

Face Recognition from Video

Rajani Machindra Hegade¹ Dhanashri Nagnath Kadam² Poonam Maruti Mote³

Prof. Bhosale A. C⁴

^{1,2,3}Student ⁴Assistant Professor

^{1,2,3,4}Department of Electronics & Communication Engineering

^{1,2,3,4}S.B.Patil College of Engg, Vangali, Maharashtra, India

Abstract— The research for face detection and recognition is focusing on

- 1) Video to Frame Conversion: To sample video at 15 frames per second.
- 2) Face Detection: To detect the faces in the frames
- 3) Face Recognition: To identify the person in the video

The first step in the face recognition system is face detection to input video. Viola-Jones for face detection method is used in processing images extremely while achieving high detection rates is used. In this connection the face detection and recognition in video or capture image by camera streams is the significant step of information drawing out in the various computer vision and image processing applications. Detecting and recognition of face in video stream in generally being a challenging problem, provides an enormous attention for recognition, classification, and activity analysis, making these later steps more efficient. This paper, we are going to the describe some important aspects of the face detection and recognition, which are very much useful in the many applications like face recognition, facial expression recognition, skin texture feature, face tracking, facial feature extraction, identification system.

Key words: Face Recognition, Video to Frame Conversion, Knowledge-Based Methods

I. INTRODUCTION

This paper is a developing a real time face recognition system which can recognize and detect static images, which can be captured from video and can be modified to work with dynamic images. The main challenge for a face detection and recognition system is of effective feature extraction. Face detection is a procedure by which we can use to extract face region from a human body. Now, the concept can be able to implement in different ways but mainly we use four steps for this implementation. In the first step we detect the frame. In this frame of an image where a face may present. In the second step we normalize the detected region, and separate the frames so that the alignments of various facial features are in the proper location. In the third step we extract to the different facial features like eyes, nose, mouth, edges etc. And in the fourth step, we detect and verify whether the anticipated parts are actually carrying out a face or not. We are doing this using some rules, algorithms, template or image databases. The concept of extraction can be implemented by various method. There are a more number of papers regarding the literature survey of face detection.

A. Face Detection Technique

The input is taken in video format. This video obtained has to be analyzed for face recognition.

B. Knowledge-based methods

These rule-based methods are human knowledge [3] of what constitutes a typical face and different face. Usually, the rules capture the relationships between facial features. These methods are designed mainly for the face recognition, detection which aims to determine the image find of the video single face.

C. Feature Invariant Approaches

These algorithms aim to find skin texture features that exist even when the pose, viewpoint, edges, and then use these to identify the faces. To distinguish and describe from the knowledge-based methods, the feature invariant approaches start at feature extraction and skin texture features process and face of the image finding, and later verify each candidate image by different relations among these features, while the knowledge-based methods usually exploit information of the whole image and are sensitive to complicated backgrounds and other factors. find more works in [5][6][7].

D. Template matching methods

In this category, no images of a face are stored to describe the face as a whole or the facial feature separately. The correlations between an input image and the stored pattern are checked for the detection. These methods have been used for both face detection and recognition. Checking template matching [8], where the template of faces is checking in the fracture extraction according to some defined rules and algorithm.

E. Face recognition

Face detection is the first step are the many applications; one of them is face detection and recognition. To the recognize a face, we first detect the face in the frame and then we compare it with a set of known individuals present in a database to verify the identity of the each person. Face recognition method can be classified as two main approaches: In Feature-based approaches skin texture Feature [9] we first preprocess the input image to remove the noise, and then we extract distinctive facial features such as the eyes, mouth, nose, edges, etc., and then geometric relationships among those the facial points, facial expression thus reducing the input facial image to a vector of geometric features. The face detection and recognition techniques are then employed to match faces using these database. Most of the previous works was based on this technique and method.

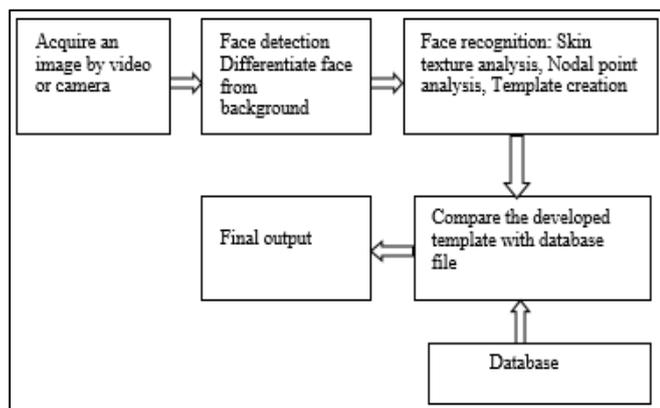


Fig. 1: Block diagram of Face Recognition From video

II. WORKING

- 1) Initially, the input is taken in video format. This video obtained has to be analyzed for face recognition. The first step is converting the video into frames. Preprocessing is applied for image enhancement, noise removal and localization.
- 2) Then the face detection algorithm is applied on the pre-processed image. The face detection algorithm which we are using for face detection is Texture features and Cascade classifier. Then these images act as input images which are stored in a separate folder (detected faces).
- 3) Now the face recognition algorithm is applied. The algorithm that we are using is template matching because it has a higher success rate as compared to other algorithms. Skin texture analysis and Nodal point analysis are used to face recognition.
- 4) Initially we create a database of images which are considered as template images. Now the algorithm compares the template images with the detected images. The basic method of template matching is to loop through all the pixels in the detected images and compare them to the template images.
- 5) While this method is simple to implement and understand, it is one of the slowest methods. This procedure is repeated for all the detected images. If a match is found then the image is displayed along with its name. Hence the faces are successfully recognized with acceptable accuracy.

III. RESULT



Fig. 2: Reference image



Fig. 3: Output image of face recognition

In this project we detect the face detection and recognition from video by using the algorithm and texture feature.

IV. CONCLUSION

This paper is presented and evaluated for face detection from video by Digital image processing. This project aims at demonstrating real time Face Detection. The project involves the use of DIP. Multiple faults can be identified using the image process and does not involve same feature involve and fault detection than conventional method.

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