



Recommendation of Music From Users Mood Using Machine Learning Model

Dr. TEGIL J JOHN¹, AYANA.N², VARSHA.P³, ARCHANA.K⁴

Assistant Professor, St Joseph's College Autonomous Devagiri¹

M.Sc.CS Students, Department Of Computer Science, St.Joseph's College Autonomous, Devagiri²⁻⁴

Abstract: The human face is a significant organ for conveying a person's mood. However, making a recommendation playlist based on the current mood by detecting the users face expression can be a work intensive and effective thing. This research is focused on detecting the facial expression using a music application and recommending songs according to that mood. Emojis is also included so that the user can choose emojis to convey their current mood. Emojis may include happy, sad, angry and neutral. Datasets of facial expressions as well as the songs can be taken for this research. The goal of this study is to identify the users mood by two methods there by giving them a better playlist of music. This study would give more accurate result compared to the previous works.

Keywords: facial expression detection, feature set, data set, music recommendation

I. INTRODUCTION

Music is defined as the specialty of organizing sound to make a mix of structure, concordance, tune, beat or generally expressive substance. Meanings of music change according to culture, however it is a part of every single human culture. Music might be performed utilizing a huge amount of instruments, including the human voice. Music truly influence well-being, learning, mental capability, personal satisfaction, and even joy.

Music listeners had higher scores for mental prosperity and somewhat decreased degrees of nervousness and wretchedness contrasted with individuals by and large [1]. Obviously, music can activate the ears and the mind with emotion and also to sync. It can prompt better learning and emphatically affects the capacity to retain. It can assist with treating psychological instability thereby bringing down tension and gloom. Music's impacts on the body particularly for the health of heart. Music therapy treatment utilizes parts of music to work on physical and emotional health.

It includes paying attention to music, moving to the beat of the music, meditation. Current research in emotion based recommender systems focuses on two main aspects, lyrics [2], [3] and audio features [4] this study is focused on audio features and map those features to the four basic moods such as happy, sad, angry and neutral.

II. ROLE OF MUSIC IN DAILY LIFE

One of the incredible advantages of music as a pressure reliever is that it can be utilized while doing the day to day activities so it truly doesn't require extra time in busy life. Music gives a brilliant setting to everyone life and can find expanded happiness. A morning wakeup with music and beginning that day feeling great. A music during cooking, eating ,sleeping or even in traffic feel them good. Music listening is independent of age, situation, mood ,time and so on. For those who are in illness or bad mood can enjoy music which can reduce their sadness. Even a blind person can feel the power of music. Mood swings are common for human beings , sometimes feel happy, sad, angry or neutral. A happy and neutral man can enjoy any kind of songs. But a man with sad mood need a soothing or positive songs, also an angry person need a calm song that have the power to reduce their pressure. So a music can change ones mood.

III. FACIAL EXPRESSION DETECTION

Facial expressions are the movement of face muscles that are used to express the emotional state of human beings. Facial expressions may reveal actual sentiments in a specific condition. While someone say they are feeling fine, sometimes the look on the face convey a different meaning. These feelings can be captured and suitable songs can be recommend for those according to their mindset.



The basic steps for facial expression detection are obtaining the facial expression images of human faces and pre-process the images. Perform expression detection and related feature extraction then classification of expression based on happy, sad, angry and neutral.

A significant step in the facial expression detection is the pre-processing of facial images. Due to the difference in the quality, size, pixel of the input image cannot be used directly so the preprocessing method minimize the rate of unwanted information as much as possible, thereby maximizing the recognition rate of expressions.[6].Feature extract and then classify using any neural network algorithm. Traditional algorithms have poor robustness and insufficient capabilities. The Convolutional neural network-based algorithms can used for efficient result.

IV. LITERATURE REVIEW

Various methodologies have been proposed for the recommendation of music from facial expression .

In the paper[8], music is recommended based on the real-time mood of the user with three modules: Emotion Module, Music Classification Module and Recommendation Module. The Emotion Module takes an image of the user's face as an input and makes use of deep learning algorithms to identify their mood with an accuracy of 90.23%. The Music Classification Module makes use of audio features to achieve a remarkable result of 97.69% while classifying songs into 4 different mood classes. The Recommendation Module suggests songs to the user by connecting their emotions to the mood type of the song.

Another research for music mood classification is using some features like pitch, tempo and rhythm to identify the emotion conveyed by the song. This method involves extracting a set of features and using those feature vectors to find patterns characteristic to a specific mood [4], [9].

In the paper[10],Fisher algorithm is used for Emotion classification. A classifier that is used to detect or obtain the facial landmarks from the face of the user is then trained on HELEN dataset.

A convolutional neural networks (CNN) based deep learning architecture is proposed in paper[11].The performance of the proposed method is evaluated using two datasets Facial emotion recognition challenge (FERC-2013) and Japanese female facial emotion (JAFFE). The accuracies achieved with proposed model are 70.14 and 98.65 percentage for FERC2013 and JAFFE datasets respectively.

In [12] music is suggesting by extracting different facial emotion of a person: Happy, anger, surprise, neutral. OpenCV library is used to detect the face in the image. Eigen faces algorithm is used to recognize the face.

According to the research [13]Hindi music mood classification has been described. MIREX (Music Information Retrieval Evaluation eXchange) mood taxonomy gave an average accuracy of 51.56% using the ten fold cross validation.

V. PROPOSED METHODOLOGY

The proposed methodology is for detecting the facial expression using a music application and recommending songs according to that mood. Emojis for happy, sad, angry and neutral. is also included so that the user can choose that option for the fast response. Sometimes the expression on their face may not be same with their mind set. Conveying their feeling from a single click is an added option. Convolutional Neural Network(CNN) can be used for the classification of both facial image and emoji as well as the music. Once the expression is detected, assign happy and rock songs for happy person ,refreshing and soothing songs for sad user, Relaxing songs for those are in angry mood and all types of Songs can be preferred for the neutral one. The user can choose their song from the recommendation playlist. This would reduce the searching time for music that matches with their current feeling by decreasing the unnecessary processing time.

A. Convolutional Neural Network

CNN is one of the Neural Network Model which is effective for both image as well as audio classification. In this study CNN model is necessary for both images and emoji classification as shown in Fig. 1. It consist of three layers they are input layer, hidden layer and output layer. We give data to this input layer. Then it goes to hidden layer. These layers compare with the related data already in the data set. Then it detect whether the input belongs to the group of happy, sad, angry and neutral emotion and gives the result in output layer.

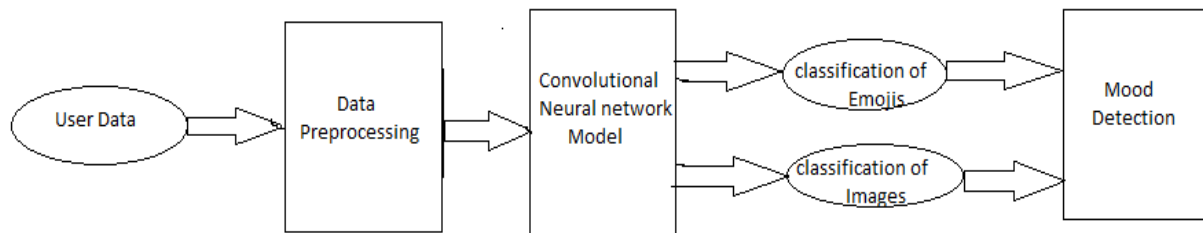


Fig 1. Work flow of model

B. Mapping of Songs With Mood

Datasets of happy, sad, angry and neutral songs can be taken and map with the user's mood. This mapping is as shown in Fig. 2. Map happy and rock songs for happy person, refreshing and soothing songs for sad user, Relaxing songs for those are in angry mood and all types of Songs can be preferred for the neutral one. After the mapping procedure is complete, a playlist of relevant songs is generated.

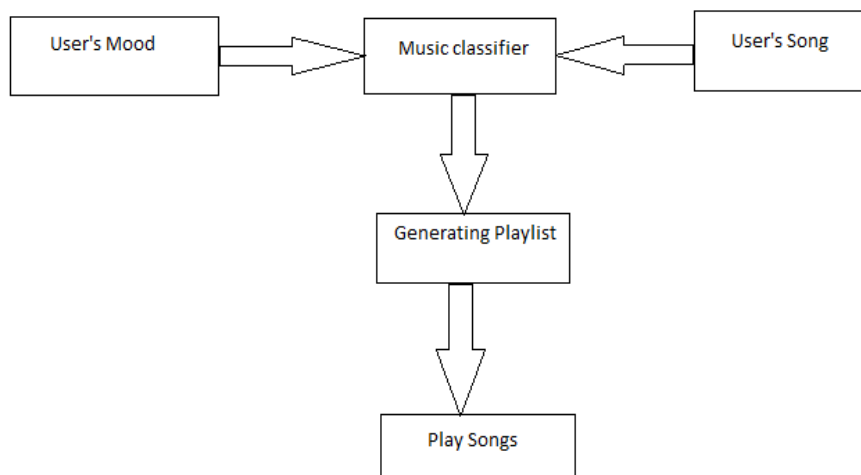


Fig. 2. Music Recommendation flowchart

VI. CONCLUSION

In this paper we discussed about the Recommendation of music from users mood. Facial images of users are captured and then classify . Sometimes processing of images takes more time . A new feature is added so that the user can convey their current feeling through a single click on the given emojis for the fast response. Four basic moods such as happy, sad, angry and neutral is taken for this study. Convolutional Neural Network(CNN) is more efficient for the classification of both user's facial images as well as emojis choose by them.

This study would give more accurate result compared to the previous works. The high accuracy and quick response time of the application should suitable for most practical purposes. This application would help the users to reduce their time for searching songs also can be used for music therapy.

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