

# Facial Expression Recognition Using Image Processing

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**ABSTRACT:** Facial expression recognition gives very important but some challenges is also in this field of recognizing the human emotions. It gives automatically expressions only using four different steps which is very useful for image processing and also using deep learning and CNN algorithms it develop and the outcome come. For recognizing emotions is very easy task but when it comes to live image it will become very challenging to come up with powerful as well as which is use for everyone. As an example, the expression may varies in different situations such as the individual's mood, their skin color, age, and environment surrounds. Facial Emotion Recognition should be done by all in different data some are image should be store in database by taking those image it should be recognizing expressions of human but in this it will taking live and then it will detecting expressions of human. Facial expression recognition is very easy to understand every expression in computer. When eyes should be up and big it means expression should be angry.

**KEYWORDS:** K-means Clustering, Classification, Classification Neural Network

## I. INTRODUCTION

. A facial expression recognition is an automated system which can analyze the features of the face from the live facial image or live video datasets and identify the facial expression into different expression. To detect expression of human face it required to identify different facial features such as motions of face etc. Human facial expression is important for understanding the communication in some places its very challenging to understand with communication so with the help of expression only some field human understand the mentality of human. Computer capture the facial expression recognition which include some very great role in health, artificial intelligence and robotics. Their are many applications in this field which is very useful to understand the emotions of human face, some of them used for hospitality purpose some are used for recognizing the emotions while watching anything, some are used for recognizing for identifying criminals and so on. In Facial expression recognition helps to understand the expressions of unhealthy peoples in hospital which gives very important information of peoples who can't speak properly using their expressions every one can understand the feeling of peoples. Now its very challenging so many applications are their with the help of those applications its plays a very important role in different different areas. Facial expressions recognition input should be live image to give the expressions per to recognize the expressions. Their are other applications also which help to recognize human expression but some of them are working with the image which is already store in database and recognize only those image expressions which is store in files but here it will take live image and video by webcam using those live image it will recognize the different emotions of human. This is very helpful and also challenging to recognize expressions of live image.

## II. LITERATURE SURVEY

G. N. Matre, S. K. Shah [1] given solution on facial expression detection which give primary attention in order to identify the criminals face and breaches and this is very essential to find criminals by their expressions.

Anagha S. Dhavalikar [2] purpose of the project which identify the facial expression using some technique based on machine communication system for automatically recognizing emotions of human which will increasing the performance of recognizing the expression of human.

Khadija Lekdioui, Yassine Ruichek [3] facial expression recognition will follows the rule of image processing which help to identify. how the feature extraction will work how the step of the image processing work to recognize the human expression in different areas.

Ira Cohen, Ashutosh [4] It will give complete details about how the facial expression is working on bases of image processing and input with the live image using webcam and output will be recognize in the text format. This working of facial expression recognition main importance to identify expression automatically using live input using webcam and output should be in text format.

Matthew N. Dailey [5] human expression can give deep checking the expression which is categories between seven different expression. Basically the main focus is to identify expression for many fields. It help in so many fields because expression play very great role in many areas where human expressions can be identify by applications.

Boost Kai-Biao Ge [6] this become the similarity of emotion detection based on image processing using some important modules. Facial expression recognition works and give easy way to recognize the different human emotions. Mostly human facial expression based on their movement of features and also mindset as per the thoughts it should change as per situations.

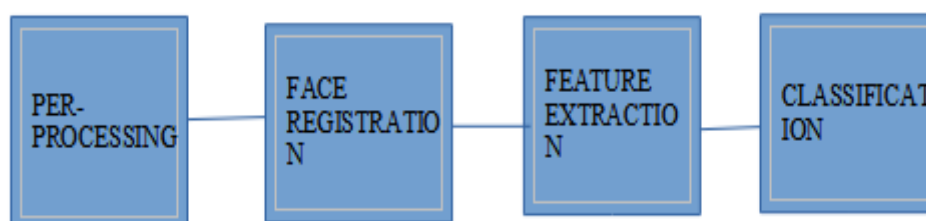
Jie Ma [7] purpose of the project presented in the image processing in facial expression recognition. It will detect expression based on the image which is store in database different image and not only one it will take many image as per image clarity it will give different expression.

V. Gomathi, Dr. K. Ramar [8] Analyzing emotions of human which is very challenging phase in image processing. So this represent all the process of analysis the expression of human in easy ways which will identify the expression of human while playing with toys.

A. Santhiyaku Jeevakumar [9] Starting of recognition of facial expression it should be very easy to recognize expression but it is hard to capture expression because there are many application which is very powerful. So this project give the how to detect the emotions.

### III.PROPOSED SYSTEM

The purposed of the project is to identify the Human facial expressions which is divided into seven different emotions. the project is very useful to various platforms like e-commerce, social networking websites, shopping malls, and other retail industries. Facial recognition systems can easily detect if any customer or a persons view towards any product. If it is in social media. it can help to understand your partner's interpersonal behavior towards various situations and this can also help to understand their mindset and it can also be used to make a decision to get connected with the person or not. facial expression recognition should include the completeness of the facial expression requirements like functionality and non functionality should be explain properly. The ultimate use of this application will be mainly in Research and development where marketers will test any product and its reaction to their customers before market launch. There can be various future enhancements which can also be implemented for the other industries also.

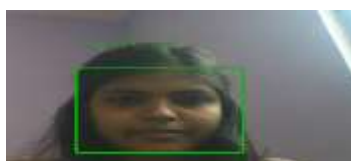


**Figure 1 Proposed system of Facial expression recognition**

**Input image:** Image set consist of two type live image or video. It will take as input image in both type and then it will detect the expression of human facial image or video.

**Pre-processing:** Pre-processing is the common name for improving the image, Noise Reduction, sharpening, Clarity, Texture, Masking, portions of images. Pre-processing is one of the most important technique in image processing for giving the best quality of image for detecting expressions and the each and every steps. Preprocessing is also required for shadow removal, image correction. It also help to give image more perfection to recognizing the expression of humans.

**Face registration:** The step should register face with clarity for detecting the expression. Feature extraction is a technique of defining a large set of unnecessary data into a set of feature of reduce dimension. It is also very important step in every image processing to define process of recognizing facial expression. After preprocessing step it come for register face of human it give the clarity of face like it should be face and then only it will detect facial expression of humans. The indication of face registration on human face is it in square shape when it come to face then it means face should be register.



**Figure 2: Example of Face registration**

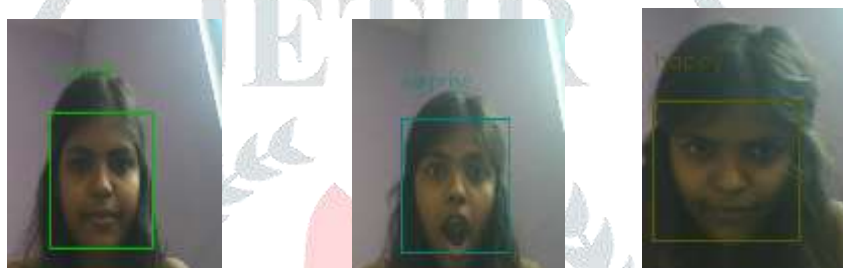
**Feature extraction:** Features is extracted from the sample live image or video for detecting the expression. Feature extraction is a technique of redefining a large set of unnecessary data into a set of feature of reduce Dimension. It is also very important step in every image processing.

**Emotion classification:** The last and final step of the process, the classification is applied to the input image or video. After the feature extraction, the input images are classified according to the intensity value of the pixel. The template, which conforms to CNN algorithms, is used for classification. CNN is the convolutional neural network used for analyze the input image. it also help in removal of limitation and increase in efficiency for image processing result in a system that is far more effective, simpler to trained limited for image processing and neural language processing. .

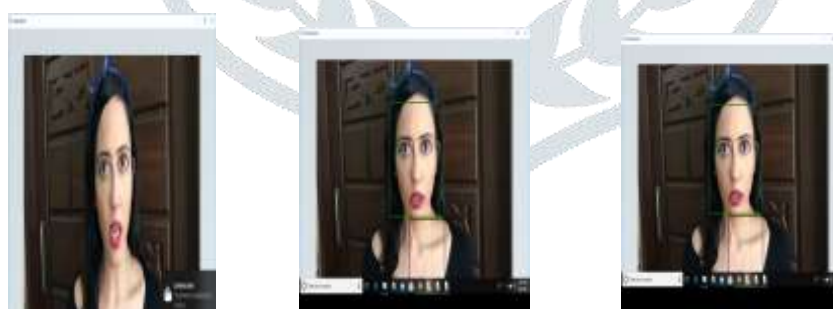


**Figure 3: Example of Emotion classification**

**RESULT:** In this field we discuss about the result obtain by overall classification and prediction. Two type of input taken image and video for recognition of facial expression based on that it will give the result in the text format. live



**Figure 4: Output of Facial expression recognition**



**Figure 5: Output of Facial expression recognition**

#### IV.CONCLUSION

This project is based on the image processing which call facial expression recognition done by using some tools and technology and also some steps which should be taken care to every image processing works. The human facial detection should be done by using some set of process and some of them are, preprocessing, facial registration, features extraction, classification these are the steps should be taken care to recognizing the human different emotions. First step should be done by giving the clarity of image as well as brightness of image for the exact recognition of emotions. Second step is used for registration of face, it means face should be detected by using facial registration, third step is movement of eyes, nose and i brow like if the eyes should be big and I brow should be up it means facial expression changing or t should be some expression, last step depend on recognizing the expression. It should give the exact expression name of human emotions. The project is still ongoing and is expected to lead to successful report of this should be in many areas. the system and source code are available for free. In addition, intend to expand the system to recognize emotions in video sequences; However, the results of the ranking and the evaluation of the system will not be taken into account which the report is not last. the results will be announced in time for the final system to be available to the target audience of this document.

## REFERENCES

1. Hyung-Ji Lee, Wan-Su Lee, Jae-Ho Chung, "Face recognition using Fisherface algorithm and elastic graph matching", IEEE International Conference on Image Processing, Vol.1, pp: 998- 1001, October 2001.
2. Adrian Dinculescu, Cristian Vizitiu, Alexandro Nistorescu, Mihaela Marin, Andrea Vizitiu, Determining Emotional Valence and Intensity 5th IEEE International Conference on E-Health and Bioengineering - EHB, pp:1 - 4, November 2015.
3. Rajesh K M, Naveen Kumar M, "An Adaptive Profile Modified Active Shape Model for Automatic Landmark Annotation Using Open CV", International Journal of Engineering Research in Electronic and Communication Engineering (IJERECE), Vol.3, Issue.5, pp:18- 21, May 2016
4. S. McGilloway, R. Cowie, E. Douglas-Cowie, S. Gielen, M. Westerdijk, and S. Stroeve, "Approaching automatic recognition of feeling from Voice: A rough benchmark," Proc. ISCA Work. Speech Emot., pp. 207–212, 2000.
5. T. S. Polzein and A. Waeibel, "Emotion-Sensitive Human-Computer Interfaces," ISCA Tutor. Res. Work. Speech Emot., 2000.
6. C. aeronaut and A. Rudnicky, "The Carnegie altruist soul Corpus," Proc. Int. Conf. Spok. Lang. Process., no. August, pp. 341–344, 2002.
7. U. Shrawankar and V. M. Thakare, "Techniques for Feature Extraction In Speech Recognition System : A Comparative Study," 2013.
8. Z. Fang and Z. Guoliang, "Comparison of various Implementations of MFCC," vol. 16, no. 6, pp. 2–3, 2001.
9. I. Miporas and T. Ganchiev, "Comparison of speech options on the speech recognition task," J. Comput. ..., vol. 3, no. 8, pp. 608–616, 2007.
10. D. O'Shaughnessy, "Linear prophetic cryptography.," IEEE Potentials, vol. 7, no. 1, pp. 29–32, 1988.
11. J. Schmedhuber, "Deep Learning in convolutional neural networks: an summary," Neural Networks, vol. 61, pp. 85–117, 2015.
5. J. Nagiam, A. Khoesla, M. Kaim, J. Naim, H. Leei, and A. Y. Nig, "Multimodal Aerial Deep Learning," Proc. 28th Int. Conf. Mach. Learn., pp. 689–696, 2011.
6. F. Deipl and T. Voigt, "Automatic feeling recognition from Expression," 2010.
7. S. Lugovec, I. Dinder, and M. Hoervat, "Approaches and applications of feeling recognition," 2016 thirty ninth Int. Conv. Inf. Commun. Technol. Electron. Microelectron. MIPRO 2016 - Proc., no. November 2017, pp. 1278– 1283, 2016.
8. B. Schuller, G. Rigoll, and M. Lang, "Emotion recognition combining Physical options and linguistic info during a hybrid support vector machine - belief specification," Acoust. Speech, Signal method., vol. 1, pp. 577–580, 2004.
9. C. Bussico et al., "IEMOCAP: Interactive emotional dynamic motion capture information," Laing. Resoer. Eval., vol. 42, no. 4, pp. 335–359, 2008.
10. J. H. Haensen, S. E. Boiu-Ghaizale, R. Sarikaaya, and B. Pelliom, "Getting Started with SUSAS: A Speech underneath Simulated and Actual Stress information," Eurospeech, pp. 1743–46, 1997.
11. K.Meisser; J.Mataes; J.Keittler;K., "XM2VTSDB: The Extended M2VTS information."
12. I. Sneidson, M. Mc.Rorrie, G. MicKeown, and J. Hanratty, "The iatrogenic natural feeling information for detection," IEEE Trans. Affect. Comput., vol. 3, no. 1, pp. 32–41, 2012.
13. M. Slaeny, "BabyEars: A recognition system for emotive vocalizations," Speech Commun., vol. 39, no. 3– 4, pp. 367–384, 2003.
14. K. D. Gairrett et al., "Correlates within the Comprehension of Emotional Prosody," no. February, p. 19104, 2002.
15. E. Douglaas-cowie, R. Coweie, and M. Schröder, "A New feeling Database: concerns, Sources and Scope," In, pp. 39–44, 2000.
16. D.Erickson, "Expressive: Production, perception and application to synthesis," Acoust. Sci. Technol., vol. 26, no. 4, pp. 317–325, 2005. ems, signals and image processing. 23-25 May 2016, Bratislava, Slovakia, 978-1-4673-9555-7/16. IEEE 2016