

## EMOTION BASED MUSIC PLAYER

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**Abstract:** *Human expression plays a vital role in determining the current state and mood of an individual, it helps in extracting and understanding the emotion that an individual has based on various features of the face such as eyes, cheeks, forehead or even through the curve of the smile. Music is basically an art form that soothes and calms the human brain and body. Taking these two aspects and blending them together our project deals with detecting emotion of an individual through facial expression and playing music according to the mood detected that will alleviate the mood or simply calm the individual and can also get quicker song according to the mood, saving time from looking up different songs and parallel developing a software that can be used anywhere with the help of providing the functionality of playing music according to the emotion detected. By developing a recommendation system, it could assist a user to make a decision regarding which music one should listen to, helping the user to reduce his/her stress levels. The user would not have to waste any time in searching or to look up for songs and the best track matching the user's mood is detected, and songs would be shown to the user according to his/her mood. The image of the user is captured with the help of a webcam. The user's picture is taken and then as per the mood/emotion of the user an appropriate song from the playlist of the user is shown matching the user's requirement.*

**Keywords:** *Emotions, Songs, Testing, Detection, Playlist*

### I. INTRODUCTION

Project EMO player (an emotion-based music player) is a novel approach that helps the user to automatically play songs based on the emotions of the user. It recognizes the facial emotions of the user and plays the songs according to their emotion. Face expression recognition is used to recognize the essential human emotions. The facial expressions convey essential emotional facts and details. In the next generation of computer vision systems, programs and systems focused on the interaction of images may play an important role. Face emotion can be used in the areas of human machine interface (HMI) defense, entertainment and. A human being can convey his / her emotions through his / her mouth, eyes, etc. People usually have a great number of songs in their collection or playlists. Using traditional music players, a user had to manually browse through his playlist and select songs that would soothe his mood and emotional experience. 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 and including volume modulation, genre classification etc.

Although these features satisfy the user 's basic requirements, the user has to face the task of manually browsing through the playlist of songs and selecting songs based on his current mood and behaviour. So, to avoid difficulty choosing a song, most people only pick a song from their playlist at random and some of the songs might disappoint the user. As a result, some of the songs are not matching the user 's current emotion. In addition, there's no widely used program that can play songs based on the user's current emotions. That is the requirements of an individual, a user sporadically suffers through the need and desire of browsing through his playlist, according to his mood and emotions. Music plays a crucial role in enhancing or improving an individual's life as it is an important medium of entertainment and relaxation for music listeners and has even proved to have a therapeutic weightage

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the requirements of an individual, a user sporadically suffers through the need and desire of browsing through his playlist, according to his mood and emotions. Music plays a crucial role in enhancing or improving an individual's life as it is an important medium of entertainment and relaxation for music listeners and has even proved to have a therapeutic weightage. Many mobile applications have come up with many functions like emotion capturing with artificial intelligence, gesture, sleeper time, lyrics, shuffle play and many more. This application is randomly similar that off but here we came up with new function called Emotion Based Music Player with many different Moods. Here user can select music list depending on their current emotion or we can also call as mood so after clicking to different types of mood a list of songs would be displayed. And user can also search their favourite songs by searching in-search tab. User can also create their playlist. This application is made for online as well as offline too. User can easily

handle this application because many of us have been using different kind of music players dayby- day. As a result of more

and more robust visual features, the performance of visual sentiment analysis systems has gradually improved. Almost all of these approaches, however, have attempted to reveal the high-level sentiment from a global perspective of the entire images. Little attention has been paid to research into where we get our sentimental responses and how the local regions approach the task of visual sentiment analysis. We are attempting to solve these two difficult problems in this work.

## **PROBLEM DISCUSSION**

Using traditional music players, a user had to manually browse through his playlist and select songs that would soothe his mood and emotional. In today's world, and technology, various music players have been developed with features like fast forward, reverse , variable playback, streaming play back with multicast streams and including volume modulation, Genre classification etc. Although these features satisfy the users has to face the task of manually browsing through the play-list of songs and select songs based on his current mood and behaviour. For accessing this application user has to first login or sign-up. User can see various types of moods in Mood tab after login. Such as Chill, Romance, Energy Booster, many more. And when a user clicks on mood as per

there choice list of songs would be displayed and user can enjoy their time by listing music. User can download as well as share there play-list. User can do search with music as well as artist also. Face detection and facial feature extraction from images is the first step in emotion-based music player. For the face detection to work effectively, we need to provide an input image which should not be blurred and tilted. Once proper facial images are retrieved, linking them with music recommendations will be done.

## II. LITERATURE SURVEY

1. Emotion Based Music Player The main aim was to efficiently extract features and facial parts that can be used to detect emotion and propose a method for generating music based on detected emotion.

2. Smart Music Player Integrating Facial Emotion Recognition And Music Mood Recommendation The project focuses on an andriod application that would capture an image of the user and detect 4 emotions and develops a algorithm for generating a playlist and detecting emotion further also lets user to add a song and skip a song.

3. Real Time Emotion Recognition from Audio The system focuses on detecting audio signals and rapid audio on computing devices. Features are detected

and extracted to determine degree of similarity. However, the efficiency was not very high in this research.

4. Smart Music Player Integrating Facial Emotion Recognition And Music Mood Recommendation This project works on a database basis. Database is Olivetti's face which contains 400Faces with different emotions in it. This database operates on the basis of a svm algorithm that separates data set from the test and training database. The test database helps to provide data for its learning or accuracy data while a training data set is particularly useful for queuing and indirect data afterwards. split and when the camera is used certain facial features are taken and used to get the training database separated, this helps to select a certain type of emotion (happy / sad) .then according to that emotional music will be played.

5. Mood Cloud Mood Cloud a real-time music mood visualization it classifies music emotion into 5 types namely: aggressive, happy, party, relax and sad. It applies the SVM library to analyse emotion database. The result is then presented by Flash player.

## III. PROPOSED WORK

Here we have proposed an Emotion Based Music Player where user can play a song according to their mood and emotion. It

aims to provide user preferred music with respect to their mood. Emotion based music player is an idea of giving an effortless mobile application where user can play song according to their present emotion or mood. After clicking to specific mood its recognized by inner code and accordingly play list is displayed. If you are a new user firstly you have to sign up so you won't miss any update. For accessing desktop site user have to login. When this application starts it displays users play list and suggest new songs as well as suggest according to mood. When user plays song according to their mood it ask for up vote button if user denied it the song won't be added to play list and if user allow it then the song will be added in play list .

The proposed system can capture the user's facial expressions, and based on his facial expressions, extract facial reference points, and then classify them to obtain the user's specific emotions. After the emotions are classified, songs corresponding to the user's emotions are displayed to the user

**METHODOLOGIES**

**What is Open CV**

Open-Source Computer Vision Library is a library of programming functions that focuses on real-time computer vision. The library is a cross-platform. Its main

purpose is real-time image processing. If the native Intel performance primitives are installed on the system through self-optimized routines, library performance can be improved.

**Why Open CV ?**

Open CV provides many functions for facial detection and facial recognition. It comes with a trainer and a detector. If you want to train your own classified objects such as mobile phones, pens, etc... you can use Open CV to create it.

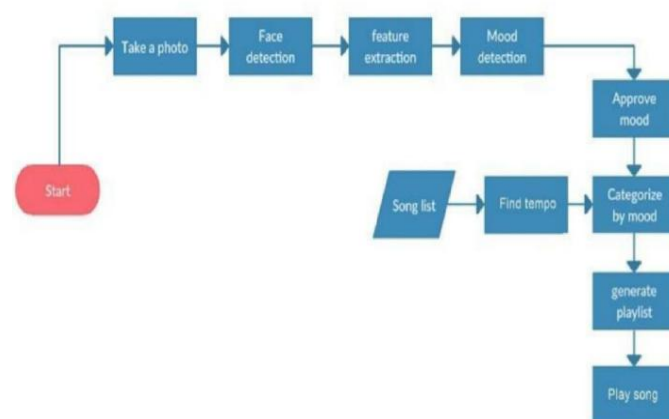


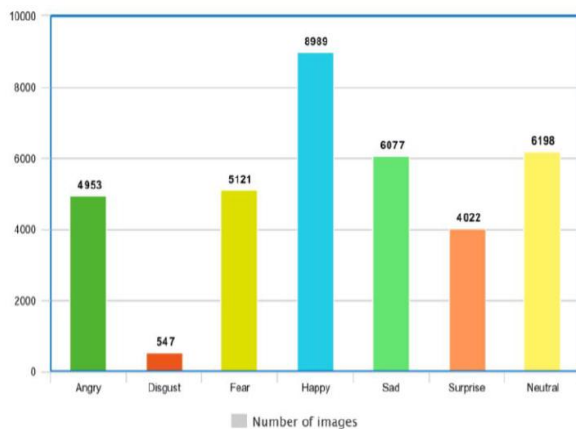
Fig.1 system architecture

**IV. IMPLEMENTATION**

**TRAINING OF MACHINE LEARNING MODEL**

The dataset which we have used for this project is the FER2013 dataset. This dataset consists of a huge amount of face images which are pixelated grayscale of 48x48 pixels. The faces are processed automatically, so that that face is in the middle part of the frame. The requirement

is to classify each face in one of seven groups according to the emotion shown in the facial expression. 0 is Angry, 1 is Disgust, 2 is Fear, 3 is Happy, 4 is Sad, 5 is Surprise, 6 is Neutral. The \*pixels\* column comprises a very long string for each image. This string is the separated pixelation in row major order. The total number of tuples is 35,887. There are 3 columns. Emotion, Pixel and Usage.



**Fig.2 Visual representation of dataset**

Training a CNN(Convolution Neural Network) model from the data set to recognize human emotions using google colab.

**FACIAL RECOGNITION USING HAAR CASCADE**

This classifier is based on the Haar Wavelet method to analyse pixels in an image into squares by a predefined function. It uses the “ integral image ” concept to calculate the features detected. The Haar Cascade algorithm uses the Ada-

boost learning algorithm. Haar features are identical to those convolutions that are used to detect the feature's presence in a given picture. It is a machine-based learning technique, in which a cascade function is trained from both positive and negative images. It is then used on other images to detect artifacts. The algorithm originally requires a lot of positive pictures (face pictures) and negative images to train the classifier. Then we need to extract from the functionality. Hair features displayed in the picture below are used for this. They are just like our kernel that is coevolutionary. -- function is a single value obtained by subtracting the pixel total from the number of pixels under the black rectangle below the white rectangle.

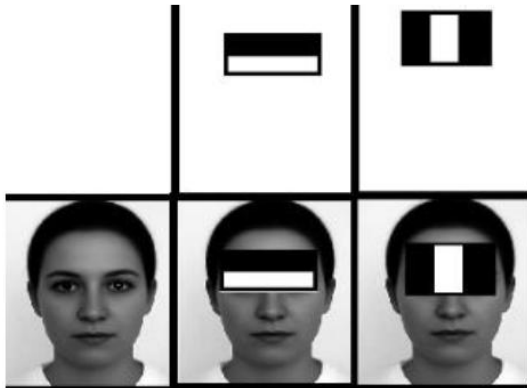
**Detection of feature points:**

It detects feature points on its own. For facial recognition, the RGB image is first converted into a binary image. If the average pixel value is less than 110, black pixels are used as substitute pixels, otherwise, white pixels are used as substitute pixels.

Now, all possible models and positions of all cores are used to estimate many functions. But of all these functions we calculated, most of them are not relevant. The figure below shows two good attributes in the first row. The first

function selected seems to focus on the attribute that the eye area is usually darker than the nose and cheek areas. The second function selected is based on the fact that the eyes are darker than the bridge of the nose.

Fig.3 Haar Feature extraction of face



**V. RESULTS**



Fig.4 Photo uploading page





Fig.5 Choosing image for upload

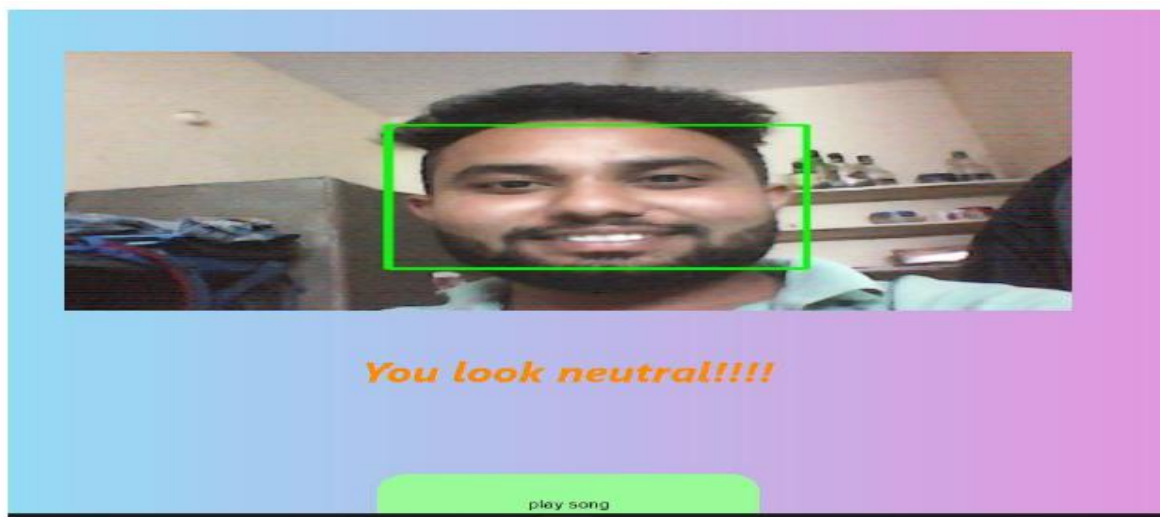


Fig.6 Different Types Of Emotions

**VI. CONCLUSION**

The Emotion-Based Music Player is used to avoid manual work and give a better music player experience for the end user. The product solves the basic needs of music enthusiasts without troubling them as existing applications do: it uses technology to increase the interaction of the system with the user in many ways. It eases the work of the end-user by

capturing the image using a camera, determining their emotion, and suggesting a customized play-list through a more advanced and interactive system.

The application developed will reduce the efforts of the user in creating and managing playlists.

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