumination changes, elegant detection of edges and powerful image representation.

Robust Face Representation Using Hybrid Spatial Feature Interdependence Matrix[5]:

The face is composed of a set of small facial regions. The spatial feature interdependence matrix (SFIM) determines the local region to represent face appearance. The image is projected onto an unidirectional connected graph which explicitly encodes feature independence based relations for all pair of local regions. A careful handling of the utilization of the feature interdependences regarding all local region pair is yielded. While measuring feature interdependence strength, a distance-aware weighing method is used, this is facilitated by kernel function. The difficulties addressed in the SFIM are confined to varying illuminations, changing facial expressions and moderate changes in face pose.

Face detection

Face detection is a process to extract face regions from input image which has normalized intensity and uniform in size. The appearance features are extracted detected face part which describes changes of face such as furrows and wrinkles (skin texture).In this system model, the face detection process is based on hear like features along with adaptive boosting method.

Face granulation

This approach is used to represent the facial information in several parts to extract the features and discriminate presence of variations such as pose, expression and illumination. To detect face granules, 2D Gaussian low pass filter is used to generate difference of Gaussian between two successive filtering at each reduced version of image. At each iteration level, the image will be down sampled to desire size to make difference of Gaussian pyramid. These granules are used to provide facial features such as smoothness, edge details and blurriness.

Gabor filter approach[6]:

The low frequency sub bands of two source images are fused based on selection of appropriate coefficients using Gabor filtering. It is useful to discriminate and characterize the texture of an image through frequency and orientation representation. It uses the Gaussian kernel function modulated by sinusoidal wave to evaluate the filter coefficients for convolving with an image.The complex Gabor in space domain, here is the formula of a complex Gabor function in space domain.

$$g(x, y) = s(x, y)\ wr(x, y)$$

Where s(x; y) is a complex sinusoidal, known as the carrier, and wr(x; y) is a 2-D Gaussian-shaped function, known as the envelop. The complex sinusoidal is denotes as follows,

$$s(x, y) = \exp(j\ (2*pi(u0\ x + v0\ y) + P))$$

Where (u0, v0) and P denotes the spatial frequency and the phase of the sinusoidal respectively.

IV.Proposed system

Our system the face attendance is capable of identifying a person by scanning the person from distance without getting closer to the system. Our proposed system is the one of the easiest process to get the attendance even there are more number of people. Here multiple user faces are detected and recognized with the data base trained
Multiple texture based features. In our system we are going to develop face recognition system able to connect to our database and extract the student images. Our system will detect recognized faces with some image processing techniques and use the recognized faces to give attendance to database

V.BLOCK DIAGRAM

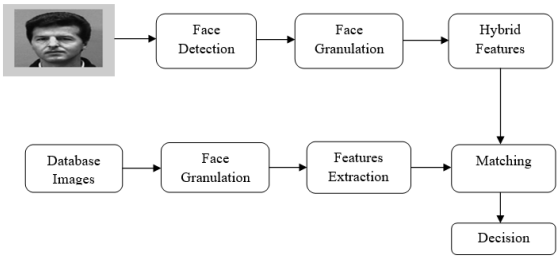

Fig 1.1: Block diagram of the face recognition system

VI.IMPLEMENTATION

The real time image is captured and it is passed through the executable library to extract the face region from the background and the output is obtained.

Fig 1.2: Cropped image from the background

The cropped image figure is then analyzed using Hear classifiers along with Ado boots technique for face detection. The detected face is then passed through the Gaussian filter and for various illuminance value output is obtained. The code composer studio is used to perform face recognition and authentication process in TMS320C6745 processor.

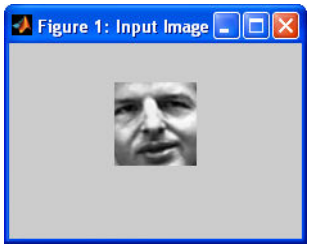

Fig:1.3 Real time image

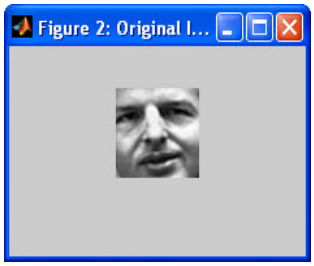

Fig: 1.4 Database image

Fig: 1.5 Matched Result

The real time image represented in figure 1.3 and the database image represented in figure 1.4 are processed using ccs and the output is obtained based on their extracted feature values and the authentication is shown in figure 1.5.The above images represents the matched faces.

VII.CONCLUSION

Identification structures are strong in herbal environments, in the presence of noise and illumination modifications, cannot rely upon a unchanged modality, in order that fusion with different modalities is critical. The images are further analyzed based totally on gradient orientation and differential excitation the usage of Weber filter and texture extraction is completed through the Gabor clear out. The extracted values are in addition in comparison with the extracted values of the database picture and authentication is acquired. All modern face popularity algorithms fail under the hugely various situations under which people want to and are capable of identify different human beings. Next generation character recognition systems will want to apprehend people in real-time and in tons less restrained situations.

REFERENCES

[1] Ahonen.T, Hadid.A and Pietikäinen.M, (2004) ‘ Face description with local binary patterns’, in Proc. Eur. Conf. Comput. Vis.

[2] “Fast Face Detection Using AdaBoost, JulienMeynet”, 16th July 2003.

[3] “Face Recognition as an Authentication Technique in Electronic Voting”,Noha E. El-Sayad, Rabab Farouk Abdel-Kader, Mahmoud Ibraheem Marie, 2013.

[4] “Local Gabor Binary Pattern Histogram Sequence Novel Non- Statistical Model for Face

Representation and Recognition",Wenchao Zhang, Shiguang Shan, Wen Gao, Xilin Chen, Hongming,2005.

[5] "Robust Face Representation Using Hybrid Spatial Feature Interdependence Matrix", Anbang Yao and Shan Yu, 2013.

[6] JulienMeynet,(16th July 2003)'Fast Face Detection Using AdaBoost'.