Face Recognition Techniques USING (Deep Learning)

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Abstract: Deep Learning is replacing the way we look at technologies. In this so many excitement around Artificial Intelligence (AI) along with it is branches namely Machine Learning (ML) and Deep Learning at the moment. After research It has estimated that several deep learning applications will affect our life in the coming generation. Basically, these are already making an impact. Approx next five to ten years, It will progressive tools, bibliothecary and dialect will become standard components of every software progressive toolkit.

Keywords-deep learning; machine learning; facial recognition; holistic approach; face detection.

I.   INTRODUCTION

In Real time applications, Face authentication is a increasing quickly. It's a very provoking and attracting area. It's classified as geometry based or template based algorithms as well PCA,ICA, LDA,EBGM etc.

II.   THE APPLICATION OF DEEP LEARNING

A.   Facial Recognition

It's a technique to automatic identify the human by matching his face with the database images. In modern area the protection of human, intelligence, data or estate have became challenging and necessary. Because protection breach in organizations, credit card misuse and computer hacking are increasing day by day. It is a part of biometrics in which system could identified person.

First geometric algorithms was proposed in 1960s which property were used for authentication of face and the person. In 1991 Turk and Pentland gave the concept o Eigenface established on the (PCA)..It is becoming too active field. It has been researched desirous. Computers are becoming genius day by day and maximum applications are going production like (Human Computer Interface), Artificial intelligence, robotics, amusement, games etc.

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Fig. 1. Face matching digital image with the Database in real time

This is based on three operations which are mentioned below:
a. Face detection
b. Face Segmentation .
c. Face Recognition

Face authentication is the first fundamental step for human face recognition. it is used to authenticate the people face with his/her digital image of database. It is a part of object detection and can use in many areas such as security, bio-metrics, law enforcement, entertainment, personal safety, etcc .feature Partition is a circumstantial procedure,occasionally face authentication match approximately difficult.
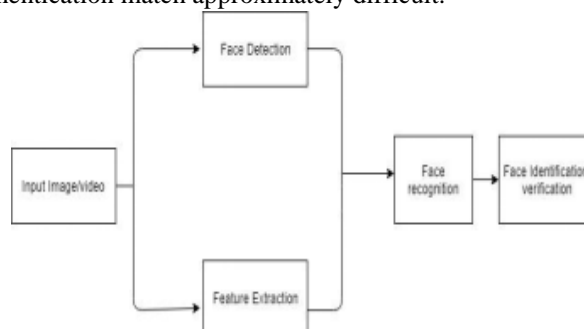

Fig. 2. General face Recognition system

III.   ALGORITHMS

PCA is stand for Principal Component Analysis. This algorithms is most conventional and broadly algorithms which used in the research of face recognition.This is also a method which used in the operation of image and signal processing. solving single individual problems, instead of using normal features.
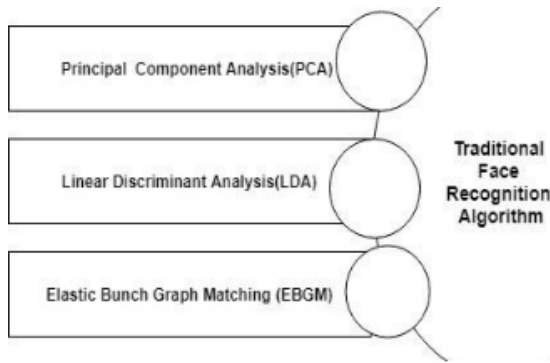
Fig 3. Conventional Face Recognition Algorithms

Linear Discriminant Analysis was introduced by Wiskott et al which is mostly used for reduction of dimension and feature pulling out.This is a supervised learning model which is similar to logistic regression. According to analysis with small dataset PCA is better than LDA.It has also been used in different applications for image recognition. It is also known as Fisher faces.

IV. APPROACHES FOR FACE RECOGNITION

There are various approaches are used for face authentication .
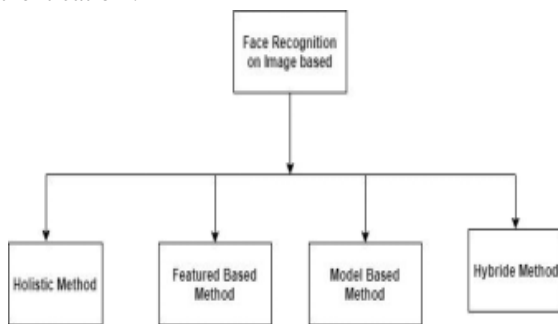
Holistic Approach

This approach provides a technique in which complete face is consider as a single feature for detection and recognition. It analyzes the correlations of complete face, accept particular features.
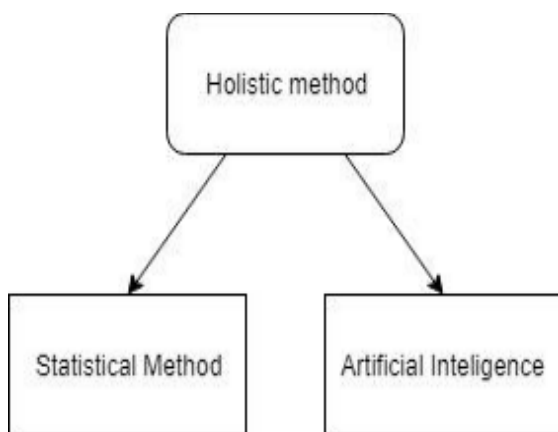

Fig. 5. Holistic Face Recognition Methods

Artificial Intelligence is a computational approach which provides a arithmetic component to train neural network of intellectual entity which achieve attributes of face. This proposal with machine such as neural networks and automatically recognizes the faces of learning techniques.

Properties based Approach dislike to holistic, this approach consider individual properties of the face like eyes, nose, mouth, mole, ears and match the similarity between the images.

The Modern hybrid methodology for face recognition, a face identification method is presented. Face recognition by using the nose tip for the main aspect of feature extraction phase. A research work is done on the face authentication with the help of the Gabor filter proposal and the normalization approach.

V. APPLICATIONS OF FACE RECOGNITION

1. **Access and security:** we can verify the right person using facial biometrics.During verifying a payment. It can be integrated with physical devices and objects. Instead of using passcode scanner ,OTP, etc It would be accessed via owners' facial recognition features.

2. Criminal identification: In these day everywhere cctv camera have been installed in many private and public places for surveillance the human activity. It can used to identify the suspects of scene. So many softwares are available to detect the similarity between photo in the photage and recorded photo of criminals. PCA has proposed in this paper for an automated facial recognition system for criminal database.

3. Validate Identity at ATMs: According to facial recognition technique if we integrate that with ATM card face scanner will finally change ATM cards absolutely and in the interim, face authentication can be used to make sure that individuals using ATMs cards are who they are or not. This technique is presently used at many places to verification of people's'.

VI. DISCUSSION

Deep learning is a part of machine learning where artificial neural networks and algorithms are motivated by the human intellect. It is a algorithm of face verification and authentication of an individual.

There is many methodology used in face authentication.

Face detection technology is based on approach as well model based approach and feature based approach.

In holistic proposal, the whole face region is acquired into account as input data into face catching system. AI techniques are further classified of holistic approach.

VII. CONCLUSION

In this analysis different operations and technique of face authentication are considered. It is achieved that the hybrid approach is approximately best technique. In the modern area research work is going on based on hybrid approach. This is based on current system which anxious with both representation and authentication using artificial neural networks is presented. This paper provides the survey of the approach face authentication system, and explains the technology used.

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