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Original Research Article

FACE DETECTION AND RECOGNITION USING VIDEO STREAM

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Abstract

An efficient face detection algorithm which can detect multiple faces oriented in any directions in a cluttered environment is proposed. In this paper, a morphology-based technique is first devised to perform colour segmentation. Next, the RGB image is converted into HSV (Hue Saturation and Value). Then, each of these potential face images is normalized to a standard size and fed into a trained back propagation and then using principal component analysis it is used for identification. In this detection system, the morphology-based eye-analogue segmentation process is able to reduce the background part of a cluttered image by up to 95%. This process significantly speeds up the subsequent face detection procedure because only 5-10% of the regions of the original image remain for further processing. Experiments demonstrate that an approximately 94% success rate is reached, and that the relative false detection rate is very low. We are detecting faces using a video stream, then the Eigen values are calculated therefore Eigen vectors are obtained and hence the Eigen face is matched with the database.

Keywords—Face detection, RGB converted to HSV, principal component analysis, Eigen faces.

INTRODUCTION

Human face detection and recognition have long been a difficult research topic. In the last two decades, researchers have devoted much effort to these two problems and have obtained some satisfactory results. Some of these previous efforts were focused on face recognition [1]. W. Zhao, R. Chellappa, P. Phillips, A. Rosenfeld [2] has successfully employed the Eigen face approach to recognize a human face. However, an accurate and efficient method for human face detection is still lacking.Human Face is central to our

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identity. It plays an essential role in everyday interaction and other routine activities, thus face detection and tracking algorithms are of great importance for human machine interaction, it is an extensive widely studied field. Detection is a technique which will be used for detection of faces and are later matched with the help of predefined database which is called recognition. Our project may help us in following areas, light conditions which affect the face; the face gets converted into eigen values. Various surveys have been made for algorithms which will be used for detection and recognition of faces. The face is tracked according to its movements. The face detection will be real time and implemented by color segmentation. The scale of a face can be handled by a rescaling process [1]. In Eigen face approach, the scaling factor can be determined by multiple trials. The idea is to use multi scale Eigen faces, in which a test face image is compared with Eigen faces at a number of scales. In this case, the image will appear to be near face space of only the closest scaled Eigen faces. Equivalently, we can scale the test image to multiple sizes and use the scaling factor that results in the smallest distance to face space. Varying poses result from the change of viewpoint or head orientation. Different identification algorithms illustrate different sensitivities to pose variation, the objective is to extract the relevant information in a face image, encode it as efficiently as possible, and compare one face encoding with a database of models encoded in the same way. A simple approach to extract the information contained in a face image is to somehow capture the variation in a collection of face images.

BACKGROUNDSUBTRACTION

Background subtraction is a computational vision process of extracting foreground objects in a particular scene. A foreground object can be described as an object of attention which helps in reducing the amount of data to be processed as well as provide important information to the task under consideration. Often, the foreground object can be thought of as a coherently moving object in a scene. Background subtraction method is the mostly seen method in the literature for effective motion tracking and moving object Identification. In background subtraction, background can be static, in which previously a fixed background is obtained and used in the entire process. Background is dynamically updated with changing external effects like weather. We have employed this method in this paper. Initially, we will take a video for a particular period and convert a specific frame from RGB to HSV. Then a threshold is applied to this difference image obtained in the previous step. Then a morphological operation like dilation is applied to the threshold image. We get a binary image showing the objects detected in the frame. Then we extract some features of the detected objects like eigen face. and use this information for counting the objects in the frame and hence the whole video. The extracted features are then used to classify the faces in the frame using Principal Component Analysis.

MATLAB SIMULATION RESULTS

Fig 1: Saturation Image.

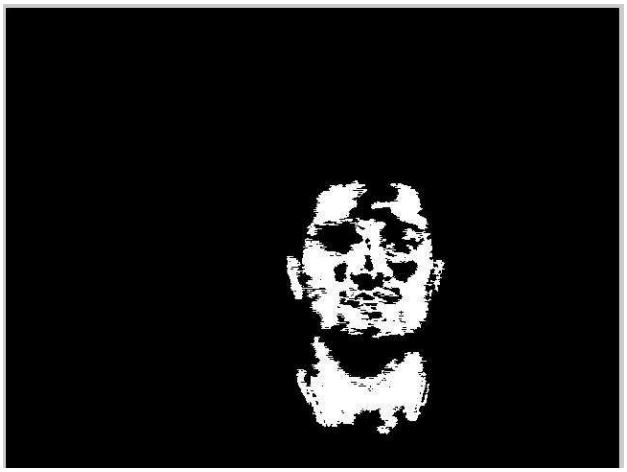

Fig 2: Binary Image

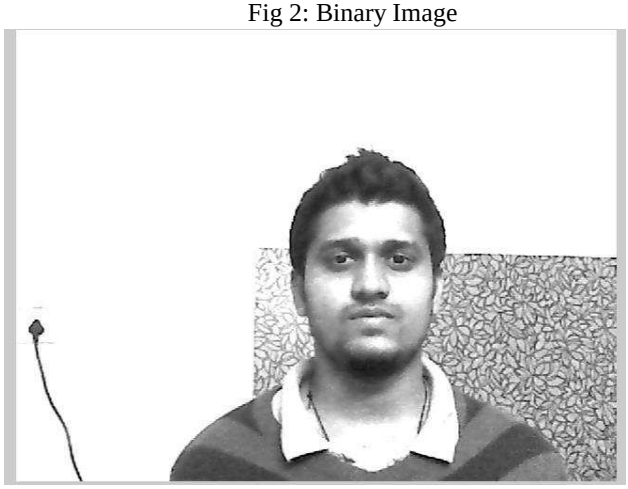

Fig 3: V Image.

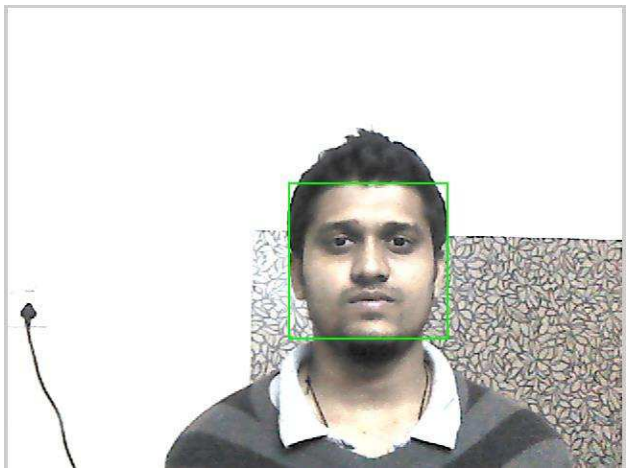

Fig4: Final face Detected.

FUTURE SCOPE

1. Sensitive to lighting conditions.
2. Effective only on frontal images of faces.
3. Multiple detection of same faces.
4. Variations in lighting conditions.
5. Differences in head orientation
6. Change in expression.
7. Change in background color.

APPLICATIONS

It is important to know whether the face is detected and recognized in order to have an efficient working of a biometric. Some of the applications of this project can be as follows:

1. For surveillance in VIP meetings.
2. Security purposes in banks and jewelry shops.
3. To identify suspicious people.
4. Automatic door lock system.
5. To identify correct candidate at examination centre

CONCLUSION

Face will be detected from video stream of many faces and detection will be done by using COLOR SEGMENTATION method. Next part is detected face is applied to recognition section and features of training set is extracted using KLT or PCA algorithm and average weight is calculated .Now weight of test image frame is compare with dataset.

REFERENCES

1. Fast face detection via morphology-based pre-processing
2. W. Zhao, R. Chellappa, P. Phillips, A. Rosenfeld, “Face recognition: a literature survey”, ACM Computing Surveys vol. 35, pp.399–458, 2003.
3. B. Abboud, F. Davoine, and M. Dang. Facial expression recognition and synthesis based on an appearance model. Signal Process, Image Commun., 2004.