

# Mining of Images Based on Structural Features Correlation for Facial Annotation

Vijay W. Pakhale<sup>1</sup>, Mayank Bhargav<sup>2</sup>

<sup>1</sup>Student, Patel College of Science and Technology, RGTU, Bhopal

<sup>2</sup>Assistant Professor, Patel College of Science and Technology, RGTU, Bhopal

\*\*\*

**Abstract** - Face Recognition is now challenging problem in social networking, because of its functionality in various applications. For that reason, many techniques are emerged for face recognition from images. But through these techniques users has to query images, which is hard to formulate queries and also leads to unsatisfied results retrieval.

In this paper, we consider the problem of Face Annotation with respect to faces presents in the images as well as in videos. We consider the big source of the faces for comparing with the given images which is captured from the videos.

**Key Words:** Face-Annotation, Image Retrieval, Unsupervised Label Refinement, Pattern Recognition,

## 1. INTRODUCTION

Now a day's, huge amount of data is being shared through the internet which has some personal information. Through social networking online personal data is also shared between those users who are unknown to each other by sharing the images. Most of the people from images which are shared into the social network are unknown to the users and user has to manually search for getting information about them.

Through face recognition techniques, the problem of finding the identical face from the bunch of faces is solved. Content-Based Image Retrieval techniques are used for face recognition purpose [10]. In that techniques user has to query low level content for getting the information of the images [14][15]. This information is approximate and not accurate, so that through these techniques user gets unsatisfied results.

Most of the images which are uploaded to the internet are not properly labeled as well as their quality level is also low [6][7]. For these reason it is very difficult task to label those images for recognition purpose. Many existing techniques are not suitable each and every time because they are not applicable to the noisy or low level images.

## 2. LITERATURE SURVEY

In existing papers, researcher were annotated text, using these text they labeled the low -labeled images. The brief discussion of some papers is given below which are give some reference to our work:

S. Satoh, Y. Nakamura, and T. Kanade, "Name-It: Naming and Detecting Faces in News Videos," IEEE MultiMedia, vol. 6, no. 1, pp. 22-35, Jan.-Mar. 1999 [1]: In their proposed techniques they used SBFA for news videos. They detect faces by using their tag, and if that is not available they search many similar images and attach mostly given tags to those un-named images.

J. Zhu, S.C.H. Hoi, and M.R. Lyu, "Face Annotation Using Transductive Kernel Fisher Discriminant," IEEE Trans. Multimedia, vol. 10, no. 1, pp. 86-96, Jan. 2008 [2]: In this paper, researcher applied transductive kernel fisher discriminant algorithm, in which labeled and un-labeled data information is incorporated.

D.-D. Le and S. Satoh, "Unsupervised Face Annotation by Mining the Web," Proc. IEEE Eighth Int'l Conf. Data Mining (ICDM), pp. 383-392, 2008 [3]: These researcher gets the information about face by measuring the distribution function among faces from various images. After that they also apply some classification function for classify images into one class which are most similar to given query images.

## 3. PROPOSED WORK

In this paper, we propose the method of face annotation which is more reliable with more accuracy. In this method we first obtain the database by collecting images from different sources. Then we retrieve the complete face from these images by measuring some human facial characteristics, like distances between eyes or eye and nose. Then we compare the given image with these images and tagged it with those images which have most similar characteristics.

Steps for proposed solution:

1. Image retrieval from collection
2. Measuring facial features
3. Comparing features with others
4. Face recognition from database
5. Face annotation with those facial features

A. Image Retrieval:

In this proposed work, we can take images from videos which can be uploaded by people through social networking. For image retrieval we choose some good frames from videos on which we are going to apply our face recognition techniques. We

have to build a huge database where all these images can be stored. These images are labeled by some tag.

**B. Face Analysis:**

For accomplishing face analysis, we have to measure the features of faces from the image [4][5]. In our work we measure twelve different features of the face, which are:

1. Width of an eye
2. Height of an eye
3. Width of nose
4. Height of nose
5. Width of mouth
6. Height of mouth
7. Distance between two eyes
8. Distance between left eye to nose
9. Distance between right eye to nose
10. Distance between left eye to mouth
11. Distance between right eye to mouth
12. Distance between nose to mouth

To get these features, first we have to focus only on the face region from the frames in order to identify the individual [12][13]. For getting face region we take encoded image of real image and after that we measure all these twelve parameters.

**C. Face Recognition:**

Through analyzing the images we get the features of the individual faces. These features of one image can be compared with all other images from the database. Highly matching facial features from other frames are considered as same person's image. So that we performed face recognition by comparing these features of the faces with each other to accurately retrieved the same facial images.

**D. Face Annotation:**

In this phase, we proposed our algorithm by which we can get the information about the face which we retrieve from our previous stage. This information we are going to used to determine the people in social networking.

**E. Derived Algorithm:**

This algorithm we used to derive the data from the images either online or offline.

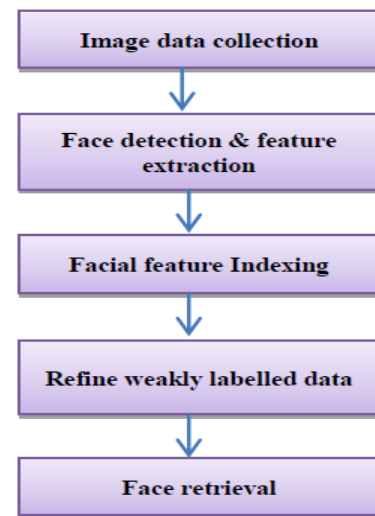


Fig: Algorithm for Face Retrieval from images

**4. RESULT ANALYSIS**

We proposed algorithm is more reliable than other search based algorithms because it gets output in less time and by using fewer images it gives more accurate data.

First, we enter one image to derive their facial features and match with other faces from our database. The below displayed images are those images which has most matches features with our newly entered image. Also we display the different facial features by analysing the face from entered image in Facial Analysis section. For this analysis our system takes 3.041 seconds.

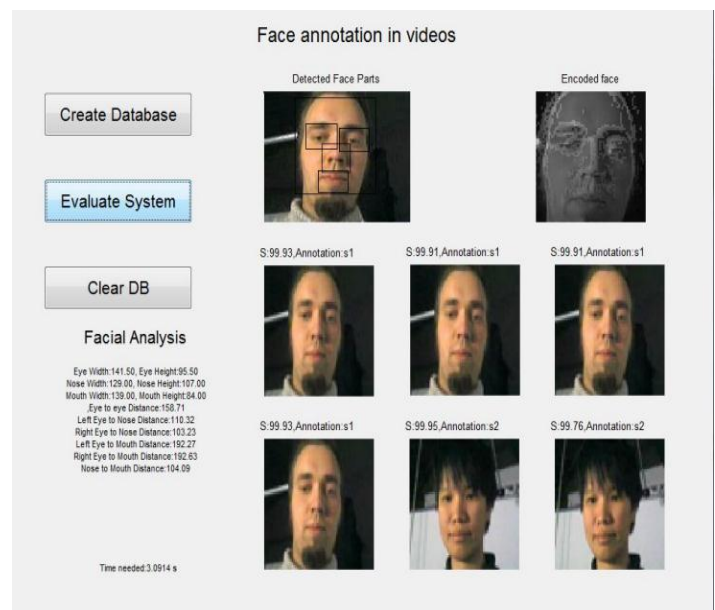


Fig: Face Annotation in Videos

## 5. CONCLUSION

Through this paper we demonstrated a face annotation system with some better performances with others. We consider videos as an image source, and then we apply techniques for getting facial features from those images. After that we perform face recognition by comparing different features of the faces and do annotations for that. In our proposed work we consider twelve different features of the face which are definitely different from each others. We learn that SBFA and ULR techniques are the best combination for face annotation.

## REFERENCES

- [1] S. Satoh, Y. Nakamura, and T. Kanade, "Name-It: Naming and Detecting Faces in News Videos", IEEE MultiMedia, vol. 6, no. 1, pp. 22-35, Jan.-Mar. 1999.
- [2] Jianke Zhu, Steven C.H. Hoi and Micheal R. Lyu, "Face Annotation Using Transductive Kernel Fisher Discriminant", IEEE Trans. Multimedia, vol. 10, no. 1, pp. 86-96, Jan. 2008
- [3] D.-D. Le and S. Satoh, "Unsupervised Face Annotation by Mining the Web," Proc. IEEE Eighth Int'l Conf. Data Mining (ICDM), pp. 383-392, 2008
- [4] Ms. Malashree Patil, Prof. Jyoti Neginal, "A Robust Face Annotation Method by Mining Facial Images", IJAR CET, May 2015.
- [5] Dayong Wang, Steven C.H. Hoi, Ying He and Jianke Zhu, "Mining Weakly Labeled Web Facial Images for Search-Based Face Annotation", IEEE, Jan 2014.
- [6] Steven C.H. Hoi, Dayong Wang, Yeu Cheng, Elmer Weijie Lin, Jianke Zhu, Ying He, Chunyan Miao, "FANS: Face Annotation by Searching Large-scale Web Facial Images", IW3C2, May 2013.
- [7] Patrick J. Flynn and Anil K. Jain, "Face Annotation at the Macro-scale and the Micro-scale: Tools, Techniques, and Applications in Forensic Identification", NCJRS, Aug 2013.
- [8] Yuandong Tian, Wei Liu, Rong Xiao, Fang Wen and Xiaoou Tang, "A Face Annotation Framework with Partial Clustering and Interactive Labeling", Microsoft Research Asia.
- [9] Akshay Asthana, Roland Goecke, Novi Quadrianto and Tom Gedeon, "Learning Based Automatic Face Annotation for Arbitrary Poses and Expressions from Frontal Images Only", NICTA Australia.
- [10] Mei-Chen Yeh, Sheng Zhang and Kwang-Ting Cheng, "An Experimental Study on Content-Based Face Annotation of Photos", NTTU Taiwan.
- [11] Jae Young Choi, Seungji Yang, Yong Man Ro and Konstantinos N. Plataniotis, "Face Annotation for Personal Photos Using Context-Assisted Face Recognition", ACM 978-1-60558-312-9/08/10.
- [12] Lei Zhang, Longbin Chen, Mingjing Li and Hongjiang Zhang, "Bayesian Face Annotation in Family Albums", Microsoft Research Asia.
- [13] Madhumathi k. and Dr. Antony Selvadoss Thanamani, "Face Annotation Using Unsupervised Label Refinement and Facial Gesture Detection using Eigenfaces Algorithm", IJAR CCE, Sep 2014.
- [14] J.Chithara, "Survey on Unsupervised Mining Weakly Labeled Web Facial Images for Search-Based Face Annotation", IJCSET, Oct 2014.
- [15] Krishna Prasanth and Anoop, "A Review on Content Based Image Retrieval and Search Based Face Annotation on Weakly Labeled Images", IJCSIT, 2014.