

## RECOGNITION OF FACIAL EXPRESSION IN HUMANS USING IMAGE PROCESSING

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### ABSTRACT

In this facial expression has many real world applications such as medical, human machine interaction and human psychology. This paper elaborates the concept of facial expression using image processing with application of biometric

System. Facial expression recognition system have a vital role in numerous areas such as intelligent human computer interaction This proposed system aimed to present and disgusted. The proposed system divides three main task preprocessing; feature extraction last one is classification. In this facial expression recognition that of various facial emotion expression is done by using some extracted features as well as classification is perform by different classifier we select one of them. A well-known viola Jones face detection method is used for human face detection. After face detection feature extraction for eyes and mouth. Then feature selection, centroid of facial features finding, Then obtain features are clustered by using an efficient method named SVM or some other classifier to recognize various human expressions. This process is performed by matlab R2013 (a)after the successful testing with the proposed system facial expression recognition efficiency best obtain from different classifier.

Index Terms- Facial feature extraction, face detection, facial expression recognition, Matlab

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### I. INTRODUCTION

The most important part of human body is face. Nowadays the facial images for facial expression classification have become interesting area of research. Because human face provides important information regarding age,gender, identity etc.[1][12]. The acknowledgmentof facial expression classification is the part of emotion of human consciousness. Face recognition is the bioelectronics technique. Facial expression classification is also a more challenging mission. The keystages of facial classification are preprocessing, feature extraction and classification.

As especially sensitively facial emotions are rich resource of information about human behavior. Facial expressions express indicates emotions like regulate social behavior, brain function, etc.

The biometric characters are behavioral and physical traits. Behavioral biometrics is signature and typing rhythms. Physical biometric systems are the finger, iris, voice,palmand face for identification. In

addition to this, the 3D faces also used for facial expression classification. The features such as intensity and range are used for classification of facial expressions[10].

Facial expression recognition, pattern recognition computer vision, and human- computer interaction research attracted increasing attention in communities. As the military and security purpose and also for collection of information from the persons face such type of research area is attracting the researchers. Considering the limitations and opportunities in the field of image processing the research work is undertaken and carried out in titled "Recognition of Facial Expression in Humans Using Image Processing". The details of research work are elaborated in the present manuscript.

## **II LITERATURE REVIEW:**

Shyna Dutta<sup>1</sup>, V.B. Baru<sup>2</sup>, [1] reported on facial expression recognition system wherein the human face is main part to recognize the different expressions of human. The R.Gowsalya, C.Rajeshkannan, [2] studied and proposed a new dynamic recognition of facial expression method. Yimo Guo, Guoying Zhao, Senior Member, IEEE, and Matti Pietikainen, Fellow, IEEE [3] reported on the system we propose a new way to tackle the dynamic facial expression recognition problem. T.Jeslin<sup>1</sup>, R. Ravi<sup>2</sup>, [4] reported on the most 3 D face recognition system. The system is innovative and works satisfactorily. Xiaoning Peng & Beiji Zou<sup>1</sup>, Lijun Tang<sup>2</sup>, Ping Luo<sup>3</sup>, [5] reported on improved dynamic facial expression recognition experiment system based on the MHMMs model is realized in this paper and six universal facial expressions: angry, disgust, fear, happiness, sadness and surprise is recognized.

## **III. FACE RECOGNITION:**

Image processing is becoming popular system due to easy availability of powerful PC, large memory device and graphics software. Face recognition identify a specific individual in surveillances, digital images and access restricted cameras. The systems are commonly used for security purpose but are increasingly being used in a variety of other applications such as in telecommunication system and in social networks. Currently a lot of facial recognition development is focused on smart phones application. The smart phone facial recognition capacities include image tagging and other social networking integration.

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## **IV. FACE EMOTION RECOGNITION:**

Facial emotions can be express as a discrete and consistent response to internal and external events which have a particular significance on human facial emotions are being expressed using the face, the speech or body language of human's response. Face emotions is defined as a positive or negative experience that is associated with a particular pattern of physiological system activity.

## **V. PROPOSED METHODOLOGY:**

In present research work we propose a completely special unique method of classification of facial emotions by SVM classifier or some other classifier, and distance vector method mostly used. The main aim of the proposed work as monitors the face detects and classifies them according to effective image processing techniques. The system has divides three main task proposing, feature extraction and last one SMV classification according great facial features extracted.

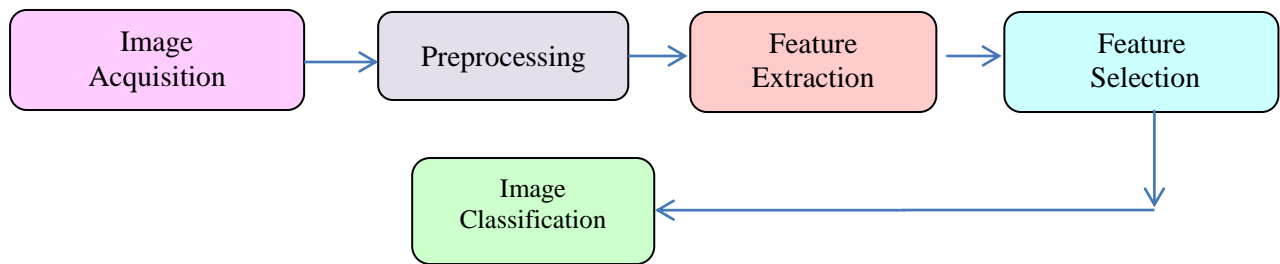


Figure No .1 Proposed Methodology diagram

**A. Image Acquisition:** In this process the image of faces are captured quickly in high pixel camera and form database of humans. Moreover, we can use online images of facial expressions from standard database. We use standard Indian face database.

**B. Preprocessing:** This is the most vital task required steps of image processing it is performed system to get uniform and noise free output.

**C. Feature extraction:** Feature extraction converts pixel face database into higher-level representation of shape, motion, color, texture, and spatial configuration of the facial or its components. The Feature extraction generally reduces the dimensionality of the input space.

**D. Feature selection:** In this process select feature according to their match face images. Some feature extract and match them also save as feature.

**E. Image Classification:** The classification is done with the help different classifier technique. This section described facial expression classification step. Minimum distance classifier used for the matching and classification purpose. The minimum distance classifier mostly used different classifier. Distance examines square root of difference between the coordinate of a pair of object. The prototypic expressions relate to the emotional states of happiness, sadness, surprise, anger, fear, and disgust.

## VI. RESULT:

After successfully designing of the system it is implemented for the actual work. The system is designed for the facial recognition for typical application. The system acquires the images from the data base as shown in figure 2 and the image processing is carried out as shown in the figure 6. After processing the face detection is carried out as shown in figure 8. The Facial Feature Detection is carried out at the end of the process as shown in the figure 10. Moreover, the figure 3, 5, 7 and 9 are depicted the backend process carried out in the developed system. On investigation of the system it is concluded that the system works satisfactorily.

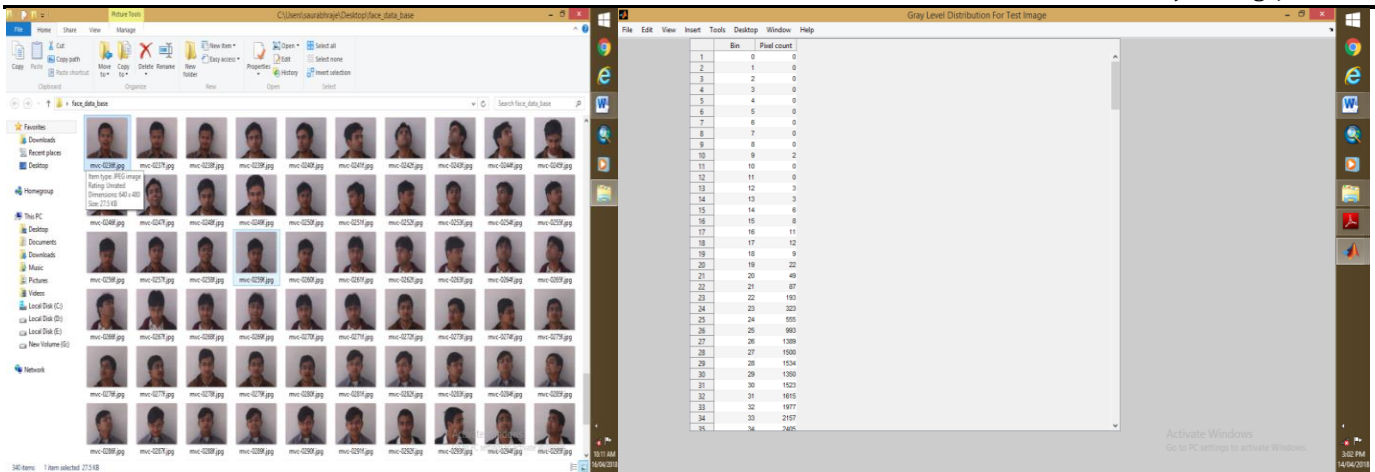


Fig2: Face Database Fig 3:Gray level distribution for input image

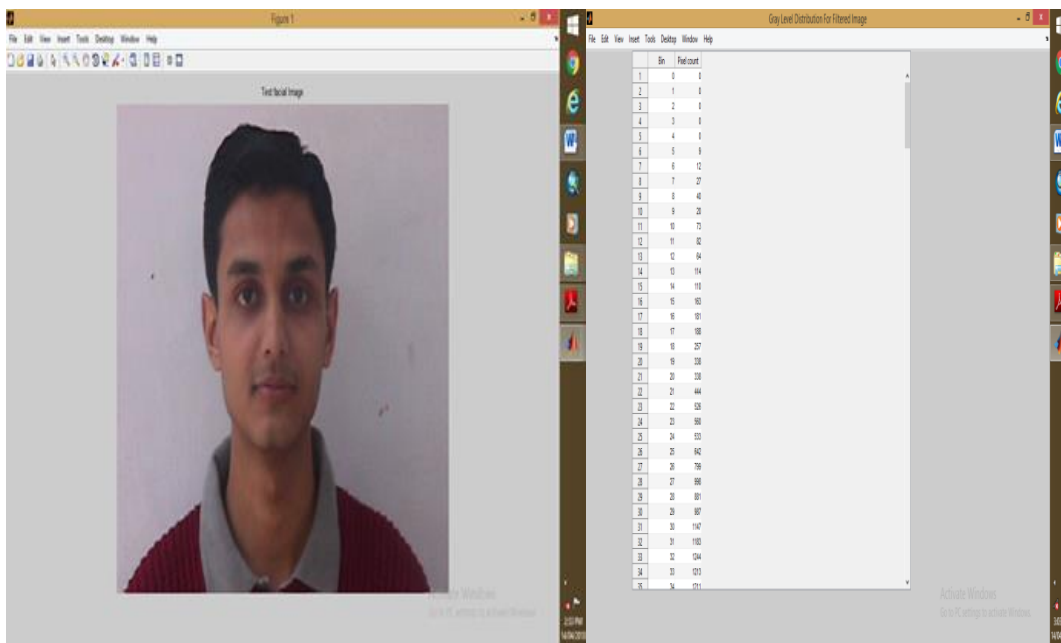


Fig 4: Input Image

Fig 5:Gray level distribution for filter Image

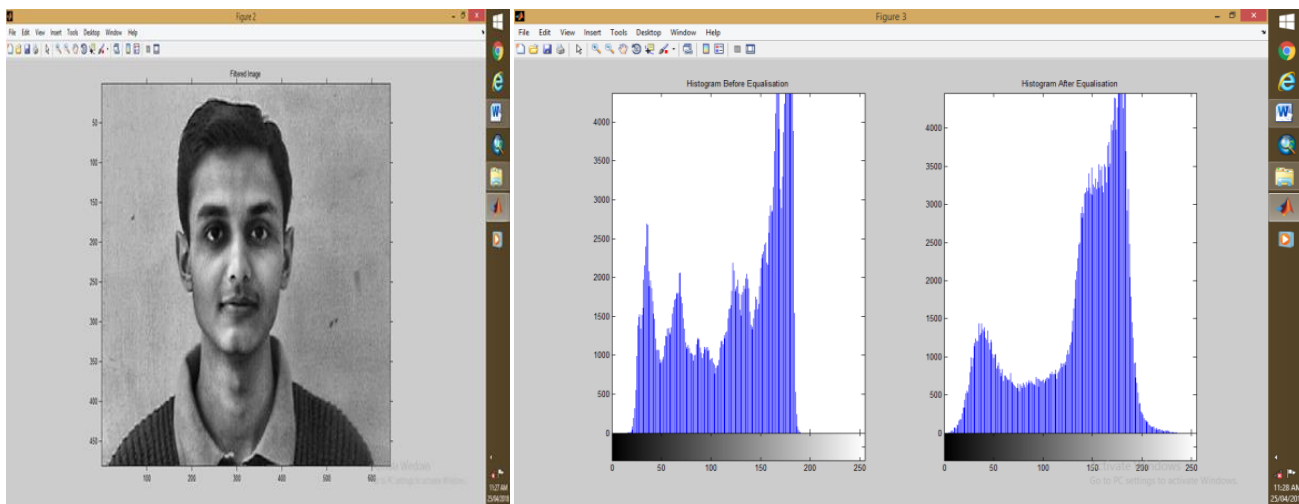


Fig 6: Preprocessing Image

Fig 7: Apply CLAHE on before and after filtering



Fig 8 :Detection of Face

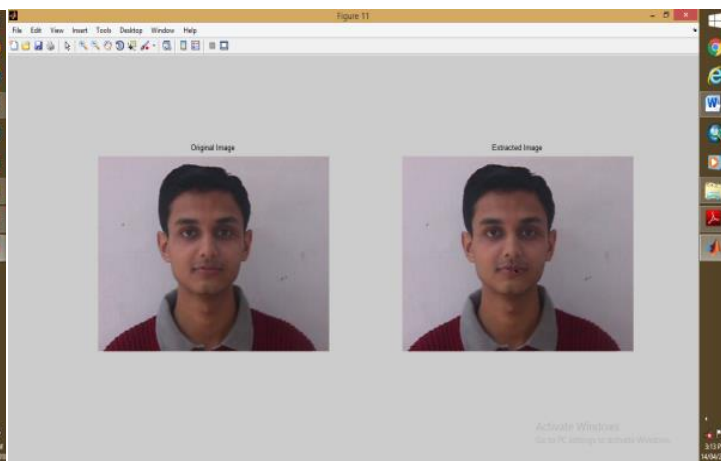


Fig 9:Extraction Of face Image

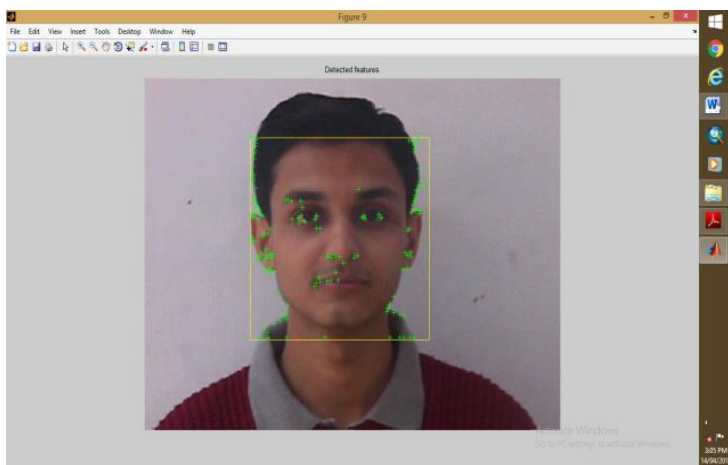


Fig 10:Facial Feature Detection

## VII. CONCLUSION:

Present research work is carried out by using MALAB 2013. We have tendency to propose a way for facial expression human emotions classification is done by different classifier we select one of them which recognizes the some emotions such as happy, sad,surprise,anger,etc is implemented an database of human frontal facial expressions from Indian face images as to determine recognition facial expressions.

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