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Emotion based Music Player

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Abstract: Humans tend to connect the music they hear, to the emotion they are feeling. The song playlists though are, at periods too large to sort out automatically. It would be accommodating if the music player was "smart enough" to sort out the music based on the current state of emotion the individual is feeling. The main idea of this project is to automatically play songs based upon the emotions of the adherent. Based on the emotion, the music will be played from the predefined playlist. It aims to deliver user-preferred music with emotional attentiveness. In the existing system user want to manually select the songs, randomly played songs may not accede to the feel of the adherent, user has to classify the songs into various emotions and for playing the songs user has to manually choose a particular emotion. These difficulties can be avoided by using our project. This is a novel way that helps the handler to automatically play songs based on the emotions of the handler. It recognizes the facial emotions of the adherent and plays the songs based on their emotion. The emotions are recognized using a machine learning method Support Vector Machine (SVM) algorithm. The human twist is an important organ of an individual's body and it especially plays an important role in the heritage of an individual's behaviours and emotional appearance.
Keywords: Face Feature Extraction, Face Detection.

I. INTRODUCTION

Human beings have a natural power to guess their mood when look at someone's face. Now this ability is learnt by electronic device like computer, human android robot and mobile devices. Devices can give valuable applications which are used in real world. In past few years, the percentage of people who have stress has raised at higher rate. Listening to the music is best option for reducing the stress. Moreover, there is no music player which is able to select songs based on the user emotions. To solve this problem, we develop application emotion-based music player, which is able to suggest a song based on emotion; sad, happy, angry and neutral.

II. LITRATURE SURVEY

A. *Music Emotion Classification*

This section presents the existing methods for classifying emotion from the music. There are some relevant approaches which are concluded as follows.

1) Krittrin Chankuptarat [1] applies the user's heart rate and facial image to identify the user's emotion. The classification method is method that classifies the user heart rate based on the ranges provided in Quazi's research. In case the user's heart rate is in multiple ranges, the system was identifying that the user has multiple emotions.

a) *Gap Analysis:* Only heart rate cannot give the information about the emotion. System gives very poor efficiency.

2) Sneha Lukose [2] applies the SER (Speech Emotion Recognition) technology for detecting the emotions. The SER system focuses on recognizing the state of emotion of human being's voice. A certain emotion expressed is highly dependent on the speaker and his or her age, language, culture, personality, environment etc. Once the emotion of the speech is credited, the system platform automatically selects a fragment of music as an approval uphill strategy from the database of melody playlist stored. The analysis results produce an effect that this SER system implemented on peak of five emotions provides bustling emotional classification prosecution of 76.31% using GMM model and an overall greater than before correctness of 81.57% as soon as SVM model.

a) *Gap Analysis:* It was not real time and analysis done on some prerecorded dataset.

3) Anuja Arora [3] applies some technologies on audio file to detect emotion. The feature extraction used to retrieve the different kind of audio feature such as harmonic feature. Training of the dataset is done using the KNN, SVM, MLP and Random Forest models and then using this trained model predictions are made on test set for checking the result. Gap Analysis: Recognize the mood based on audio file utilizing the audio feature returns the critical outcomes. It is not possible in real time application.

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4) Aurobindo V. Iyer [4] applies some face detection algorithm to detect the emotion. Develop android application to capture user's face image and sent it to server. Server applies the Viola Jones Algorithm for detecting the face. After face detection next step is emotion recognition which is carried out using Fisher faces Algorithm. The server gets the emotion and uses a code which suggests the users with the list of songs based on this emotion.

a) *Gap Analysis:* Images are compared with pre-trained dataset of different users. Hence bit low accuracy.

III. PROPOSED SYSTEM

There are different techniques which can be used for classification so as to fit properties of the database and which then leads to different outcomes with respect to actual ground truth data. In this section we explain details of the all the techniques used and all the approaches selected for experimenting for classifying moods of user's using images.

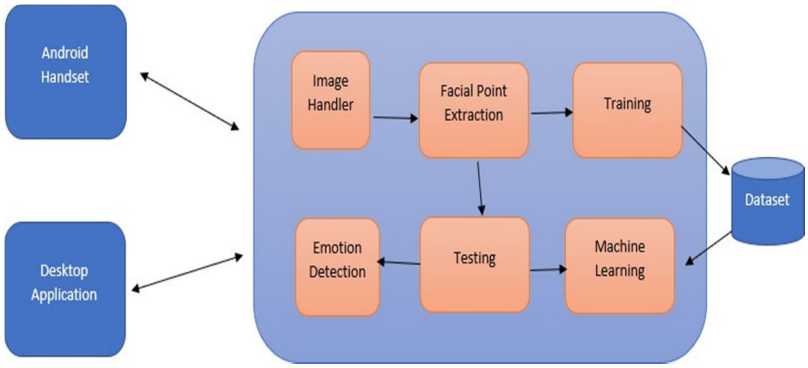


Fig. 1 System Architecture Diagram.

System developed by 2 different types of the user interface.

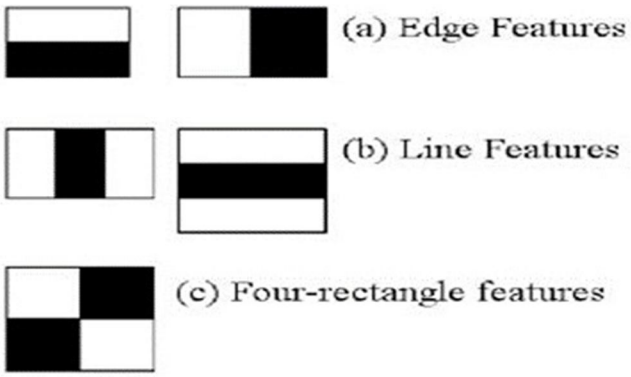
1) *Android Application:* Here user can take picture of his face and send it to the server.

2) *Desktop Application:* Here users can take pictures from the webcam and send them to the server.

The first approach of this system is training using different users per emotion which is called a dataset. These training files are used at the time of testing to compare the best match using different machine learning algorithms for the best result. Emotion Based Action comprises of a four-step process:

A. Face Detection

Here we work following viewpoint detection, initially the algorithm needs a lot of complimentary images and negative images to train the classifier. Then we have to extract features from it. Each feature is a single value obtained by subtracting the number of pixels knocked out of the white rectangle from the number of pixels knocked out of the black rectangle.



Here we deal with detection. OpenCV already encloses many pre-trained classifiers for slope, eyes, smile, etc. OpenCV comes when a trainer as capably as detector. If your hardship to train your own classifier for any want considering car, planes, etc. you can practice OpenCV to create one.

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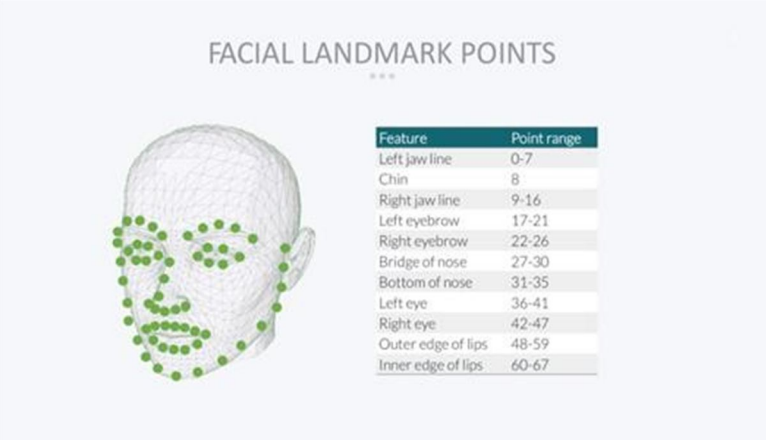
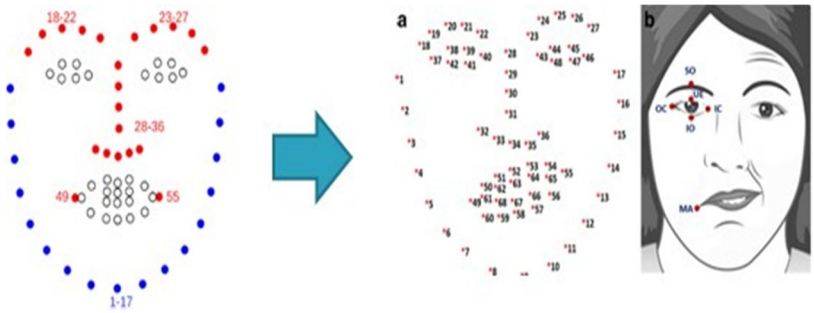
B. Emotion Detection

DLib library is used to find 68 facial landmarks. This facial point helps to track different object of faces in different emotion.



We have to record changes in facial points which will give us hint about emotion.



C. SVM Based Machine Learning

The Support Vector Machine classifier is widely used due to its accuracy and the ability to deal with high-dimensional data. It is also one of the best methods in machine learning which provides better accuracy results. The SVM is a statistical classifier that classifies data into binary or multi classes based on the training data. A hyperplane or set of hyperplanes is constructed in a high-dimensional reveal and it can be used for classification, regression, or strange task. For the training and testing of emotional speech, features are extracted, and then models are created. SVM helps in distinguishing between multi-class data sets by creating a hyperplane and then indicating the class to which it belongs. For training the SVM model, the entire data set of multiple classes can be given together and simultaneously mapping the data set with the appropriate class labels to help predict the best results. While testing a data set, this hyperplane helps to map the test data to the nearest training data points of the class.

D. Music Player

Music Player To effectively recommend the songs which suit the user's emotion, the application has to know not only what emotion the user has, but also what mood the songs are.

IV. CONCLUSION AND FUTURE WORK

The point of this paper is to explore the area of facial expression recognition for implementation of an emotion-based music player. Manual face analysis utilized by people was immediately supplanted by reasonable computer programming. A broad variety of image supervision techniques was developed to meet the facial exposure to environment recognition system requirements. Proposed system is able to process the facial image and recognize basic emotions and then play music based on these emotions. In the future work, we would like to focus on improving the emotion recognition rate of our system and also recognize more different emotions.

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V. ACKNOWLEDGMENT

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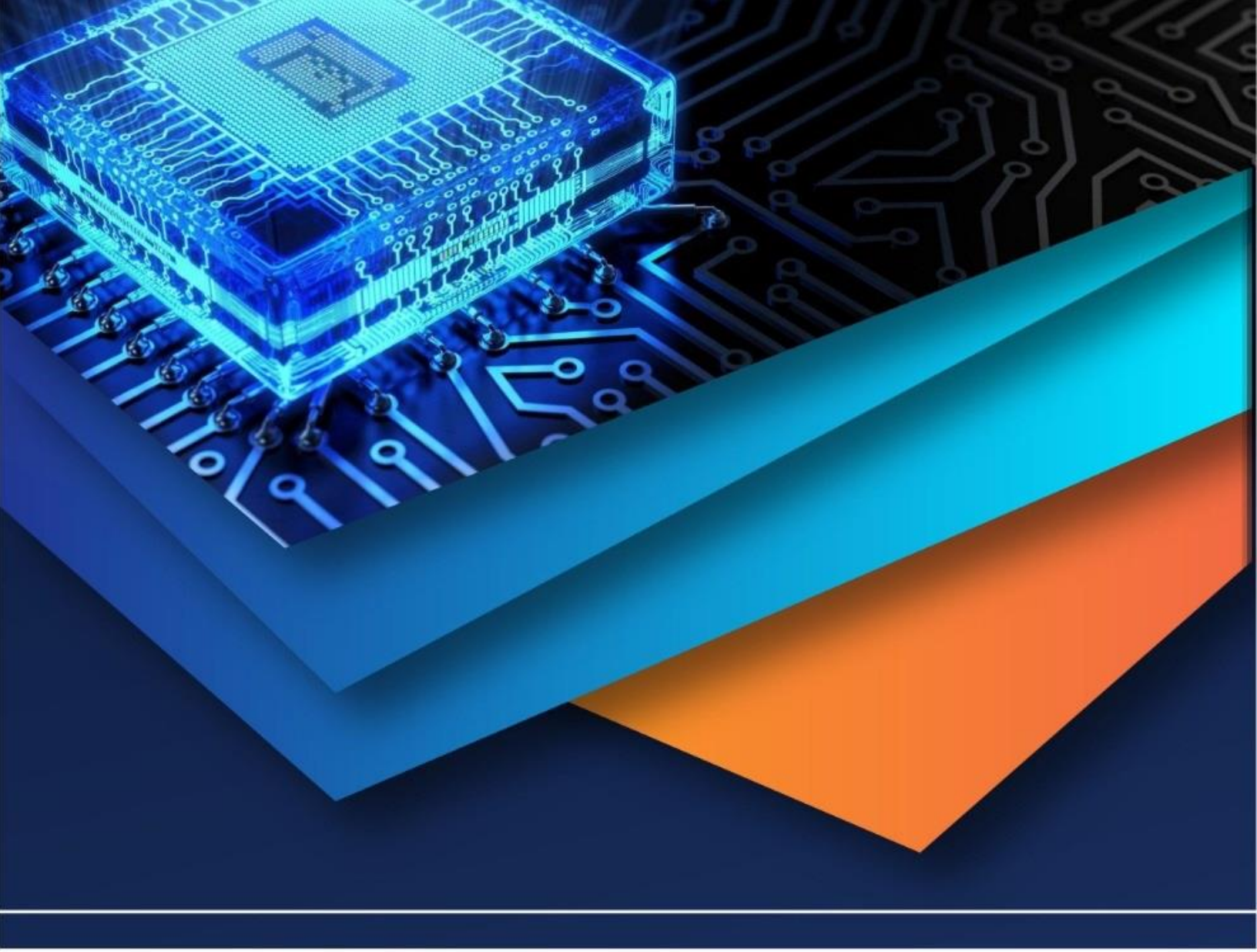

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