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Moodque: Emotion Based Music Player

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Abstract: In this paper, The human face is an important organ of an individual‘s body and it especially plays an important role in extraction of an individual‘s behavior and emotional state. Manually segregating the list of songs and generating an appropriate playlist based on an individual‘s emotional features is a very tedious, time consuming, labor intensive and upheld task. Various algorithms have been proposed and developed for automating the playlist generation process. However the proposed existing algorithms in use are computationally slow, less accurate and sometimes even require use of additional hardware like EEG or sensors. This proposed system based on facial expression extracted will generate a playlist automatically thereby reducing the effort and time involved in rendering the process manually. Thus the proposed system tends to reduce the computational time involved in obtaining the results and the overall cost of the designed system, thereby increasing the overall accuracy of the system. Testing of the system is done on both user dependent (dynamic) and user independent (static) dataset. Facial expressions are captured using an inbuilt camera. The accuracy of the emotion detection algorithm used in the system for real time images is around 85-90%, while for static images it is around 98- 100%. The proposed algorithm on an average calculated estimation takes around 0.95-1.05 sec to generate an emotion based music playlist. Thus, it yields better accuracy in terms of performance and computational time and reduces the designing cost, compared to the algorithms used in the literature survey

Keywords: Extraction, upheld task, expression, playlist, emotion detection.

I. INTRODUCTION

Music plays a very important role in enhancing an individual‘s life as it is an important medium of entertainment for music lovers and listeners and sometimes even imparts a therapeutic approach. In today‘s world, with ever increasing advancements in the field of multimedia and technology, various music players have been developed with features like fast forward, reverse, variable playback speed (seek & time compression),local playback, streaming playback with multicast streams. Although these features satisfy the user‘s basic requirements, yet the user has to face the task of manually browsing through the playlist of songs and select songs based on his current mood and behavior. The introduction of Audio Emotion Recognition (AER) and Music Information Retrieval (MIR) in the traditional music players provided automatically parsing the playlist based on various classes of emotions and moods. AER is a technique which deals with classifying a received audio signal, by considering its various audio features into various classes of emotions and moods, whereas MIR is a field that extracts some critical information from an audio signal by exploring some audio features like pitch ,energy,MFCC, flux etc. Though both AER and MIR included the capabilities of avoiding manual segregation of songs and generation of playlist, yet it is unable to incorporate fully a human emotion controlled music player. Although human speech and gesture are a common way of expressing emotions, but facial expression is the most ancient and natural way of expressing feelings, emotions and mood.

II. PROBLEM STATEMENT

The current available systems require the user for doing the manual selection of the songs, but the proposed system will use facial scanning and face feature tracking to determine the user's mood based on it, will provide the user with a personalized playlist, thus making the process effortless for the user.It will provide a better experience to the music connoisseurs and enthusiasts.

III. RELATED WORK

The first paper referred to was, ‘Few Perspectives and Applications of Music Induce Emotion’ [1] by Fulvia Anca Constantin. The subject of music induced emotion is less discussed in the scientific world, mostly because it was only recently investigated from emotionally and cognitively perspectives. There are explored the induction of emotion during music listening and playing aswell as the influences of musical preference and assimilation on induced emotion. Preference for classical music is known to be influencing specificity and intensity ratings and instrumental music appears

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effective for the induction of basic emotions to listeners and players. The second paper referred to was, 'Recognizing Emotions Evoked by Music using CNN-LSTM Networks on EEG signals.

IV. METHODOLOGY

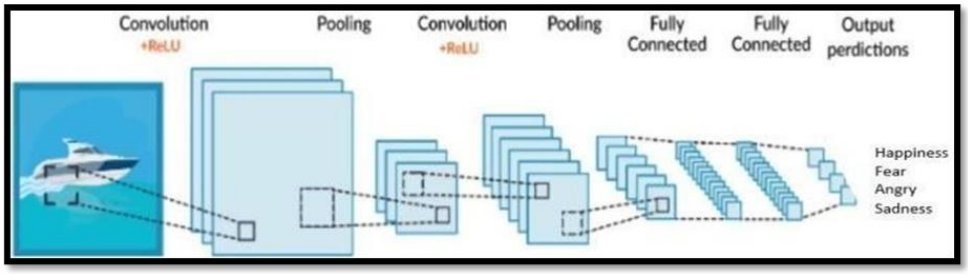
Methodology of Existing System:

The Existing algorithm in this involves an emotion music recommendation system that provides the generation of a customized playlist in accordance to the user's emotional state. The Existing system involves three major modules: Emotion extraction module, Audio feature extraction module and an Emotion-Audio recognition module. Emotion extraction module and Audio feature extraction module are two separate modules and Emotion-Audio recognition module performs the mapping of modules by querying the audio meta-data file. Following is the block diagram of Existing system.

Components:

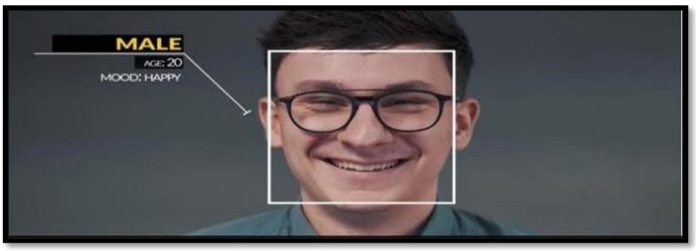
1. **Convolutional Neural Network (CNN):**

A Convolutional neural network (CNN) is a neural network that has one or more convolutional layers and are used mainly for image processing, classification, segmentation and also for other auto correlated data. A convolution is essentially sliding a filter over the input.



2.Face Detection:

Face Detection is the first and essential step for processing, and it is used to detect faces in theimages. A facial detection system uses biometrics to map facial features from a photograph or video. It compares the information with adatabase of known **faces** to find a match. **Face detection** systems use computer algorithms to pick out specific, distinctive details about a person's **face**.



3.Emotion Detection:

Emotion detection is used to analyze basic facial expression of human. Emotion recognition system is constructed, including face detection, feature extraction and facial expression classification.

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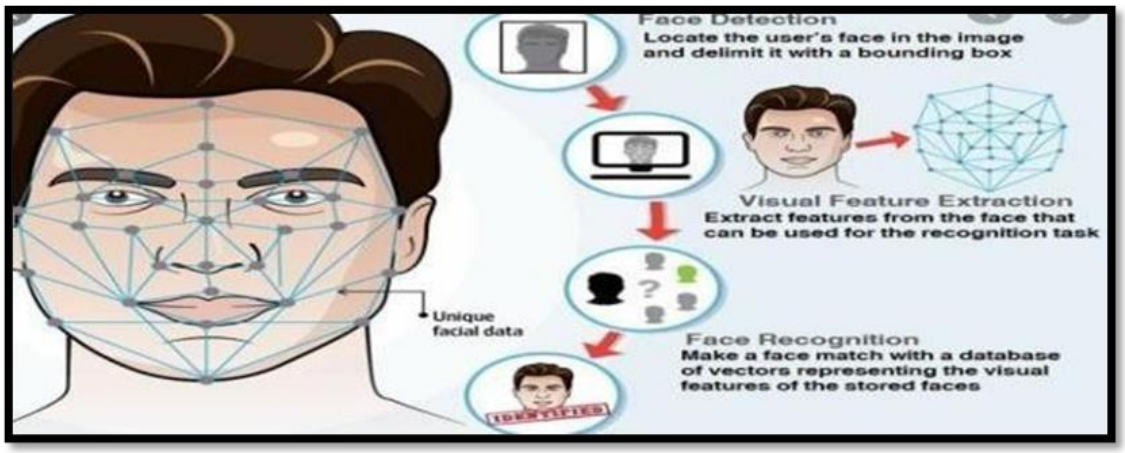
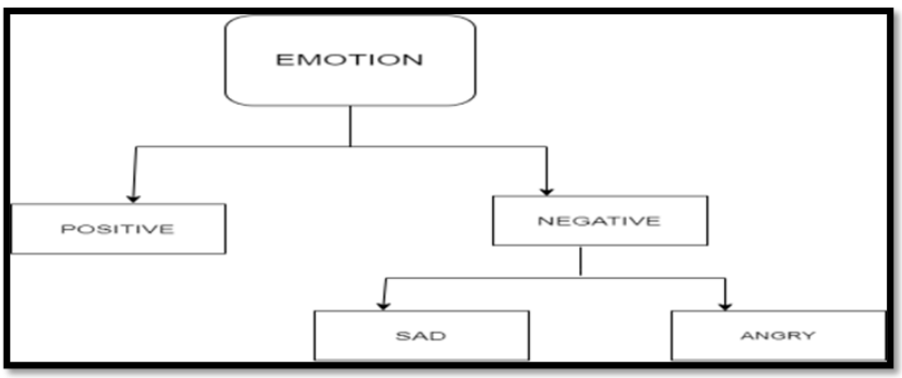
4.Facial feature extraction:

Facial feature extraction is the process of extracting face component features like eyes, nose, mouth, etc. from human face image. Facial feature extraction is very much important for the initialization of processing techniques like face tracking, facial expression recognition or face recognition.



5.Emotion Recognition :

The emotions are to be extracted from the detectedface. The image that is captured from the camera module, contains the facial features. The detected face is pre-processed (i.e.) cropped and resized. The detectors defined prior can be utilized to identify the emotion and sort them. It must be noted that viola-jonesalgorithm uses adaboost algorithm with cascading classifier, wherein a series of weak classifier's classification with a satisfactory threshold is combined to give an acceptable outcome.



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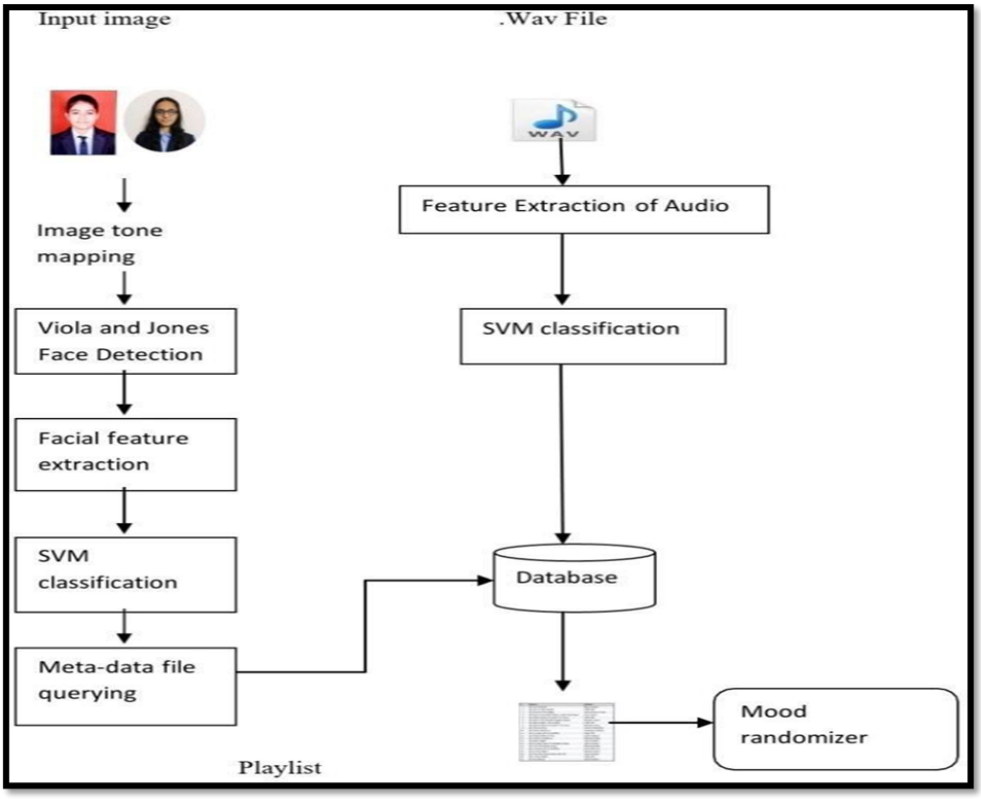

Fig : Proposed System Architecture

DISCUSSION

Here, we will be going through a detailed explanation about the implementation of the proposed model with respectto its use in the real world.

1. User opens and logs in the web app "Moodque".
2. Once the app is opened, this User need to login/register. It will display songs depending upon the history or user's mood. User can either select a song manually or can get song by detecting mood; to enable mood detection and let the app play a song for him according to his mood.
3. Moodque application detects the mood of the user according to his/her facial expression. It opens the front camera of the device i.e. laptop, pc.
4. The front camera of the device is initialized. If the user smiles, then the application draws a rectangular box around the smile to detect the happy mood of the user.
5. The application identifies the happy/sad mood of the user and appropriately plays a song from their playlistto suit their mood.
6. Also if the user is not in mood to listen songs he/she can read articles too which help them feel better.
7. SMS regarding the link of the article will be sent onusers number that has been used while registration.

IV. CONCLUSION

The predictor is relatively successful at predicting test data from the same dataset used to train the classifiers. However, the predictor is consistently poor at detecting the expression associated with contempt. This is likely due to a combination of lacking training and test images that clearly exhibit contempt, poor pre-training labeling of data, and the intrinsic difficulty at identifying contempt. The classifier is also not successful at predicting emotions for test data that have expressions that do not clearly belong exclusively to one of the seven basic expressions, as it has not been trained for other expressions. Future work should entailimproving the robustness of the classifiers by adding more training images from different datasets, investigating more accurate detection methods that still maintain computational efficiency, and considering the classification of more nuanced and sophisticated expressions.

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FUTURE WORK

We want to adapt our model in some other real-world scenarios, like a teaching learning environment, where the teacher could improve his/her teaching based on the feedback received by utilizing the model or in Psychology, where it would help the psychologist analyze and study a person‘s behavior. Another future scope in the system would to design a mechanism that would be helpful in music therapy treatment and provide the music therapist the help needed to treat the patient suffering from disorder like mental stress, anxiety.

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[3] Face Player: Facial Emotion Based Music Player Pushkar Mahajan 1, Pratik Khurad 2, Prateek Chaudhari3 123 (Student, Department of Computer Engineering,).

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[5] International Journal of Computer Science and Mobile Computing A Monthly Journal of Computer Science and Information Technology IJCSMC, Vol. 10, Issue. 2, February 2021, pg.50 – 53 Emotion Based Music Player Agrawal Abhishek Pradeep1 ; Kalyani Bhagwan Vispute2 ; Vaishnav Sham Bhavsar3 ; Sagar Prakash Wadile4 ; Prof. Vishakha N. Pawar5 1,2,3,4Students, Department of Computer Engineering, Guru Gobind Singh Polytechnic, Indira Nagar, Nashik, India 5 Lecturer, Department of Computer Engineering, Guru Gobind Singh polytechnic, Indira Nagar, Nashik, India

