

# Emotion Based Song Recommendation System

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## Abstract

The mood or attitude of the user can be determined by the shape of his face. These expressions can be extracted from the live camera feed of the system. In the field of computer vision and machine learning (ML), where machines are trained to recognize different human emotions or feelings, much research is being done. The human emotions can be perceived through the various techniques provided by machine learning. One such strategy is to integrate the CNN and Keras model, which produces a less trained model and simplifies ML integration. Music is often used to control emotions, especially to change bad moods, to improve energy, or to reduce tension. In addition, listening to the right music at the right time can contribute to good mental health.

**Keyword- Face recognition, Image Processing, Computer Vision, Emotion Detection, Music, Mood detection.**

## I. Introduction

This project is based on the Transformed Emotional Acquisition model. We will use this project for machine learning. This project can also be used to gather information about a person's emotional state, i.e. mood swings, temporary behavior. People's emotions can be broadly divided into: fear, disgust, anger, surprise, sadness, happiness, and neutrality. A large number of other emotions such as happiness which is a variation of happiness and contempt can be separated under this umbrella of emotions. These feelings are very subtle. The flexibility of the facial muscles is very small, and finding this difference can be very challenging as even small differences result in different principles. Also, expressions of similarity or similarity may differ from

one person to another, since feelings are very much dependent on the context. Although focusing only on those facial expressions that reflect the abundance of emotions such as the mouth and eyes, how these symptoms are expressed and separated is still an important question. Neural networks and machine learning have been used for these activities and to get good results. Machine learning algorithms have proven to be very useful for pattern detection and classification, so they can also be used for sensory detection.

## II. Literature Survey of Existing Products

Currently there are various methods proposed by researchers to classify the emotional state of human behavior. We focus only on some of the basic human emotions. Various algorithms have been developed to study the curve of the face and predict the environment using feature curves that are generated using karas. This process uses a number of learning methods to obtain emotions, which makes the model expensive to calculate. Finding emotions based on facial expressions is complicated as individual facial expressions vary from one person to another which is why Haar-cascade is used to study facial structure data and the use of OpenCV for accommodation. There are many ways to get rid of Facial Properties. There are very few systems available that have the ability to create playlists of songs based on emotions using human emotions. It is complicated in terms of time to remove facial features in real time. Existing systems can create playlists but with less accuracy.

## III .Comparison with existing system

| Title of Paper                                 | Working   | Parameter used   | Result  |
|--|---|--|---|
| Review on Facial Expression Based Music Player | Ease of use, Mixed mood detection, Improved accuracy.     | Viola-Jones algorithm and multiclass, SVM (Support Vector Machine)   | The system reduced the efforts of user in creating and managing playlist. |
| Emotion Based Music Player                     | Ease of use, No trouble of troublesome selection of songs | Object perception using Haar feature-based cascade classifiers is an | It provided better enjoyment to the music listeners by providing the most |

|   |   |  |   |
|---|---|--|---|
|   | Can be used in vehicles.  | effective object detection method.   | suitable song to the user.  |
| Mood Sound: An Emotion based Music Player | The Mood Sound is web-based program that mainly focus on captured image using different logical stages like capture picture, detection of face. | System can take real time input from internet camera and OpenCV libraries to implement face detection through Haar cascade classifier. | Recognized emotions passed to music player which has sorted music list according to mood. The music list is sorted by using the tempo of songs. |
| Mood based Music System                   | The mood-based music system is computer-based software that focuses on implementing mood detection.   | CNN classifier is used to detect emotional state. CNN is made up of neurons with learnable weights.                                    | Result of mood based music system can be seen through accuracy in mood detection and in the songs suggestion.                                   |

**IV. PROPOSED SYSTEM:**

Learn the basics of machine learning and image / emoji recognition. The proposed system helps us provide a connection between the user and the music system. This project focuses on user-favorite music recommended for emotional awareness. In the first section of the proposed system, we have provided options and each contains its own functionality. For this, we have provided a list of songs and feelings based on local recognition. When the system starts working it takes pictures with a webcam. Our main goal in this program is to create a sophisticated music player that can improve the user experience and music is one of the best resources for changing the situation. In these system-captured images they are compared to data sets, and in particular several emotions are assumed because a person has many emotions and it is difficult to predict because they are different from person to person and it will be difficult to predict so, four common and easily visible human emotions. And here's another approach that can be used with the main idea namely, random selection of songs that can help us illuminate our emotions and another line mode. Evaluation, analysis and model improvement. An app that uses python and machine learning libraries will use machine learning to identify user feelings. Use data sets to interpret emotions and suggest songs based on analysis.

## Select Emoji



Figure 1. Different Type of Emoji Expression

### V. SYSTEM ARCHITECTURE:

The layout of the system structure shows the overall structure of the software system and the relationships, limitations, and boundaries between components. When the website is opened, a large screen will appear that contains two buttons - take it quickly, use emoji. When the user clicks the "take snap" button, the camera opens, the user clicks the image. This image is provided as a face recognition program. If no face is found the song does not play. When one face is successfully detected, the image is presented as input into the status detection module. Received mood is displayed to the user, after which the "play songs" button is enabled. The appropriate playlist for the status found is displayed on the playlist screen where the user can select and play the song. When a user presses a "apply emoji" button, a screen of several emoji will appear. The user can click on any emoji to find the right playlist. To exit the site, the user must simply press the back button.



Figure 2. Architecture Diagram of EBMRS

## VI. METHODOLOGY:

A music-based complimentation system is an application that focuses on using real-time FRAME detection. It is an example of a new product that combines two main modules: The first is face recognition and the second is Emoji detection.

### 1: Facial Expression Recognition Module

#### 1.1 Mood Detection

This Module is divided into two parts:

##### 1.1.a: Face Detection

Ability to see the surface of a face in any photo frame or frame. The output is a link to the bounding box of the received face. In this work, initially the Python OpenCV library was initially considered. But assembling it was a daunting task so the Face Detector component found in Java was considered. This library identifies people's faces in the Bitmap image object and returns the number of faces present in a given image.

What is Open CV ?

The Open-Source Computer Vision Library is a collection of programming functions aimed towards real-time computer vision. It's a cross-platform library. Its primary goal is to process images in real time. Library performance can be increased by installing native Intel performance primitives on the system via self-optimized procedures.

Why Open CV?

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##### 1.1.b: Mood Detection

Separation of emotions on the face such as happiness, anger, sadness, neutrality, surprise, fear or disgust. Therefore, CNN's image modeling and Visualization model was used. There are other models but what makes Resnet Net50 special is that it has a limited computational capacity to run or use transfer learning on it. CNN

worked with the Cameras to train and test our seven-class model - joy, anger, neutrality, sadness, surprise, fear and disgust. We have trained 25 epochs and gained almost 75% accuracy.

### 1.2 Music Recommendation

A website for songs categorized as heart rate is available on Kaggle in two different languages - Hindi. Searching for a good cloud storage platform to store, retrieve and query this track data at the request of each user. Options like AWS, Google Cloud, etc. accepted but these were rejected as they were expensive and were given limited free storage. Mp3 versions of the songs were downloaded directly from the Firebase storage and linked to the Real Time website as a heart rate and language.

## 2: Emoji Detection Module

We have given our users an additional option to use emoji to create playlists. Whenever a user is unwilling, or unable to take a snapshot of his or her situation for a variety of reasons such as high or low light, his or her camera is not working properly, they have a low-resolution camera that can take a clear picture. on their face, which you can see the right mood, for any other reason, the user can click the “Use Emoji” button and select the emoji that represents the mood they are in, or the mood they demand . their playlist to be created. Fig.1. 6 screenshot displayed to the user when he clicks the “Use Emoji” button. The first is the "happy" mood emoji, the second the "Sad" mood, the third the "Neutral" mood, the fourth the "Angry" mood, and the fifth the "Horror".

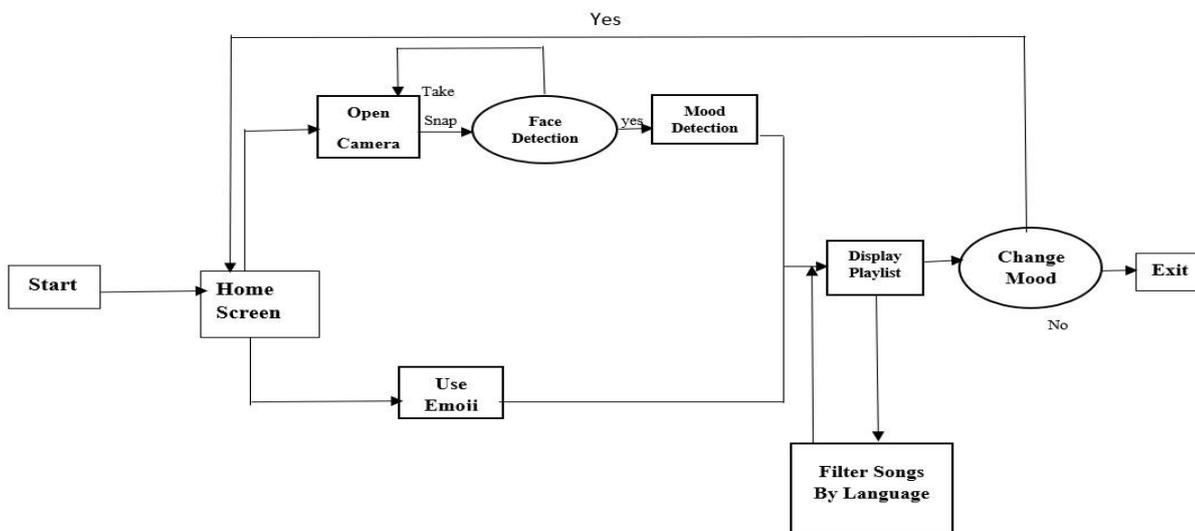


Figure 3.Flow Diagram Of Emotion Based Music Recommendation System

## VII. FUTURE ENHANCEMENT

As we know technology will be automated so this project is one of the steps towards automation. Thus, to get the most accurate results you need to be trained in a lot of photography, as well as a large number of epochs. Recommendations for movies and TV series on the basis of emotional discovery can also be considered as the future scope of our project. Nowadays people use a lot of voice help but what about discarded people who can't use Google help so like these people the app is very useful.

## VIII. Conclusion

In this project, we are attempting to assist users by recommending songs based on their moods. To automate and provide a better music player experience for the end user, the emotion-based music player is used. The program meets the basic demands of music listeners without bothering them in the way that other apps do, and it makes use of technology to expand the system's connection with the user in a variety of mode. It makes the end-job user's easier by taking a picture with a camera, assessing their mood, and offering a personalized playlist using a more advanced and interactive network .

## IX. Reference

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