Emotion Detection With Facial Feature Recognition Using CNN And OpenCV

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Abstract: A Facial expression is the visible manifestation of the affective state, cognitive activity, intention, personality and psychopathology of a person and plays a communicative role in interpersonal relations. Automatic recognition of facial expressions can be an important component of natural human-machine interfaces; it may also be used in behavioural science and in clinical practice. An automatic Facial Expression Recognition system needs to perform detection and location of faces in a cluttered scene, facial feature extraction, and facial expression classification. Facial expression recognition system is implemented using Convolution Neural Network (CNN). CNN model of the project is based on Facial expression dataset with some facial expression labels as happy, sad, surprise, anger, and neutral is used in this project.

I.INTRODUCTION

Facial expressions are important attributes in human communication that helps us to know the intentions of other people. In common, people are inferred to know the emotional states of others, such as happiness, sadness, disgust, anger, using facial expressions and vocal behaviour. According to different number of surveys, actionable components will convey one third of the human communication, and non-actionable components convey two thirds of the same. Among various non-actionable components, by carrying emotional synonym, facial emotions are one of the main data channels in the one to one communication. Hence, it is quite common that research of facial emotion detection has been winning lot of attention over the past years with applications in wide range and not only permitting to perceptual and cognitive sciences, but also in Machine computing and computer graphics. Proposed system: We have developed a convolution neural network based model for classifying human facial emotions from dynamic facial expressions through live video frame in real time. We use transfer learning on the fully connected layers of an existing convolution neural network which was pre-trained for human emotion classification. Finally, a live video stream connected to a face detector system give feeding of images to the neural network. The results facilitate the easiness of implementing convolution neural networks in real time to detect Human facial expression. The results demonstrate the feasibility of implementing neural networks in real time to detect human emotion.
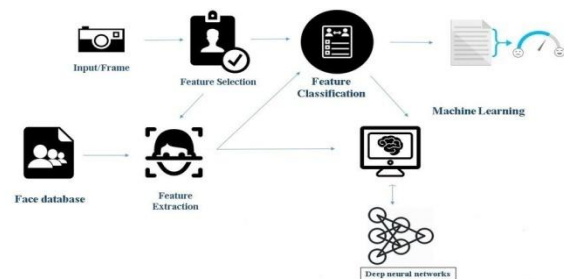
II. IMPLEMENTATION

Fig 5.3. System Architecture

DATASET: We have used a face dataset named fer2013, which comprises of a pre-trained model trained with thousands of images available in open source. Those images were used to train our model which in later stages can be used to detect the emotion.

MODELS: We have used a convolution neural network model, to detect and extract emotions from the face in live streaming web cam. CNN is mostly preferred in dealing with images and feature extraction
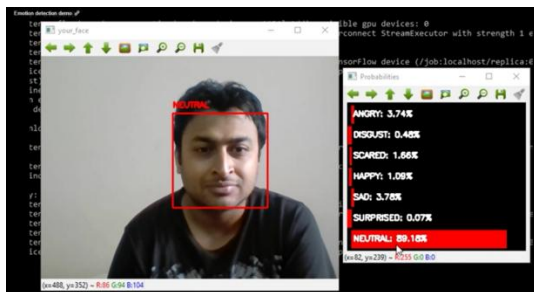
III.RESULT
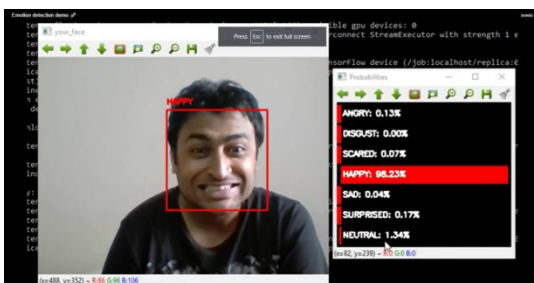

Fig: 7.1 NEUTRAL

Fig: 7.2HAPPY

IV. CONCLUSION

Emotion detection is never ending prolonged research as it has no perfect ending with the accuracy. We have tried a perfect solution to detect Even though, it is not 100% accurate, but it makes the most out of any other existing models. Our model can be used in various applications like humanoid robots, military, etc.

REFERENCE

1. .P. Abhang, S. Rao, B. W. Gawali, and P. Rokade, "Article: Emotion recognition using speech and eeg signal a review," International Journal of Computer Applications, vol. 15, pp. 37–40, February 2011. Full text available.

2. P. Ekman, Universals and cultural differences in facial expressions of emotion. Nebraska, USA: Lincoln University of Nebraska Press, 1971.

3. P. Ekman and W. V. Friesen, "Universals and cultural differences in the judgements of facial expressions of emotion," Journal of Personality and Social Psychology, vol. 53, 1987.

4. Kołakowska, A. Landowska, M. Szwoch, W. Szwoch, and M. R. Wrobel,´ Human-Computer Systems Interaction: Backgrounds and Applications 3, ch. Emotion Recognition and Its Applications, pp. 51–62. Cham: Springer International Publishing, 2014.

5. Krizhevsky, I. Sutskever, and G. E. Hinton, "Imagenet classification with deep convolutional neural networks," NIPS, vol. 1, p. 4, 2012.

6. Yao, J. Shao, N. Ma, and Y. Chen, "Capturing au-aware facial features and their latent relations for emotion recognition in the wild," in Proceedings of the 2015 ACM on International Conference on Multimodal Interaction, ICMI '15, (New York, NY, USA), pp. 451–458, ACM, 2015.

7. Shan, S. Gong, and P. W. McOwan, "Facial expression recognition based on local binary patterns: A comprehensive study," Image and Vision Computing, vol. 27, no. 6, pp. 803 – 816, 2009.

8. S. Kahou, V. Michalski, K. Konda, R. Memisevic, and C. Pal, "Recurrent neural networks for emotion recognition in video," ICMI, pp. 467–474, 2015.

9. Z. Yu and C. Zhang, "Image based static facial expression recognition with multiple deep network learning," in Proceedings of the 2015 ACM on International Conference on Multimodal Interaction, ICMI '15, (New York, NY, USA), pp. 435–442, ACM, 2015.

10. G. Levi and T. Hassner, "Emotion recognition in the wild via convolutional neural networks and mapped binary patterns," in Proc. ACM International Conference on Multimodal Interaction (ICMI), November 2015.