Face Annotation for Content Filtering

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Abstract— With the rapid advances in the field of multimedia technologies the collection of numerous digital images are also on verge of increase. This has led to the research in the field of image annotation. Auto face annotation is playing an important role in many real-world applications. Face annotation task is part of face detection and recognition. Various pictures are uploaded on social sites daily but many of them are tagged with false name or improperly. It then becomes problematic in recognizing a person properly. Automatic image annotation is the process of automatically assigning semantic labels to images. This paper presents the survey on different approaches for auto face annotation and image based annotation retrieval and also it aims to cover the latent space and generative approaches for auto face annotation and includes a proposed methodology in short.

Key words: Face Annotation, Search based face annotation clustering based approximation, unsupervised label refinement

I. INTRODUCTION

The widespread use of digital media devices are increasing so the different social media tools used for sharing photos. The large number of human facial images are shared over the different social real world application. Some of this images are tagged properly but many of the image are not tagged properly then it becomes problematic in understanding the name of person if any random person sees it so the facial annotation are came. The main aim of image annotation process is to automatically assign associate label to images, so image retrieving users are able to query images by labels and automatically detect human faces from a photo image and further name the faces with the corresponding human names.

Auto face annotation is used for automatic face image annotation without any human intervention [5,7,8,6]. Facial annotation is also applying for videos, such as annotation of facial images from news video is done and then it showed on television so that peoples can recognize person in TV [2,5].

Auto face annotation can be useful in real world applications like online photo sharing sites able to annotate the face from user uploaded photos to make easier online photo search & management. A large collection of photos usually make a great challenge for the end user to detect facial image from photo, browse and search. One possible solution for this problem is that tag images manually but it is time consuming and more costly. So instead of using the manual face annotation automatically annotation is very reliable. To address the challenges "Auto face annotation" is important technique which automatically gives name to relevant person images [1,8]. This technique is more beneficial to different real world application of search based face annotation. The main objective of search-based face annotation is to assign correct name labels to a given query facial image.

This paper proposes a review on techniques used for detection and analysis of each technique. Combine techniques are used in retrieving facial images based on the query. So it is effective to data set the images with their exact names. The detected face recognition techniques can annotate the faces with exact data set which will improve the detection more efficiently. For a set of semantically similar images Annotations from them. Then content-based search are performed on this set to retrieve visually of images, annotations are mined from the data set. The method is to find the face data association in images with data set. The task of face name association should obey the constraint face can be a data appearing in its associated a name can be given to at most one face and a face can be assigned to one name.

II. PROPOSED METHODOLOGY

This focuses on the modules that show how the annotations will be used in order to provide proper appropriate labels.

A. Modules

- Database creation with image in binary bit format array
- Scanning BMP Format –that reads per pixel value in RGB value
- Facial feature indexing with dataset
- Similar face retrieval with value
- Detected final output
- Refines data with appropriate labels.

In short, the proposed method will be based on the following procedure and is as stated:

1) The system is fed with an image.
2) Extracting facial Features
3) The important data is extracted from the sample using software where many algorithms are available. The outcome which is a reduced set of data that represents the important features of the enrolled user's face.
4) Comparison with the new Templates
5) This depends on the application at hand. For the identification purposes, there will be a comparison between the data stored on the database.
6) Declaring a Match with the data
7) The face recognition system will return a match. The intervention of a human operator will be required in order to select the best fit from the candidate data.

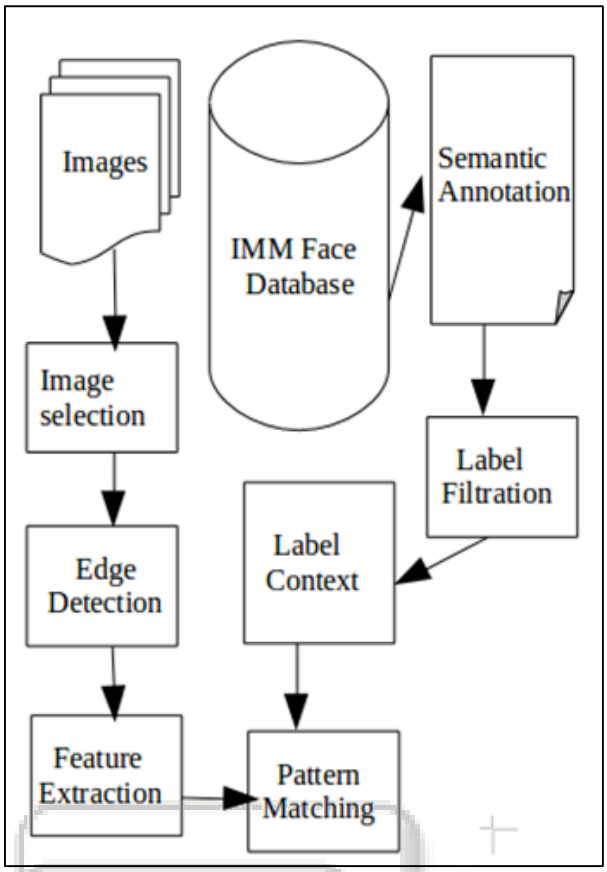

Fig. 1: Flow Diagram

III. Edge Detection using Derivatives Algorithm

Edge detection is a type of image segmentation techniques which determines the presence of an edge or line in an image and outlines them in an appropriate way [1]. The main purpose of edge detection is to simplify the image data in order to minimize the amount of data to be processed [2]. Generally, an edge is defined as the boundary pixels that connect two separate regions with changing image amplitude attributes such as different constant luminance and tristimulus values in an image [1], [3], [4]. The detection operation begins with the examination of the local discontinuity at each pixel element in an image. Amplitude, orientation, and location of a particular subarea in the image that is of interest are essentially important characteristics of possible edges [1]. Based on these characteristics, the detector has to decide whether each of the examined pixels is an edge or not.

Edge detection is to detect the edges from the given figures. There are various methods available to achieve edge selection. These can be applied as per the available photograph.

A. Tracing Input Photograph

This is the method where we trace the outline using a trace paper and a transparent paper. We take a trace paper and adjust lift over the photograph then using a sharp pencil, and good lighting, we trace out the outline of the photograph on the trace paper. Similarly, we take out 3-4 traces till we get trace as per the actual photograph. This face is then forwarded to the next module after thinning.

B. Scanning Top-Down and Left-Right

This is totally software approach. Here, we have the scanned image in BMP format inside profile. The first job is to skip the header. Now, the pointer points to pixel info. This file is now scanned left to right and RGB values are extracted. If RGB values of two consecutive pixels are found to have difference greater than a given value, it is taken into account, and is displayed on screen. Otherwise, we move to scan next pixel in sequence without displaying anything. Once we have scanned in left to right fashion, now to scan in top to bottom fashion. Here, again RGB values of pixels are extracted. If the difference is above taken value, the pixel is displayed at its x-y co-ordinate position on screen; else we neglect the pixel. This is continued till whole image is scanned.

It also describes the following:

- Calculus describes the changes of continuous functions using derivatives.
- An image is a 2D function, so operators describing edges are expressed using partial derivatives.

The Points which lie on an edge can be detected by:

1) Detecting local maxima or minima of the first derivative
2) Detecting the zero-crossing of the second derivatives

C. Data Labeling

Data labeling procedure are compared with data labeling on spectral clustering. After initial labeling with partial clustering, the proposed labeling algorithm and spectral clustering to label the rest of the faces. We recluster label faces, and then data label the cluster, which similarity variation is the lowest. The proposed data labeling algorithm get higher efficiency at the beginning of data labeling.

Fig. 2: Annotated image providing the labels to the image

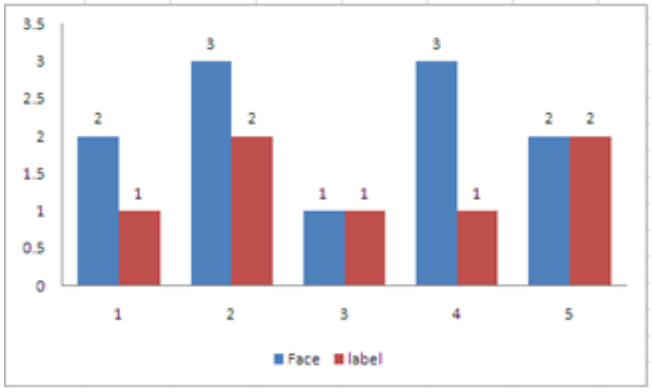

Fig. 3: Comparative analysis of images.

X -Axis indicates the number of files

Y-Axis indicates the comparison of face with labels

IV. APPLICATIONS

- It can be used in social networks for auto tagging.
- It can be used in forensics
- Online photo album management and news video summarization.
- Face annotation at macro scale and micro scale.
- Reduce weak labels and thus have application in efficient online search
- Wild landmark face annotation
- When user interaction is included, reduce it to an acceptable level.

V. CONCLUSION

The main use of annotation is user can search easily, interact with friends and famous persons. If the techniques are implemented properly, then the data label problem will be solved. The face annotations are tested properly on dataset images. The corrected labels are assigned to the duplicated data or noisy data. The research work and new methods are being proposed in this topic. In the field of multimedia and online searching this demands importance as it is very useful in these areas. The future work will be on multi person data task and thereby efficiency and accuracy of result will be improved. If the techniques are implemented properly, then the data set problem will be solved.

ACKNOWLEDGEMENT

We are thankful to all the researchers who helped us throughout this research work. We would like to express our special thanks to our professor Mr.K.N.Hande for giving us constant motivation and encouragement.

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