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REVIEW ARTICLE

A Simplified Review on Study and Implementation of Recognizing Terrorist by Rapid Detection by Activities and their Facial Match

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ABSTRACT

Security is an important aspect in all environments. It is related to safety. Our Topic "Study and implementation of Recognizing Terrorist by rapid detection by activities and their facial match" proposed for various kinds of faces is presented in this paper. To recognize terrorist is one of the major task of any government agency. The implementation of it is one of the most influential works of human kind. Our approach is to find the facial detection and activities of people for fifteen second video capture. Every people come under the camera recognize each separately. Its activity matches with record of each suspect and facial is one of the most important and it match with every mean of change. Even after plastic surgery it can also predict. The study of face recognition falls into three methods such as face normalization, feature extraction and face matching.

KEYWORDS

Automatic face detection(AFR),Principle Component analysis(PCA), Gabor Wavelet, Face Graph, Linear Discriminant Analysis (LDA), Artificial Intelligence(AI), Bunch Graph, Model Jets, Landmark Locations

1. INTRODUCTION

1.1 Definition: The problem of face recognition can be cast as a standard pattern classification or machine learning problem: Given a set of face images labeled with the person's identity (the gallery set) and an unlabeled set of face images from the same group of people (the probe set), we seek to identify each person in the probe images. This problem is attacked in three steps. In the first step, the face is located in the image; this process, known as face detection, is in many respects as challenging a problem as face recognition.

In the second step, a collection of descriptive measurements known as a feature vector is extracted from each image. In the third step, a classifier is trained to assign to each feature vector a label with a person's identity.

1.2 Basic Of Pattern Recognition Technique

Pattern reorganization Technique: Pattern recognition algorithms generally aim to provide a reasonable answer for all possible inputs and to perform "most likely" matching of the inputs, taking into account their statistical variation. This is opposed to pattern matching algorithms, which look for exact matches in the input with pre-existing patterns. A common example of a pattern-matching algorithm is regular expression matching, which looks for patterns of a given sort in textual data and is included in the search capabilities of many text editors and word processors.

2. BACKGROUND

A novel method to model and recognize human faces in video sequences is presented. Each registered person is represented by a low-dimensional appearance manifold in the ambient image space.

The complex nonlinear appearance manifold expressed as a collection of subsets (named pose manifolds), and the connectivity among them. [1]

In traditional face image acquisition settings, such as passport agencies or police stations, nuisance variables ranging from head pose to facial expression are controlled. In contrast, video surveillance systems cannot be as obtrusive, so the activities of the recorded individuals and the effects of the environment can vary significantly. Numerous performance evaluation efforts have demonstrated that face recognition algorithms that operate well in controlled environments tend to suffer in surveillance contexts. These issues have motivated the development of face recognition algorithms that draw from the wealth of information provided by videos to compensate for the poor viewing conditions encountered in uncontrolled viewing scenarios.[2]

The essential midline symmetry of human faces is shown to play a key role in facial coding and recognition. This also has deep and important connections with recent explorations of the organization of primate cortex, as well as human psychophysical experiments. Evidence is presented that the dimension of face recognition space for human faces is dramatically lower than previous estimates. One result of the present development is the construction of a probability distribution in face space that produces an interesting and realistic range of (synthetic) faces. Another is a recognition algorithm that by reasonable criteria is nearly 100% accurate. [3]

3. LITERATURE SURVEY

1] Face Expression Recognition and Analysis, Vinay Bettadapura

The automatic recognition of facial expressions has been an active research topic since the early nineties. There have been several advances in the past few years in terms of face detection and tracking, feature extraction mechanisms and the techniques used for expression classification. **This paper surveys some of the published work since 2001 till date.**

2] Face detection to face super-resolution using face quality assessment, Kamal Nasrollahi

Many different techniques have been implemented for face detection, facial feature extraction, face quality assessment, best, complete and over-complete face-log generation and finally super-resolution. **Testing different parts of the system using more than 10 local and public databases produces good results**.

3] Ongoing Challenges in Face Recognition, Peter N. Belhumeur

This problem is attacked in three steps. In the first step, the face is located in the image; this process, known as face detection, is in many respects as challenging a problem as face recognition. In the second step, a collection of descriptive measurements

known as a feature vector is extracted from each image. In the third step, a classifier is trained to assign to each feature vector a label with a person's identity.

4] Face Recognition: face in video, age invariance, and facial marks, Unsang Park

A 3D aging modeling technique is proposed and show how it can be used to compensate for age variations to improve face recognition performance.

5] New multi-biometric approaches for improved person identification
For the recognition task, each sensor captures different aspects of human facial features; for example, appearance representing the levels of brightness on surface reactance by a light source, shape data representing depth values defined at points on an object, and the pattern of heat emitted from an object.

6] Holistic face recognition by dimension reduction, Gül Ahmet Bahtiyar
Face recognition is a popular research area where there are different approaches studied in the literature. In this thesis, a holistic Principal Component Analysis (PCA) based method, namely Eigen face method is studied in detail and three of the methods based on the Eigen face method are compared. These are the Bayesian PCA where Bayesian classifier is applied after dimension reduction with PCA, the Subspace Linear Discriminant Analysis (LDA) where LDA is applied after PCA and Eigen face where Nearest Mean Classifier applied after PCA.

7] Human Recognition Using Local 3D Ear and Face Features

In this dissertation, a fast and fully automatic approach for detecting 3D ears from corresponding 2D and 3D profile images using a Cascaded AdaBoost algorithm is proposed. The classifiers are trained with three new Haar-like features and the detection is made using a 16×24 detection window placed around the ear. The approach is significantly robust to hair, earrings and earphones and unlike other approaches; it does not require any assumption about the localization of the nose or the ear pit.

8] Face recognition using unsupervised images through discretionary based security, Jagan Mohan and Uppala Narendranath Gadaee
Security is an important aspect in all environments. It is related to safety. Safety is one of the elements that complete one's requirement which leads to self-actualization. In this paper complete image face recognition algorithm is proposed for various kinds of faces. The study of face recognition falls into three methods such as face normalization, feature extraction and face matching. Discrete Cosine Transform (DCT) is a well-known feature extraction method which extracts features in the field of face recognition capabilities

9], Automatic Face Recognition in Feature Length Films, Ognjen Arandjelovic

The objective of our work is classification of film characters based on sample images of one or more actors. Characters are classified to one of the sample classes or as unknown. A typical number of classes in a feature length film is 10-20 with 5000-20.000 face images to be classified. Algorithm performance can be evaluated using ROC curves.

10] Matching Methods for Automatic Face Recognition using SIFT, Ladislav Lenc, Pavel Kr´al
The object of interest of this paper is Automatic Face Recognition (AFR). The usual methods need a labeled corpus and the number of training examples plays a crucial role for the recognition accuracy. Unfortunately, the corpus creation is very expensive and time consuming task.

4. TECHNOLOGY TO BE USED

1. Artificial Intelligence (AI)

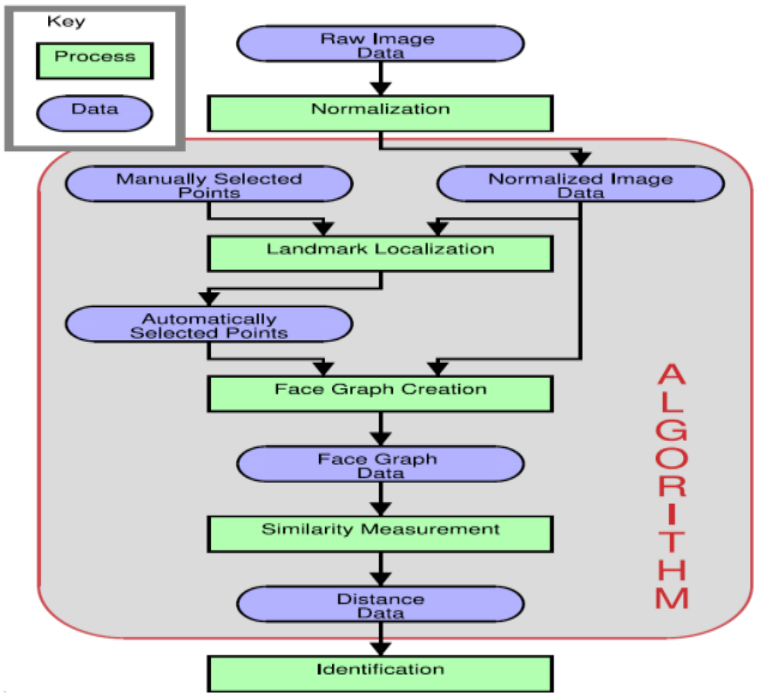
2. Pattern recognition technique

3. Statistical analysis

4. Probability

5. ALGORITHM TO BE USED

CSU Graph matching algorithm is implemented. . The algorithm needs examples of what the landmark jets look like to locate the landmarks in a novel image. The features are represented by Gabor jets, in this case referred to as **model jets**.
The jets are extracted from images with manually selected landmark locations. The model jets are then collected in a data structure called a **bunch graph**. The bunch graph has a node for every landmark on the face. Every node is a collection model jets for the corresponding landmark. The bunch graph serves as a database of landmark descriptions that can be used to locate landmarks in novel imagery. This algorithm computes the similarity of two images. To accomplish this task, the algorithm first finds **landmark locations** on the images that correspond to facial features such as the eyes, nose, and mouth. It then uses **Gabor wavelet** convolutions at these points to describe the features of the landmark.
All of the wavelet convolution values at a single point are referred to as a **Gabor jet** and are used to represent a landmark. A **face graph** is used to represent each image. The face graphs nodes are placed at the landmark improve the recognition technique and locations, and each node contains a Gabor jet extracted from that location.
The **similarity** of two images is a function of the corresponding face graphs. AI Probability & Statistical analysis improves the Data set used.



6. CONCLUSION

We are trying to implement a model on which we can predict which people are more related to suspects or terrorist. We are actually trying to find correlation. It can be used for practical implementations by agencies by creating a lot of database.

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