



**EMOTIONAL DETECTION AND MUSIC  
RECOMMENDATION SYSTEM BASED ON USER FACIAL EXPRESSION**

A PROJECT REPORT

Submitted by

**Ms. IHSANA MOHAMMED(ASSISTANT PROFESSOR,CSE)**

**RAHINAS NV(RCE18CS042)**

**SANDRA PV(RCE18CS046)**

**SAYYID SHAFEEHULLAH THANGAL PT(RCE18CS047)**

**SHAHALA SHAMEER(RCE18CS049)**

## **ABSTRACT**

It is often confusing for a person to decide which music he/she have to listen from a massive collection of existing options. There have been several suggestion frameworks available for issues like music, dining, and shopping depending upon the mood of user. The main objective of this music recommendation system is to provide suggestions to the users that fit the user's preferences. The analysis of the facial expression/user emotion may lead to understanding the current emotional or mental state of the user. Music and videos are one region where there is a significant chance to prescribe abundant choices to clients in light of their inclinations and also recorded information. It is well known that humans make use of facial expressions to express more clearly what they want to say and the context in which they meant their words. More than 60 percent of the users believe that at a certain point of time the number of songs present in their songs library is so large that they are unable to figure out the song which they have to play. 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.

## **OBJECTIVE**

The mood of an individual person is usually recognized based on their facial expressions. With today's technologies, distinguishable features of the face can be extracted as inputs with the help of a webcam or any other external device. The gathered data helps in detecting the mood and songs are played from a personalized playlist, if available or a default playlist can be used based on the mood detected. This removes the time-consuming and tedious task of manually grouping songs into different lists and helps in generating an appropriate playlist based on an individual's emotional features. Thus, the proposed system mainly aims on detecting human emotions for developing emotion-based music player.

## **FUNCTIONAL REQUIRMENTS**

### **Hardware Requirements**

Processor : Core i3 or better

- Cache Memory : 6 MB or more
- Memory : 4 GB RAM or Above
- Hard Disk : 50 GB or above
- Display Type : SVGA Color Monitor
- Keyboard : General

## **Software requirements**

- Operating System : Windows
- Front end : Web page :HTML, CSS Mobile App:XML
- Back end : Web page :Python Mobile App : Java

## **SYSTEM MODULES**

### **Emotion Extraction Module:**

The image of the user is captured with the help of a camera/webcam. Once the picture captured, the frame of the captured image from webcam feed is converted to a grayscale image to improve the performance of the classifier, which is used to identify the face present in the picture. Once the conversion is complete, the image is sent to the classifier algorithm which, with the help of feature extraction techniques can extract the face from the frame of the web camera feed. From the extracted face, individual features are obtained and are sent to the trained network to detect the emotion expressed by the user. These images will be used to train the classifier so that when a completely new and unknown set of images is presented to the classifier, it is able to extract the position of facial landmarks from those images based on the knowledge that it had already acquired from the training set and return the coordinates of the new facial landmarks that it detected. The network is trained with the help of CK extensive data set. This is used to identify the emotion being voiced by the user.

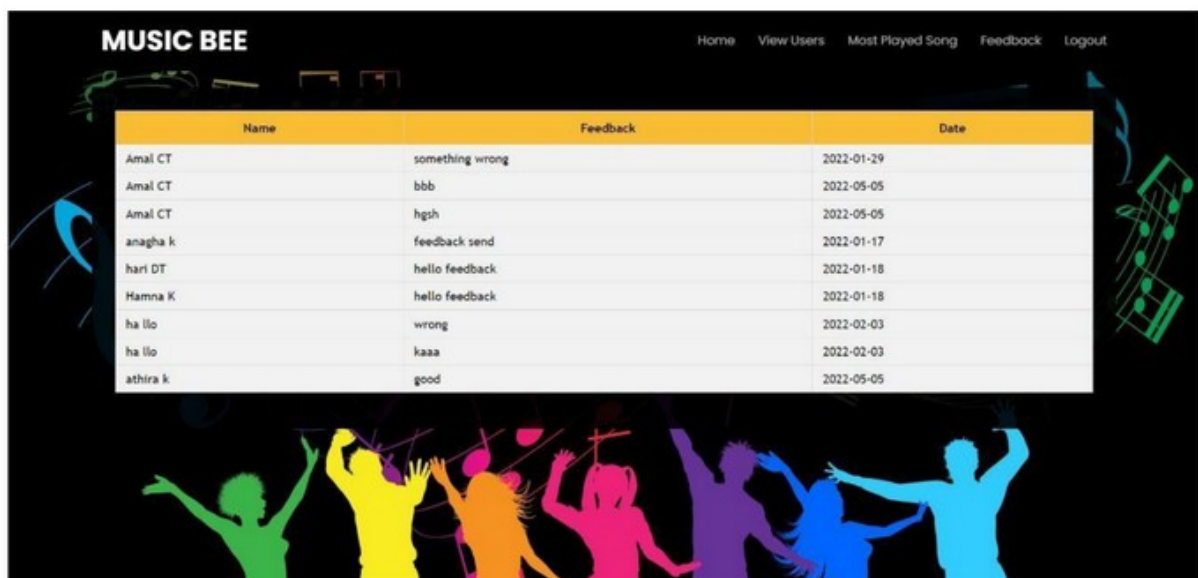
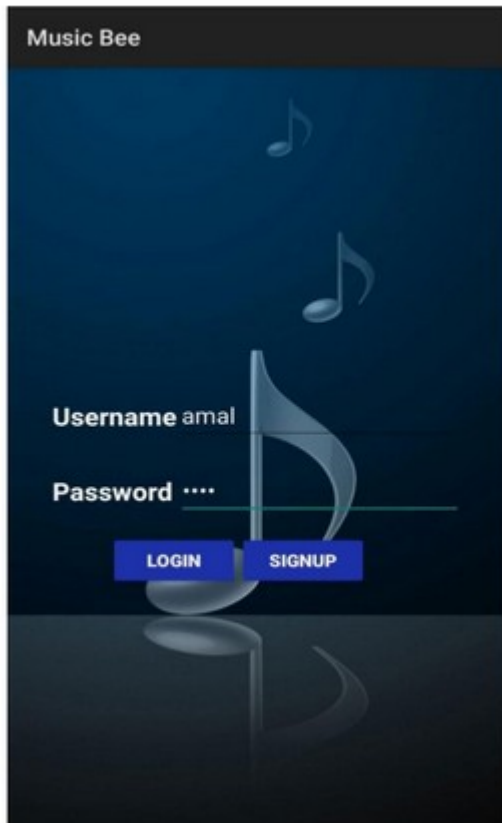
### **Audio Extraction Module:**

After the emotion of the user is extracted the music/audio based on the emotion voiced by the user is displayed to the user, a list of songs based on the emotion is displayed, and the user can listen to any song he/she would like to. Based on the regularity that the user would listen to the songs are displayed in that order. This module is developed using web technologies like PHP, MySQL, HTML, CSS, JAVASCRIPT.

### **Emotion - Audio Integration Module:**

The emotions which are extracted for the songs are stored, and the songs based on the emotion are displayed on the web page built using PHP and MySQL. For example, if the emotion or the facial feature is categorized under happy, then songs from the happy database are displayed to the user.

## RESULTS



## **CONCLUSION**

Emotion recognition using facial expressions is one of the important topics of research and has gathered much attention in the past. It can be seen that the problem of emotion recognition with the help of image processing algorithms has been increasing day by day. Researchers are continuously working on ways to resolve this by the use of different kinds of features and image processing methods. The applications of image processing algorithms in the field of both medical science and human science are of vast importance. There are continuously new ways and methods being developed that make use of image processing algorithms to extract the emotion of the user and make use of the extracted emotion to treat the user. Emotion recognition has gained a lot of importance in all aspects of life and if a robust algorithm implemented which can accurately classify the emotions of the person, then a great deal of advancement in the industry can be achieved with the help of this. The system has successfully been able to capture the emotion of a user. It has been tested in a real-time environment for this predicate. However, it has to be tested in different lighting conditions to determine the robustness of the developed system. The system has also been able to grab the new images of the user and appropriately update its classifier and training dataset. The system was designed using the facial landmarks scheme and was tested under various scenarios for the result that would be obtained. It is seen that the classifier has an accuracy of more than 80 percent for most of the test cases, which is pretty good accuracy in terms of emotion classification. It can also be seen that the classifier can accurately predict the expression of the user in a real-time scenario when tested live for a user.