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An Innovative Approach for Interviewer to Judge State of Mind of an Interviewee using Deep Learning API

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Abstract - *As the number of companies are increasing in the world the competition of obtaining the best user feedback also increases. It directly acknowledges the quality of product or service provided by the company giving the company an opportunity to improve. The idea can be implemented in reading the expression of the individual during their Interview Process and generate the report accordingly. One of the most studied ways to detect Presence of individual's mind is by recognizing facial expressions, which is still one of the challenging fields in pattern recognition and machine learning science. Deep Neural Networks (DNN) is used in order to overcome the difficulties in classifying facial expression. Action Unit (AU) is an appearance based methods. This technique described the facial expression as a composition of Action Units which are describing the facial muscle motions. This method takes advantage of the strong support of the psychology and physiology sciences since it uses the facial muscle movements for modeling different expressions.*

Key Words: **Image Processing, Artificial Intelligence, Deep Learning, Cloud Computing, Distributed Processing**

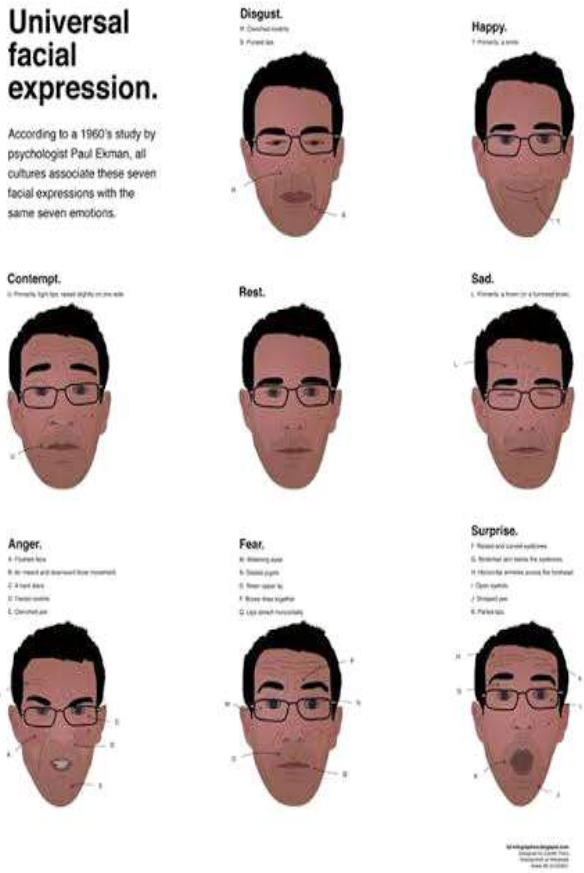
1. INTRODUCTION

Analyzing appearance of face is descriptor issue as focus is given on gesture and posture during interview sessions. But a good descriptor should be able to recognize variance of classes i.e. person with different facial expression. In this paper we identify state or mind of an individual. By Naive Bayes algorithm. It is possible to classify facial expression, facial expression can be one of eight type such as sad, anger, happy, fear, surprise, etc. which can be recognized and classified accordingly. The facial expressions are captured and stored in database pre-processing is done on gathered data and result is generated in the statistical graphical format

Today's handheld devices are growing in their capacity to interact with end-users. They have access to an ever-growing range of network based services and their sensing capabilities of the location and local environment continue to grow in scope. One remaining challenge for today's devices is to sense and determine the emotional state of the user. This introduces new challenges and requires a range of sophisticated edge technologies that can capture and analyze information from the user on the device. One example is the real-time analysis of speech patterns for detecting emotion. More recently researchers in this field have turned to deep learning techniques. The goal is to demonstrate the potential for high performance solution that can run on relative lightweight convolutional neural networks that can be efficiently implemented in hardware or on a GPU. Such a solution could realistically enable a new generation of smartphones that can understand the moods of their owners. Facial Expression Classification: This In recent years the facial expressions classification has attracted a lot of attention because of its various potential applications including psychology, medicine, security, man-machine interaction and surveillance.

There are two main approaches to investigate the facial expression in a systematic way: Action Unit (AU) based and appearance based methods. This technique described the facial expression as a composition of Action Units which are describing the facial muscle motions. This method takes advantage of the strong support of the psychology and physiology sciences since it uses the facial muscle movements for modeling different expressions. The AU based methods suffer from the difficulties such as dependencies on invisible muscle motions which makes

it extremely difficult to model the system using machines. Here, the idea is to use known image media forensics approaches to detect image expressions.



2. Literature Survey

Sandeep Kumar Ramani et al. Facial Expression Detection using Neural Network for Customer Based Service, The Raspberry Pi which is a small single-board computer, Linux based Operating system is used to explore the vision API. Python programming language which is the best suited for fast developing is used as the bridge to communicate with the vision API [3].

Celson P. Lima et al. Methodological approach working emotion and learning using facial expression, It uses software to capture students `facial expressions during classes, and later, algorithms analyze and establish correlations between students' facial expressions, emotions, teaching methodologies and student performance. To perform these analyses will be used artificial intelligence techniques such as deep learning to establish correlations [4].

Andrew Ryan et al. Automated Facial Expression Recognition System, The successful automatic registration and tracking of no rigidly varying geometric landmarks on the face is a key ingrecolor information in face images uses by Global Eigen Approach [2].

Jia-Jun Wong et al. Recognizing Human Emotion from Partial Facial Features, Face reveals the emotion states as well as cognitive activities [5], faster than people verbalize or even realize their emotional state [6]. Psychologists

have also found that the cognitive interpretations of emotions from facial expressions were innate and universal to all humans regardless of cultures [7].

David Sundgren et al. Automatic Emotion Recognition through Facial Expression Analysis in Merged Images Based on an Artificial Neural Network, We are approaching a probable future where machines could exceed human performance, but it is more accurate to think of humans with enhanced capabilities with the help from machines that understand their emotions [11].

Yassine Ruichek et al. Facial expression recognition using face-regions, Automatic recognition of facial expressions is an interesting problem which finds its interest in several fields such as eLearning and affective computing [9], [8], [10]. When designing an automatic facial expression recognition system, three problems are considered: face detection, facial feature extraction, and classification of expressions [9].`dient to the analysis of human spontaneous behavior [1].

Dr. Swarnalatha P. et al. Facial Expression Detection using Facial Expression Model, Conventional facial expression recognition techniques like principal component analysis, Linear discriminant analysis etc. uses lonely the luminance statistics in appearance images.

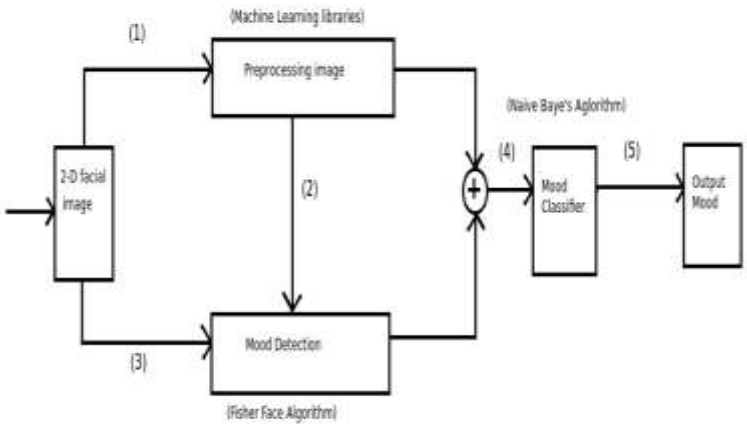
3. Brief Description

- Detection of facial expression of Interviewee for interview assessment is done.
- To analyze the state of mind of individual by using Fisher Face Algorithm.
- By using Naïve Bayes algorithms for recognizing facial expression.

4. Proposed System

Now a days interviews or interrogation are conducted remotely, online so there is need for tool to extract behavior of a person using its facial expression which can be used by multiple applications.

- Identifying state of mind of individual during interview session.
- To classify the state of mind using Naive Bayes Classifier.
- Generating report in statistical format.



5. Algorithms

1. Fisher Face Algorithm

- Fisher Face is used in Face Recognition.
- Once Video is uploaded.
- Video is divided into frames.
- Frames are formed by pixels.
- Fisher Face is used to detect those pixels by forming edge to their minimum Euclidean.
- It is designed to recognize the face image by matching results of its feature extraction.

2. Naive Bayes

It is a classification techniques based on assumption among independent predictors.
1: Convert the data set into a frequent table.
2:Dataset will consists following attributes Sad, Anger, Happy, Surprise, Disgust, Contempt, Rest, Fear.
3: Once the Analysis of data is done next step is to classify data and put the data in their respective classes according to the detection of their state of mind.

6. Advantages

- It helps in identifying behaviour of interviewee.
- It improves the overall selection process of the interview.
- User Friendly GUI for interaction.
- It automates the process of classifying, analyzing state of mind of an individual.

7. Application

- In car driving it will be used as an alert messenger it will prompt message to driver if there is slight change in state of their facial expression to avoid road accidents.
- In interrogation purpose it can be used to identity the state of mind of an individual so that according to this we can know how the state of mind of an individual.
- in medical system it can be used to identify the current state of mind of an patients fails to tell how he might be feeling.

8. Future Scope

Future direction is to detect subtle changes or micro expressions, as in the case of medical evaluation of depression, to further improve the classification accuracy. Future direction is to detect it can generate real time results.

9. Conclusion

On the basis of literature survey and by analyzing existing system, we have came to conclusion that the proposed system will not only analysis state of mind of an individual but will also generate report in graphical format.

10. References

[1] Matthews, I., and Baker, S.: 'Active appearance models revisited', International Journal of Computer Vision, 2004, 60, (2), pp. 135-164.

[2] L.Torres, J. Reutter, and L. Lorente, "The importance of the color information in face recognition," in Proceedings. 1999 International Conference on Image Processing, 1999. ICIP 99., vol. 3. IEEE, pp. 627– 631, 1999.

[3] Suchitra, Suja P. Shikha Tripathi , Real-Time Emotion Recognition from Facial Images using Raspberry Pi II, Signal Processing and Integrated Networks (SPIN), 2016 3rd International Conference

[4] Paul Ekman, Emotions Revealed, First Owl Books, New York: Henry Holt and Company LLC, 2004.

[5] Ying-Li Tian, Takeo Kanade, and Jeffrey F. Cohn, "Recognizing Action Units for Facial Expression Analysis," IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 23(2), pp. 1-18, 2001.

[6] Paul Ekman, Facial Expressions, in Handbook of Cognition and Emotion, T. Dalgleish and M. Powers, Editors, John Wiley & Sons Ltd: New York, 1999.

[7] J. Thompson, Development of facial expression of emotion in blind and seeing children, Archives of Psychology, vol. 37, 1941

[8]K. Lekdioui, R. Messoussi, and Y. Chaabi. Etude et modelisation ´ des comportements sociaux d'apprenants a distance, ` a travers l'analyse ` des traits du visage. In 7eme Conf ` erence sur les Environnements ´ Informatiques pour l'Apprentissage Humain (EIAH 2015), pages 411– 413, 2015.

[9] G. Molinari, C. Bozelle, D. Cereghetti, G. Chanel, M. Betrancourt, and ´ T. Pun. Feedback emotionnel et collaboration m ´ ediatis ´ ee par ordinateur: ´ Quand la perception des interactions est liee aux traits ´ emotionnels. In ´ Environnements Informatiques pour l'apprentissage humain, Actes de la conference EIAH ´, pages 305–326, 2013.

[10] R. Nkambou and V. Heritier. Reconnaissance emotionnelle par l'analyse ´ des expressions faciales dans un tuteur intelligent affectif. In Technologies de l'Information et de la Connaissance dans l'Enseignement Superieur et l'Indus

[11] R.W. Picard, E. Vyzas, J. Healey, "Toward Machine Emotional Intelligence: Analysis of Affective Physiological State," in IEEE Transactions Pattern Analysis and Machine Intelligence, vol. 23, no. 10, pp. 1175- 1191, 2001