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Face and Expression Recognition Based on Bag of Words Method Considering Holistic and Local Image Features

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ABSTRACT: This project presents a concept related to automatic sensory recognition through image processing and artificial intelligence (AI) techniques. It is a challenging task from a computer perspective to see as human beings through AI. Facial recognition plays an important role in identifying emotions. Emotions are categorized as joy, sadness, anger, neutrality and surprise. Today face recognition works very well and is used in many real-time programs for security purposes. These conversations can be found in the live feed via the system camera. Exfoliation features can be done such as eyes, nose, and mouth to get a face. The viola jones algorithm used to detect facial expressions in comparison to the database system. continually guard the face of the person as sad, angry, surprised, happy and neutral. if a person's face is sad, surprise, joy, anger is noticed it means that a postal warning is sent to a neighbor or doctor through the IMAP protocol and a voice warning is issued.

KEYWORDS: Sensory recognition, Artificial intelligence, Facial recognition, Emotions, Security purpose, Exfoliation features, Viola jones algorithm, IMAP protocol, Voice alert.

I. INTRODUCTION

Lifetime Facial expressions are important and provide a realistic understanding of a person's feelings. Subsequent generations of computer viewing systems can be largely based on existing computer systems that use strong communication with the user. The safety, entertainment and communication of the human machine (HMI) all use facial expressions as an important hope. A person can express his feelings through their lips and eyes. With the advent of modern technology our desires have risen sharply and are not bound by restrictions. At present a great deal of research is underway in the field of digital photography and photography. The path to progress has been tangible and is constantly growing Image Processing is a major area of research in today's world and its use is widespread. Image processing is a field of signal processing where input and output signals are images. One of the most important factors in the use of an image is the recognition of the shape of the face. Our emotions are expressed by what is said on our face. Facial expressions play an important role in communicating with people. Facial expression is a meaningless scientific act that is expressed in our facial expression according to our emotions. Automatic facial recognition plays an important role in artificial intelligence and robots and is therefore a need for generation.

II. RELATED WORK

(1) Henal Shah, Tejas Magar, Purav Shah and Kailas Devadkar "AN INTELLIGENT MUSIC PLAYER USING SENTIMENTAL ANALYSIS", The paper conveys our proposed intelligent music player using sentimental or emotion analysis. The Emotions are a basic part of human nature. They play a vital role throughout the life. Human emotions are meant for mutual understanding and sharing feelings and intentions. The emotions are represented in verbal and through facial expressions. One can also express his emotions through written text. This paper mainly focus on the methodologies available for detecting human emotions for developing emotion based music player, the approaches used by available music players to detect emotions, the approach a music player follows to detect human emotions and how it is better to use the proposed system for emotion detection. It also gives brief idea about our system's working, playlist generation and emotion classification. (2) Anukriti Dureha "AN ACCURATE ALGORITHM FOR GENERATING A MUSIC PLAYLIST BASED ON FACIAL EXPRESSIONS", This paper presents an algorithm that automates the process of



generating an audio playlist, based on the facial expressions of a user, for rendering salvage of time and labour, invested in performing the process manually. The algorithm proposed in this paper aims at reducing the overall computational time and the cost of the designed system. It also aims at increasing the accuracy of the designed system. (3)Seangliet, Y., Lee, B.S., & Yeo, C.K. “Mood Prediction from Facial Video with Music Therapy on a Smartphone”, The SMOODI provides sensible mood recommendation by bit and drag, and it's the three completely different views: Mood sq., cowl Flow and Mood Cloud. In the Mood sq., users will check the mood distribution of native clips and generate playlists. (4) Seungjae Lee, Jung Hyun Kim, Sung Min Kim, & Won Young Yoo. Smoodi: Mood-based music recommendation player. IEEE International Conference on Multimedia and Expo”, In the paper the author provides a real time face expression recognition approach with the help of Real Sense camera. Face detection and landmark detection is performed with the help of SDK of Real Sense camera. The different feature sets are tested for finding an optimal set and classification accuracy is noted for each feature set. (5)Patil, J. V., & Bailke, P. “Real time facial expression recognition using RealSense camera and ANN. International Conference on Inventive Computation Technologies (ICICT)”, In the paper, the author describes making use of machine learning approach for detection of visual object that is capable of processing the images rapidly to obtain high detection rates. The work has been is divided into 3 key contributions which are as follows: First is an Integral image, second consists a learning algorithm that is based on AdaBoost and third is cascade.

III. METHODOLOGY

It is a face system using the viola jones algorithm. User camera is requested with the appropriate permissions and real-time input caption (image) is provided in the system. The system first detects the presence of a face in the input and uses a viola jones algorithm to detect the face, then detects the input and produces a sensory output based on the output in real-time input. In the database we have trained human emotions and integrated with input images. Facial expressions such as sadness, anger, surprise, excitement is detected using the viola jones algorithm. The system continues to monitor the person's facial expressions. After this separate speech (sad, happy, angry, surprised) IMAP procedure sends a postal warning to a neighbour or doctor and makes a voice warning.

IV. EXPERIMENTAL RESULTS

Thus, the project was face expression recognition by using the viola jones algorithm was developed and the if face expression is recognized the mail alert sent to doctor or neighbor successfully.

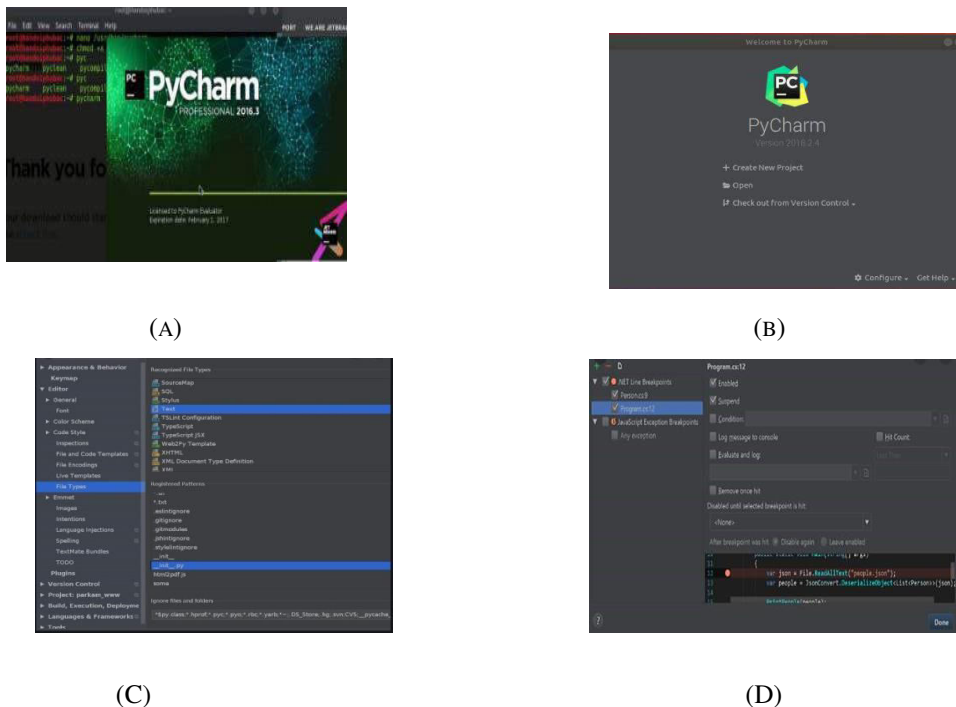
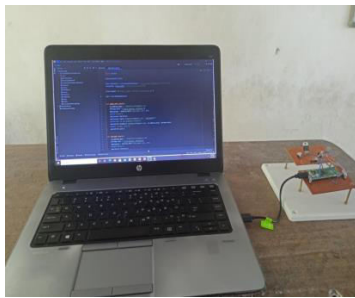
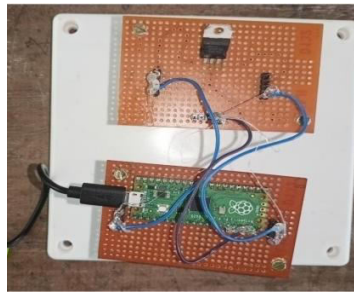


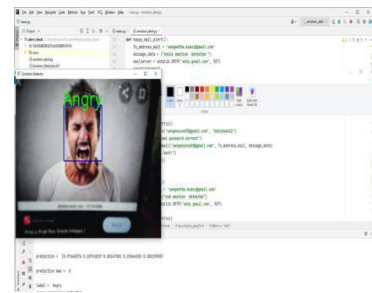
Fig (A) is a PyCharm software introduction (B) PyCharm configuration page (C) is an editing page of software and (D) is a PyCharm coding window.



(E)



(F)



(G)

Fig (E) is the experimental setup of the project. (F) is the circuit setup and (G) is the result of the experiment.

V. CONCLUSION

The proposed model uses the Viola-Jones algorithm developed using OpenCV to make a single phase of its operation used to include extraction and segmentation and to continuously monitor a person's face and send an email alert. Artificial Intelligence can be used to solve exciting tasks such as emotional detection, even if the task is even more confusing when you use multiple images. We humans sometimes make mistakes when we are aware of a person's feelings so our project helps to find a person's face.

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