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A Survey on Automatic Face Naming and Image Sorting Using Image Processing

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ABSTRACT: Image processing is a method of converting an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it. In Image processing different type of features are added to work on image. Given a collection of images, where each image contains several faces and is associated with a few names in the corresponding caption, the goal of face naming is to give the correct name for each face. We proposed a method to effectively solve this problem by learning two discriminative affinity matrices from weakly labeled images. First propose a new method called regularized low-rank representation by effectively utilizing weakly supervised information to learn a low-rank reconstruction coefficient matrix while exploring multiple subspace structures of the user data. Specifically, by introducing a specially designed regularizer to the low-rank representation method, System penalizes the corresponding reconstruction coefficients which relates to the situations where a face is reconstructed by using face images from other subjects or by using itself. A discriminative affinity matrix can be obtained with the inferred reconstruction coefficient matrix. Moreover, by using weakly supervised information to seek a discriminative distance metric, it also develop a new distance metric learning method known as ambiguously supervised structural metric learning. Hence, another discriminative affinity matrix can be obtained using the similarity matrix (i.e., the kernel matrix) which is based on the Mahalanobis distances of the data. Observing these two affinity matrices contain complementary information, system further combine them to obtain a fused affinity matrix, based on which develop a new iterative scheme to infer the name of each face. Comprehensive experiments demonstrate the effectiveness of our approach.

KEYWORDS: Distance Matrix Learning , Human Computer Interaction , Facial Action Coding System , Caption Based Face Naming.

I. INTRODUCTION

In Image processing different type of features are added to work on image. Human face is being used as index for identification. In present days automatic face detection has become curiosity in research field. Image processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it. A collection of images, where each image contains several faces and is associated with a few names in the corresponding caption, the goal of face naming is to infer the correct name for each face. Over the last two decade lots of work is done in face detection and recognition as it is best way for person identification because it doesn't require human co-operation so that it become hot topic in image processing. Face detection is an essential phase in an automated face recognition system. It can be also used in system such as face tracking, video surveillance, facial expression recognition etc. Face detection can be defined as a process to separate human frontal faces from their background and find their location in an input image in spite of their location or position, scale or size, in plane rotation and illumination pose.

II. RELATED WORK

1)Project Name: -Automatic Face Naming by Learning Discriminative Affinity Matrices From Weakly Labeled Images

Authors: -Shijie Xiao, Dong Xu, *Senior Member, IEEE*, and Jianxin Wu, *Member, IEEE*.



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Abstract: -The collection of images, where each image contains several faces and is associated with a few names in the corresponding caption, the goal of face naming is to infer the correct name for each face two new methods to effectively solve this problem by learning two discriminative affinity matrices from these weakly labeled images. We first propose a new method called as regularized low-rank representation by effective utilization of weakly supervised information for learning a low-rank reconstruction coefficient matrix to explore multiple subspace structures of the data. Specifically, by introducing a special designed regularizer to a low-rank representation method, we penalize the corresponding reconstruction coefficients related to the situations where a face is reconstructed by using face detected images from other subjects or by using itself. With the inferred reconstruction coefficient matrix, a discriminative affinity matrix can be obtained.

2)Project Name: -Automatic Face Detection Using Color Based Segmentation And Morphological Operation

Authors: -B.Pavalaraj M.E, CSE, Velammal College of Engineering & Technology, Madurai, India And K.Azarudeen* Assistant Professor, Velammal College of Engineering & Technology, Madurai, India

Abstract: -Face is our important focus of attention for conveying identity. Human face detection by computer systems has become a major field of interest. Detecting the multiple faces in a digital image has gained much importance with application in many areas. Automated human face recognition has mainly divided two parts one is face detection and second one is recognition of detected faces. A paper proposes a color based segmentation algorithm for face detection in color images with detection of multiple faces in an image and separate the skin & non-skin regions using various color models i.e. HSV and YCBCR, after that the Morphological operation is used to smooth the object boundary without changing the respective area using erosion and dilation.

3)Project Name: -Automatic Face Naming with Caption-based Supervision

Authors: -Matthieu Guillaumin, Thomas Mensink, Jakob Verbeek and Cordelia Schmid LEAR team, INRIA, Grenoble, France

Abstract: -We have to consider two scenarios of naming people in databases of news photos with captions: (i) finding faces of a single person, and (ii) assigning names to all faces. We combine an initial text-based step, that restricts a name assigned to a face to the set of names appearing in the caption, with a second step that analyzes visual features of faces. By searching for groups of highly similar faces that can associate with a name, the results of purely text-based search can be greatly ameliorated. We improve a recent graph-based approach, in which nodes correspond to faces and edges that connect to highly similar faces. We introduce constraints when optimizing the objective function, and propose improvements in the low-level methods used to construct the graphs. Furthermore, have to generalize the graph-based approach to face naming in the full data set. In this multi-person naming case the optimization quickly becomes computationally demanding, and present an important speed-up using graph-flows to compute the optimal name assignments in the documents. Generative models have previously been proposed to solve the multi-person naming task. We need to compare the generative and graph-based methods in both scenarios, and have to find significantly better performance using the graph-based methods in both cases.

4)Project Name: - Digital Image Processing Project -Automatic Face Detection Using Color Based Segmentation and Template/Energy Thresholding

Authors: - Michael Padilla and Zihong Fan Group 16 Department of Electrical Engineering EE368 - Dr. B. Girod, Spring 2002-2003 Stanford University

Abstract: -The main purpose of this project is to try to replicate on a computer that which human beings are able to do effortlessly every moment of their lives, detect the presence or absence of the faces in their field of vision. While it is something that to the layman appears trivial, to implement the necessary steps leading to the successful execution of this in an algorithm is difficult and still an unsolved problem in computer vision. In EE368 the task of using a collection of seven digital images to train and develop a system for doing just this in a competitive format. The only real limitation is that it run under seven minutes for a single file. In deriving a method of our own, we initially began by reviewing various articles on the topic as well the material covered in lecture. Thus explored the possibility of using some of the methods that have been explored by the researchers thus far, such as neural networks, statistical methods, machine learning algorithms(SVM, FLD), PLC (such as Eigen faces and the concept of a "face space"), as well as a newer methodology called Maximum Rejection Classification (MRC).

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5)Project Name: - Scalable Face Image Retrieval using Attribute-Enhanced Sparse Code words

Authors:- A Bor-Chun Chen, Yan-Ying Chen, Yin-HsiKuo, Winston H. Hsu IEEE TRANSACTIONS ON MULTIMEDIA VOL:PP NO:99 YEAR 2013

Abstract: - Photos with people like family, friends are the major interest of users. Thus, with the exponentially growing photos, large-scale content-based face image retrieval is an supporting technology for many emerging applications. In this work, they aim to utilize automatically detected human attributes that contain semantic cues of the face photos. It helps to improve content based face retrieval with construction of semantic code words for efficient large-scale face retrieval. By leveraging human attributes in a scalable and systematic framework, they propose two orthogonal methods namely attribute embedded inverted indexing and attribute-enhanced sparse coding to improve the face retrieval in the offline and online stages. They investigate the effectiveness of different attributes and also vital factors which are essential for face retrieval. Experimenting on two public datasets, the results show that the proposed methods can achieve up to 43.5% relative improvement in MAP compared to the existing methods.

III. PROPOSED METHODOLOGY AND DISCUSSION

In the image processing concept, different types of operations are performed on the image and various features are added to work upon the image. Most of the times there are various types of photograph but they are not grouped. Because generally user check images one by one and then prefer to group it, so it actually takes more time. To avoid this manual grouping problem, we are working upon this project by using face detection technique. If there are different types of images like family photo, friend's group photo, college trip photo, etc. then by applying the face detection technique the sorting and naming of the images will be done in very less time using this system. Implementation of this project is done using 'Viola Jones' algorithm as well as edge detection algorithm, face naming algorithm and image sorting algorithm. So, the Main motto of the project is grouping the images which has same person in it and labeling or tagging will be done to it. User can provide image or set of images which will be labeled and sorted, depends on his requirement.

IV. ARCHITECTURE

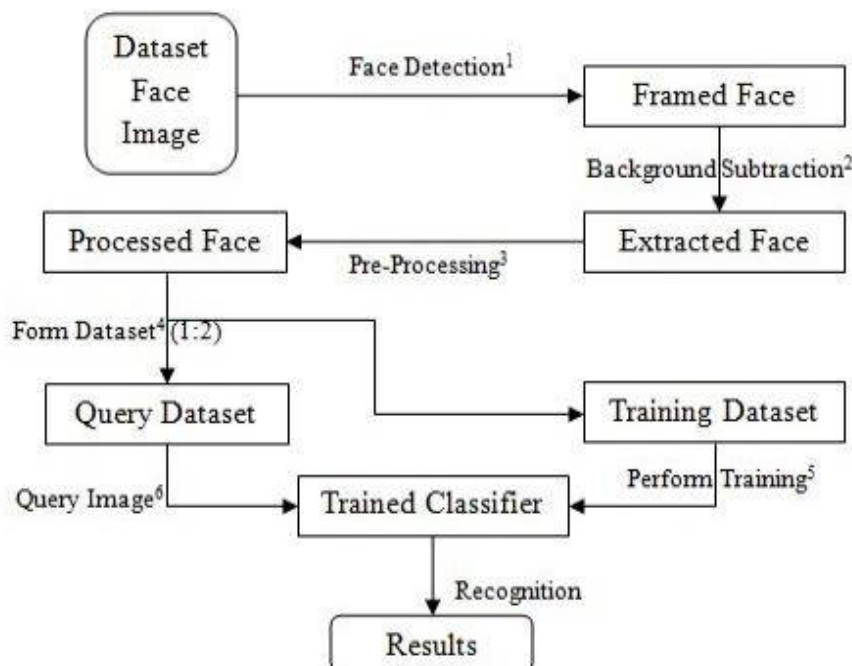


Fig: Basic Architecture of Face Naming and Image Sorting



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V. CONCLUSION

In Face recognition system, it is challenging thing to detect the face from group photograph & recognize the faces at different poses. In this system, the detection of human face from group photograph is done using Viola-Jones algorithm. From the detected faces, user has to select any one face from group photograph's detected faces as a test image. Here, different algorithms are referred like edge detection algorithm, Face Naming algorithm and image sorting algorithm. The Morphological operation like RGB , HSV color detection are used to smooth the object boundary without changing the respective area using erosion and dilation. Matching of face features based on maximum correlation coefficient Index, ranking of similar face at different poses done in this system. This is based on ascending order of maximum correlation coefficient index and it compares the proposed system with face recognition using Eigen values.

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