

Emotion Based Music Player

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ABSTRACT

Emotion Based Music Player is a web application in which the human face is an important organ of an individual's body and plays an important role in extraction of an individual's behavior and emotional state. Manually segregating the list of songs and generating an appropriate playlist based on an individual's emotional feature is a very tedious. This proposed system based on the facial expression extracted will generate a playlist automatically thereby reducing the effort and time involved in rendering the process manually and also based on voice recognition and text recognition by giving interested mood as the input. Thus, the proposed system tends to reduce the computational time involved in obtaining the results and the overall cost of designed system, thereby increasing the overall accuracy of the system. If we want we can also play songs in the background. Facial expressions are captured using an inbuilt camera and are categorized into five basic types joy, anger, sad, surprise, excitement based on one of these types, songs list will be opened. Thus, it yields better accuracy in terms of performance and computational time and reduces the de signing cost.

Keywords- Convolution neural network, Long Short term memory, Emotion detection, audio classification, hidden layers, Max-pooling

I. INTRODUCTION

Music is an important entertainment medium. With advancement of technology, the optimization of manual work has gained a lot of attention. Currently, there are many traditional music players that require songs to be manually selected and organized. User, have to create and update play-list for each mood, which is time consuming. Some of the music players have advanced features like providing lyrics and recommending similar songs based on the singer or genre. Although some of these features are enjoyable for user, there is room to improve in the field of automation when it comes to music players. Selecting songs automatically and organizing these based on the user's mood gives user's a better experience. This can be accomplished through the system reacting to the user's emotion, saving time that would have been spent entering information manually.



Fig 1.1: Application overview

This application takes input from any of these features, after giving the input the emotion is recognized and we check whether the recognized emotion is in the list of emotions which we have provided or not. If the emotion gets matched then the user can listen to the songs happily.

II. LITERATURE SURVEY

In the year of 2009, Barbara Raskauskas had published an article stating the music is one of the widely accepted culture and language which can be accepted by any type of people. She mentioned that "music does fill the silence and can hide the noise. Music can convey cultural upbringing. Music is pleasurable and speaks to us, whether or not the song has words. I've never met a person who didn't like some form of music. Even a deaf friend of mine said she liked music; she could feel the vibration caused by music. Finding enjoyment in music is universal."

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III. PROPOSED SYSTEM

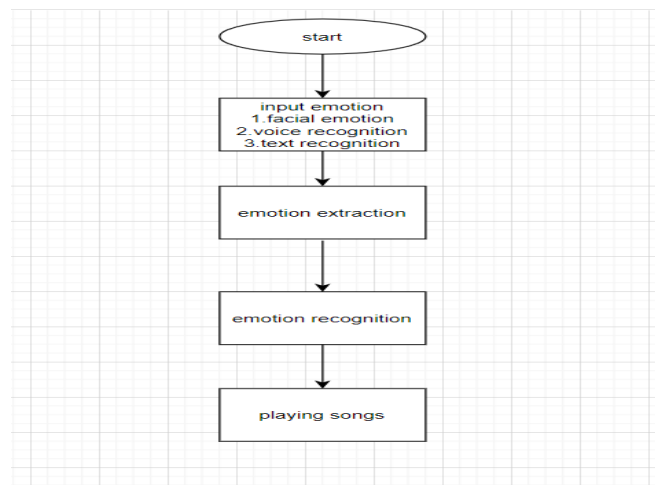


Fig: Proposed System

In this proposed system, we consider the notion of collecting human emotion from the user's expressions, and explore how this information could be used to improve the user's experience with music players. We present a new emotion based and user-interactive music system, EMOPLAY. It aims to provide user-preferred music based on emotion. EMOPLAY that learns its user's emotions through three different features, and plays songs based on user emotions through three different features, and plays songs based on user emotion. Based on user emotions, songs related to that emotion will be played.

IV. Modules

Emotion based music system provides the generation of a customized playlist in accordance to the user's emotional state. The proposed system consists of three major modules:

1. Creation of music player

We are using Android studio, it is IDE for Google Android operating system. Android studio instant Run feature pushes code and resource changes to your running app. It clearly understands the changes and often sends them without restarting the app or rebuilding APK, so you can see the effects immediately. The code editor helps to write better code, work faster and more productive by offering advance code completion, refactoring, and code analysis. As we type, android studio provides suggestions in drop list. Simply press tab to insert in the code. Fast and feature- rich emulator installs your application faster than real device and allows you to prototype and test your app on various android studio.

2. Emotion extraction module

Image of a user is captured using camera or it can be accessed from the stored image in the phone. This acquired image undergoes image enhancement in the form of tone mapping in order to restore the original contrast of the image. After image enhancement all images are converted into binary image format and the face is detected. The Convolution Neural Network is used for facial emotion detection. It consists of hidden layers (n layers depending upon the dataset). The output layer shows the approximate result. Back propagation is used for making the model error-free and producing the accurate result or match.

3. Audio feature extraction module

The songs which are stored in phone or songs which have been newly installing is need to be classified according to the mood or emotion. The lyrics of the song and also the frequency is extracted and processed to match the correct mood. It is done using LSTM (Long Short Term Memory) Neural Network. It is a Sequence Algorithm and it consists of: Input gate, Forget gate, Output gate. It has special ability to remember and forget the contents, so making the model more efficient. Large sequential data can be able to classified or predicted using LSTM.

4. Emotion-audio integration module

The captured face of the person or user is firstly detected and the result is mapped or matched with the classified songs list and then the song is played accordingly.

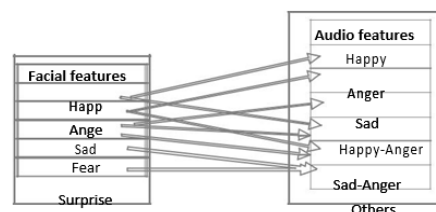


Fig: Modules

V. RESULTS

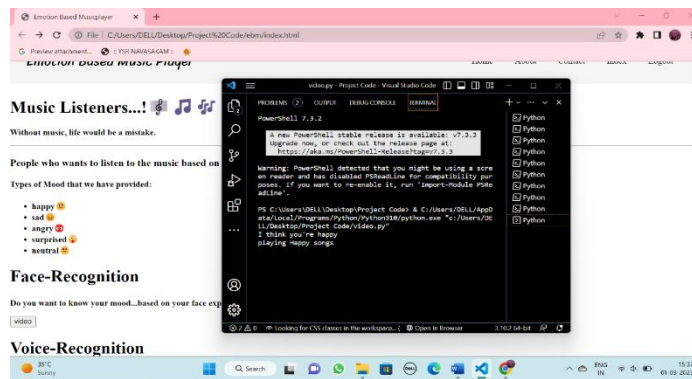
A test case is a specification of the inputs, execution conditions, testing procedure, and expected results that

define a single test to be executed to achieve a particular software testing objective, such as to exercise a particular program path or to verify compliance with a specific requirement. Test cases underlie testing that is methodical rather than haphazard. A battery of test cases can be built to produce the desired coverage of the software being tested. Formally defined test cases allow the same tests to be run repeatedly against successive versions of the software, allowing for effective and consistent regression testing. A test case is also defined as a set of conditions or variables under which a tester will determine whether a system under test satisfies requirements or works correctly. The process of developing test cases can also help find problems in the requirements or design of an application.

Face Recognition

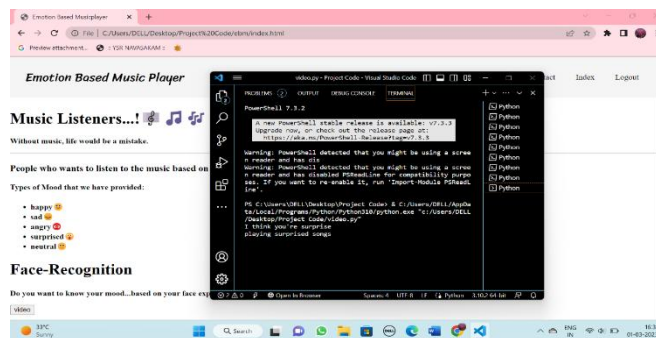
Happy:

User face will be recognized and checked for particular emotion. If happy emotion is recognized happy songs will be played



Surprised:

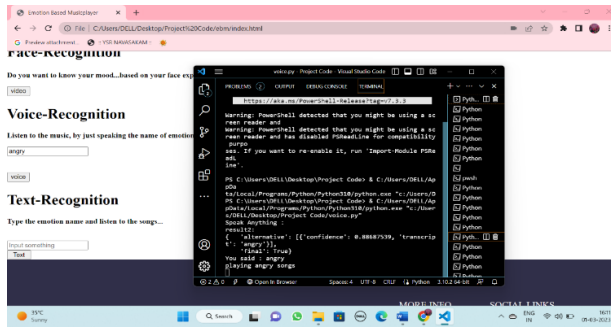
If emotion recognized is surprised play surprised songs.



Voice Recognition

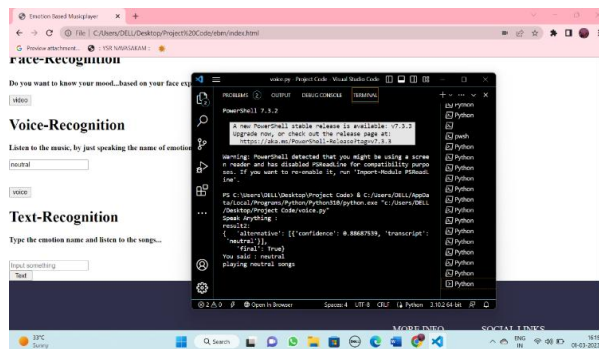
Angry:

If angry is given as input for voice recognition then angry songs will be played



Neutral:

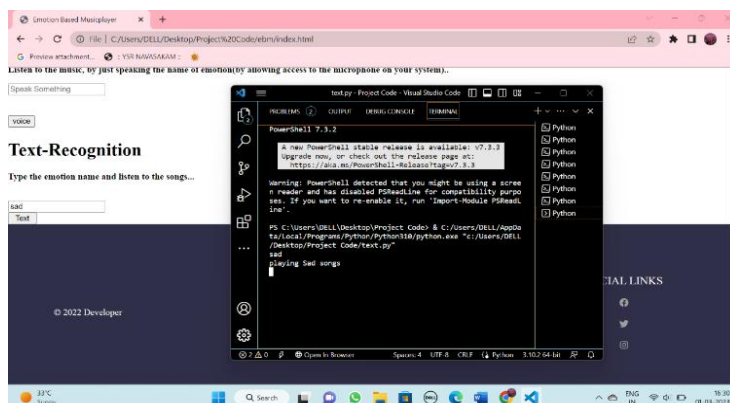
If neutral is given as input then neutral songs will be played



Text Recognition

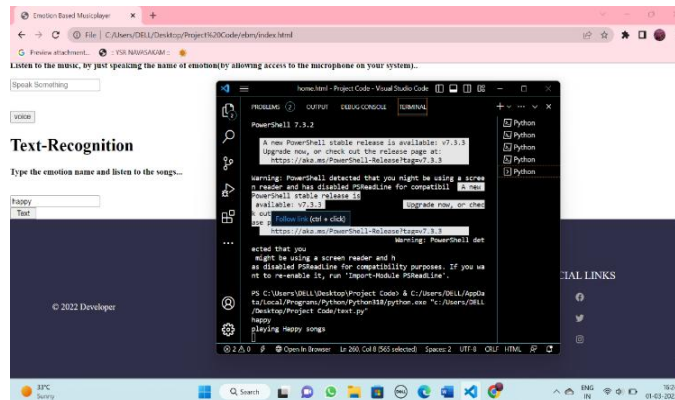
Sad:

If sad emotion is recognized then sad songs will be played.



Happy:

If happy is given as input to text box then happy songs will be played.



VI. CONCLUSION

Emotion recognition is a rising trend which helps in reducing the time involved in completing tasks. Selecting songs based on emotion is a complex task. So, this system helps the user by playing songs based on the emotion of the user. Emotion of the user can be recognized using any of the three features. Using any one of the features, user can listen to the songs based on the emotion. This project has been developed to give us great advancement in the field of machine learning technology. Emoplay fulfills to sort out the music based on the emotions of the user such as whether it is happy or sad. So, totally our work aims to develop a player which is based on user need and it helps to revive in case of free time or leisure time if we want to hear music based on our current situation.

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