Journal of VLSI Design and Signal Processing
Volume 2 Issue 3

A Review Paper on Emotion Recognition Using Facial Expression

Rishabh Bhardwaj, Amit Kumar Chanchal, Prashant Kumar, Pankaj Pandey, Shubham Kashyap

Department of E & C Engineering, MIT, Moradabad, India
E-mail: rishabh.bhardwaj756@gmail.com

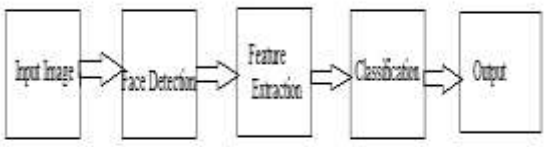
Abstract

Facial expressions are the quickest means that of communication whereas transference any kind of info. These do not seem to be solely exposes the sensitivity or feelings of anyone, however, may be wont to choose his/her mental views. This paper includes the introduction of the face recognition associate in nursing face expression recognition and an investigation on the recent previous researches for extracting the effective and economical technique for face expression recognition.

Keywords: *Facial expressions, recognition, communication, emotion*

INTRODUCTION

Facial Expression plays a crucial role in human-to-human interaction, permitting individuals to specific themselves on the far side the verbal world and perceive one another from varied modes the facial half will the main contribution in human communication [1]. From the review of papers on facial expression, it is clear that most of the facial expression recognition systems (FERS) were based on the Facial Action Coding System (FACS). Facial expression recognition is a method to recognize expressions on one's face. A wide range of techniques havebeen proposed to detect expressions like happy, sad, fear, disgust, angry, neutral, surprise but others are difficult to be implemented. Facial expression recognition is composed of three major steps: (1) Face detection and preprocessing of image,



(2) Feature extraction and (3) Expression classification.

LITERATURE SURVEY

Neha Gupta and Navneet Kaur

The objective of their work was to evaluate proposed algorithm by 50 still images. The size of image was 600 × 800 pixels. The experimental result shows that their algorithm can identify 30 emotions in their test image. Besides, the identification

of emotions this algorithm also shows the distance of test image from neutral image and the best match of test image from trained images [2]. There by our proposed algorithm was suitable for use in real-time systems with high performance.

In this, they planned associate degree correct and high speed feeling detection system. The colour and feature-based detections were adopted to seek out skin-color quick and chosen candidate blocks fastidiously. They used lighting compensation to enhance the performance of color-based theme, and scale back the computation of feature-based theme. The most important contribution of this paper was that the planned methodology will observe edges of the photographs and from that edges distance between numerous options was calculated by mistreatment geometrician distance Formulae. This distance was completely different for each image sitting different emotions. On the basis of this distance emotions were classified. In future work, the proposed approach can be applied to hardware implementation. Due to the proposed method has simple structure, it was suitable to be implemented in hardware to achieve very high performance and low power system [3].

Junkai Chen, Zenghai Chen, Zheru Chi and Hong Fu

In this paper, they planned a good technique to handle the countenance recognition drawback. Rather than victimisation the full face, they observe and extract the facial components from the face image. Facial expressions area unit caused by striated muscle movements and these movements or refined changes are often represented by the HOG options, that area unit sensitive to the thing shapes. The encoded options were accustomed train a linear SVM. Their planned system includes three perform blocks. The primary perform was face detection and facial elements extraction. The second function block was using HOG to encode these components. The last function block was training a SVM classifier. Their experiment results on two databases, JAFFE and the extended Cohn-Kanade dataset, show that their proposed method can achieve a good performance. The classification rates of their method on the two datasets were 94.3% and 88.7±2.3%, respectively. Facial expression recognition was a very challenging problem. More efforts should be made to improve the classificationperformance for important applications. Future work will focus on improving the performance of the method in the wild environment and on the more subtleexpressions such as “contempt”. This work was partially supported by a research grant from The Hong Kong Polytechnic University [4, 5].

Mohammad Shahidul Islam, Surapong Auwatanamongkol

The objective of their work proposed method that computes the local feature for apixel from the gray scale value of its neighbouring pixels. From a 3x3 local pattern, the center pixel of the pattern was surrounded by 8 neighbouring pixels in 8possible directions. The directions were denoted by 0°, 45°, 90°, 135°, 180°, 225°,

270° and 315°. The direction of theneighbouring pixel with the minimum, the second minimumand so on for the gray scale values can be considered as thelocal feature for the given pixel. To identify theneighbouring pixels with the first minima, second one and so on, the gray scale color values of all the eight neighboring pixels can be sorted in ascending order. If there are several of the pixels with the same gray color value, the positions of the pixels starting from thenorthwest one in clockwise direction can be considered tobreak the ties. The direction would represent the changing direction of the gray scale color values at the particular center pixel [6]. Thus, eight possible bins were needed to build the histogram on the numbers of pixels in a block for the possible 8 directions for all blocks for an image can then be concatenated toform the feature vector for the whole image. Notice that the direction was insensitive to light changes since the lightchanges would change the gray scale color values of all the pixels by nearly same amount but not the direction of theminima for each of the pixels.

A. Punitha and M. Kalaiselvi Geetha

Their work concentrated on classifying facial expressions into four emotions: Happy, Disgust, Neutral and Surprise usingtexture features extracted from Gray Level Co-occurance Matrix. The results proved that GLCM features based SVM was giving higher classification rate of 90 %. The systemcan be extended to extract higher-order statistical texturefeature from images and taking into account some of thestrange facial expressions. Their work deal with emotion recognition from face expressions. The method has been evaluated with Facial Expression database where the subjects express emotions such as Normal, Smile, Disgust and Surprise. All the images in the database were of size 63 X 63 pixels. Gray Level Co-occurance Matrix was computed for all the images and second-order statistical texture features that were extracted from the GLCM matrix was given as input to the Support Vector Machine for classification.

Ira Cohen, Ashutosh Garg, Thomas S. Huang

In their work a new method for emotion recognition from video sequences of facial expression were explored. Emotion-specific HMM, relied on segmentation of a contiguous video into sequences of emotions (or neutral state). However, multilevel HMM, performed automatic segmentation and recognition from a continuous signal. The experiments on a database of five people showed that the recognition rates for a person-dependent test are very high using both methods. The recognition rates drop dramatically for aperson-independent test. This implied that a larger databasewas needed for the training, and possibly the subjects shouldbe classified according to some categories, such as ethnic background and gender. This implies the use of a differentset of classes to get more robust classification. The classes can be positive, negative, surprise and neutral. This scaleclusters the emotions into four categories, and can improve the recognition rate dramatically. The work

relied on a database collected by Chen, but itwas difficult to compare the results to other works using different databases with computers. Recognizing the emotion from just the facial expressionswas probably not accurate enough. Their workwas just another step on the way toward achieving the goal ofbuilding more effective computers that can serve us better.

CONCLUSION

In this paper, the review of feeling Recognition victimization Facial Expression has been highlighted. This paper presents literature surveys on the varied techniques utilized in the past for countenance recognition. These ways area unit measured on the idea of recognition rate. This project had been created before we have a tendency to have examined every project sincerely and ultimately we set to create an advance version of the project that is extremely completely different from all the opposite comes created before. All the opposite comes created before do not have hardware implementation. We tend to had used a liquid crystal display to indicate the feeling of an individual on screen. Bluetooth device is additionally utilized in order to send message a couple of persons feelings.

REFRENCES

1. Krishna Mohan Kudir P, Abas Md Said, M Yunus Nayan. Emotion detection using sub-image based features through human facial expressions. *International Conference on Computer & Information Science (ICCIS)*. 2012;
2. Junkai Chen, Zenghai Chen, Zheru Chi, Hong Fu. Scientific cooperations international workshops on electrical and computer engineering subfields; 2014.
3. G. Zhao, M. Pietikainen. Dynamic texture recognition using local binary patterns with an application to facial expressions. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*. 2007; 29(6): 915–928p.
4. G. Zhao, M. Pietikainen. Facial expression recognition using constructive feed forward neural networks. *IEEE Transactions on Systems, Man, and Cybernetics*. 2004; 34(3): 1588–1595p.
5. L. C. De Silva, T. Miyasato, R. Natatsu. Facial emotion recognition using multimodal information. In *Proc. IEEE Int. Conf. on Information, Communications and Signal Processing (ICICS'97)*. 1997; 397–401p.
6. P. Ekman, W. V. Friesen. Facial action coding system: Investigator's guide. Consulting Psychologists Press, Palo Alto, CA; 1978.

AUTHORS

Amit Kumar Chanchal has 6 Years of experience in the field of Academic. He obtained his Bachelor's degree in Electronics & Communication

Engineering from Bengal College of Engg & Technology, Durgapur W.B.U.T, Kolkata and is currently pursuing Masters degree from NITTR, Chandigarh. He started his career from MIT, Moradabad. Presently he is working as an Assistant Professor, Deptt of E&C Engg., at MIT Moradabad. He has published 6 International & National Journals, many conferences and seminars. He is an active Member of Various Professional Societies.

Rishabh Bhardwaj is pursuing Electronics & Communication Engineering from Moradabad Institute of Technology, Moradabad. Area of interest includes Robotics, Embedded system.

Prashant Kumar is pursuing Electronics & Communication Engineering from Moradabad Institute of Technology, Moradabad. Area of interest includes Robotics, Embedded system.

Pankaj Pandey is pursuing Electronics & Communication Engineering from Moradabad Institute of Technology, Moradabad. Area of interest includes Robotics, Embedded system.

Shubham Kashyap is pursuing Electronics & Communication Engineering from Moradabad Institute of Technology, Moradabad. Area of interest includes Robotics, Embedded system.