

THE FACE DETECTION AND RECOGNITION

Priyanka. S¹, Harini.R.V²

Department Of Computer Science and Application
Sri Krishna Arts and Science College

Abstract: Face detection and recognition has become a significant and developing technology in modern days. In recent days its implemented in many phones for security purposes to make the phone more secure. Face detection and recognition technology is known for mostly identifying a person image or in a video. It's used in variety of fields in technology. This technique is used in many IoT concepts. For detection and recognition technique is used in many fields of computer vision for reorganization and used to check whether the proper admin is using the system or not. This technique is also used in the fields of biometric technology to detect the face reaction automatically. This technique has many algorithms and performs its functions step by step and clearly. It can also recognize face with higher accuracy and gives us result. Face detection can determine the location, size of human face in arbitrary image, it only recognize facial expression and ignore others.

Keywords: Facial expression, technology, detection, eyes, nose, security, marketing, admin recognition, database, images, capture, accuracy, environment, technology, face detection and recognition

INTRODUCTION:

Face detection and reorganization is most important and popular reorganization of image analysis. In present situation it provides a major role in personal information and on security features in many applications and in many devices. Face recognition works just like human beings how they identify people by recognizing them as friends, relatives by their face, this technology also does the same by recognize humans by their face. The face recognition technique recognizes facial features of one person (like: eyes, nose, mouth, moles etc...). It gives a perfect result of identification features. This can be used in surveillance camera for detecting people to find the person who has done any criminal activity in police department. It quickly matches the face and makes the user convenient to access the device and he can even access large number of database and recognize in changing environment. Face detection and reorganization is done by first taking the images and measuring the distance between eyes to nose then eyes to mouth Then eye brows, then it also take the image of the mouth, nose, Eye. These measurements are stored in a database and its used to compare whenever it needed for detection and reorganization.



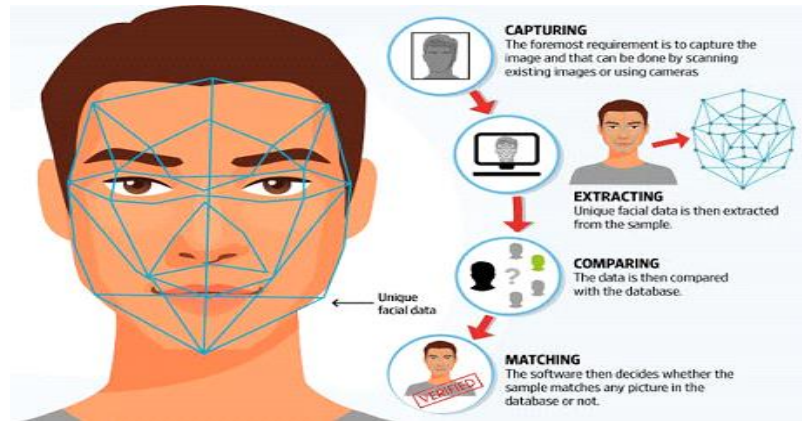
The face authentication generally has four steps they are:

- i) Face detection.
- ii) Face preprocessing.
- iii) Collect and learn faces.
- IV) Face recognition.

II.FACE DETECTION AND SOFTWARE WORKAGE:

There is major part in face detecting and recognition that's how even people identify you. In case of identical twin imagine the situation of face detecting and recognition. But this technology even work in that tough situation. Even being identical twin they have some changes in their face like mole, changes in eyes brow, eye color etc... From that it can be easily identified. There is a software recognition that can be used to find a crimes in a crowd by recognizing each people comparing from the database and it can measure various features of peoples face in that crowd. Facial recognition software falls on the large group of technology which is

known as biometrics. Of this biometrics it uses many biological information to identify people. This idea behind this is each people will be unique in their identity and have different features even if they are identical twins.



The recognition method may change to many category but the generally involve steps are same. They capture the image, analyse and they compare to that face with the database. There is a special name called as eigenfaces that name given to a set of eigenvectors. That they provide the easy way for recognition that gives complete and automatic and easy to code to users. It reduces the statistical complexity in image recognition, eigenface can handle large database and it can be used in real time.

III. THE SOFTWARE AND ITS TYPE:

The facial identification software compares the every image taken by the user and compare the that with the database images. There are five types of stepson face dection and reorganization, they are:

- i) Dection
- ii) Alignment
- Iii) Normalization
- IV) Representation
- v) Matching

DECTION:

When any system is attached to any video surveillance system it identifies a software search to that field of view of that camera for the faces .if that detected face is in the view of that video it will detect that in an fraction of second. For this there is an algorithm called multi scale algorithm that is used to search any face Line low resolution .the system will also switch to high resolution when head like shape is detected in that resolution

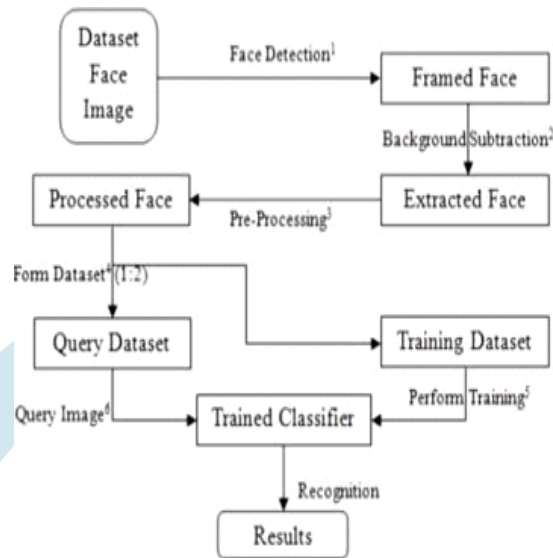


ALIGNMENT:

Once a face is detected in a system, the system determine the all the positions of the face, head and size. The face should need to turn at least 35 degrees towards that camera for register in that system in it. I t should be properly aligned

NORMALAIZATION:

The image in that system should be scaled and rotated to be registered and mapped into appropriate pose and size. It's performed by the heads locations and distance from that camera. In this normalization process light do not have a large impact.

**REPRESENTATION:**

The system will have the unique feature of translating the facial data to unique code. This code allows to easily comparing the newly acquired facial data to be stored in facial data.

MATCHING:

Matching is a new feature acquired to facial data to compare to data which is stored and ideally to at least one stored facial representations. This system matches the face and creates a face print that has a unique numerical code for face. Once it has stored a face print that compare that to millions of face prints that is stored in a database. Each face print is stored as 84 byte file .

IV. TYPES OF FACE DECTION AND RECGNTION:

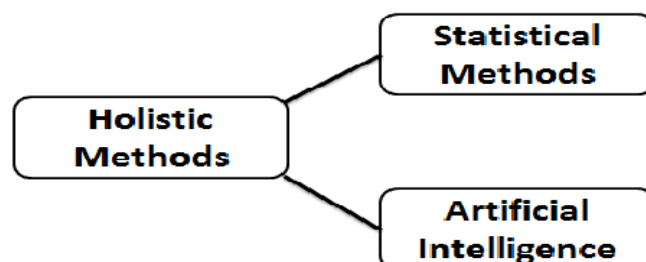
There is a interesting face dection and recognition that is appearance based face recognition. Appearance based recognition is one of the face recognition techniques that have a significant to form a strong range of research areas. There are two categories in this techniqe

- i) Holistic approaches
- ii) Hybrid approaches

HOLISTIC APPROACHES:

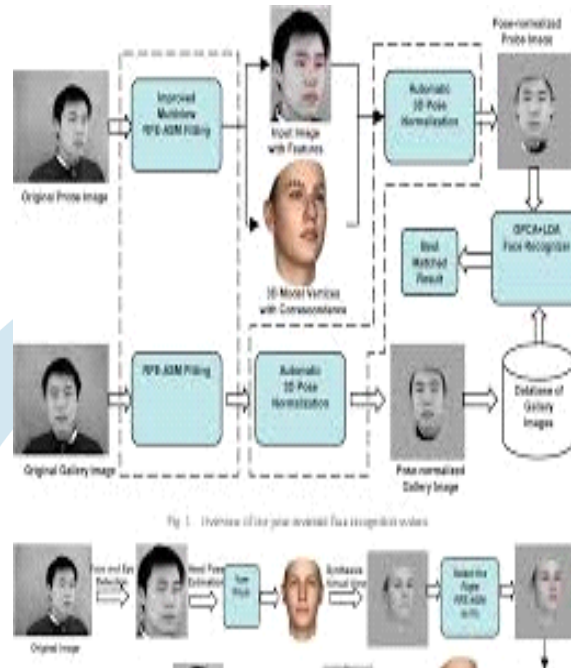
This holistic face recognition is utilized for global information for the faces to perform the face recognition. The global information from the faces is fundamentally represented by the small number of the features which can be directly derived from the pixels of information of face images. This small number of features correctly captures the variance among different individual fractures in people. It has algorithm and pictures to define them more briefly. It has two classifications

- i) Statistical methods
- ii) Artificial intelligence



HYBRID APPROACHES:

This hybrid approaches is used in both holistic and local features. This concept can be extended to Eigen features; the fractures are Eigen eyes, Eigen nose, Eigen mouth, etc... Science most features has extraction has methods that have no specific requirement on the input features, it's also responsible for combination with feature design procedure to seek more effective face recognition.



APPLICATION OF FACIAL DECTION AND RECOGNITION:

- Used in researching payment verification on the web
- Used in Access control in many offices and they are now using in face recognition also
- For Many retail store we use the face recognition
- We use Facial recognition using casinos
- Used in Government agencies to identify criminals
- Social media to identify everyone
- In Shopping we use credit card
- This recognition is used to detect Expression and emotion in healthcare
- Used in photo management apps, camera and smart phones
- It's used in advertising fields in media. It collects mass of data and give to advertising people.
- It's used in many smart phones like apple, Samsung and xiaomi crop that have feature in their phones.
- Used in Law enforcement in face recognition.
- Used in payment applications.
- It helps the blind people. Its works In a way that it sense the emotion of the blind people and in case of emergency it will give a alert call to police by decting their face expression itself.
- It's used in forensic investigation.
- Even track schools and work place attendance.
- Used in secure transaction.
- It's used in air travelling and makes air travel convenient.
- In going in road it recognize the deriver's whether they are give fast or slow.
- In Target marketing it can be used to improve the customer face recognition

- Used in Smart phone manufacturers for security
- Personal security to access the personal mobile devices
- Hospitality is one of the most competitive sector in that they use face recognition system
- Day care identify the individuals for picking up the children
- The main application is voter verification
- It uses facial expressions even for verification.
- It used in time and attendance verification
- Application that are used in government and commercial
- It created a boom in security issues (like used in surveillances camera).
- It uses authentication
- It uses in back end verification

ADVANTAGES:

- It's most convenient and social acceptability in day today life for all users.
- The integration processes it easy.
- High accuracy can be maintained.
- Facial recognition system is automated fully.
- This technology is used by people in real time to make their life easier.
- It's used in data protection.
- It more user friendly
- It is low inexpensive technique
- Easy to use for face recognition for all age people
- Its price is applicable for all.
- This technique uses image equipment technique
- It can search static images as license photographs
- It Operates biometric technique
- In this technology Many data are available to use

DISADVANTAGES:

- A good version of face detection is costly to implement.
- Data storage is complicated, high quality image storage of video is difficult to store.
- Any appearance change in ample of recognition leads to complication of detection.
- It's less reliable to use.
- Reports generated by this technique are realizable.
- There are some issues in private license and privacy rights.
- Its well lighted by automated face authentication systems
- It's a poor biometric use for pure identification protocol
- It's used in method called disguising obvious circumvention

V. CONCLUSION:

Environmental changes and mild changes in appearance impact the degree then many expect .where the biometrics system is must verify the over time, but not impossible technology to implement successfully. Face recognizes technology have been generally with top costly securing applications. To improve the face recognition under limitation in variation and non frontal view. To improve the Speed of recognition. This approach is the Very simple in terms of calculation. It required the scanning without any complicated Analysis. The Strength and weakness are calculated the paper on facial recognition using biometrics. We uses 30 images of the performance of this Implementations we got 70% of accuracy. Face recognition technology in last twenty years in long way. Many applications is used in the facial Environment to obtain high accuracy. On Next generation face recognition system are Going to smart environment.

This Computer and machines are used in the assistants. To achieve computers must able to nearby People in a manner. The normal human Interaction is the linked by face recognition. This implies the smart environment using Human beings. The person making face Recognition technology from single or multiple modalities. Face recognition technology has associated with the secure application. The main objective is neural networks. High accuracy system remains need for face recognition.

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- [3]. Priyanka P. Raut¹, Namrata R. Borkar²
ME Student¹, Assistant Professsor²
Department of Computer Science and Engineering
Dr. Sau. Kamlatai Gawai Institute of Engineering and Technology, Darapur, MS, India
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