Emotion-Based Music Player

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ABSTRACT-People are becoming increasingly stressed as a result of the poor economy, rising living costs, and other factors. Listening to music is an important role for reducing stress. However, if the music does not suit the situation, it may be counterproductive. Furthermore, there is no music player that can choose songs based on the user's mood. This work provides an emotion-based music player solution to this issue, a music player that may suggest songs based on the user's preferences Sad, happy, neutral, and angry emotions, The user's local music library is originally grouped depending on the emotion conveyed by the song, i.e. the song's mood. This is derived by taking the lyrics into account.as well as the melody of the tune Whenever the user desires, to make a playlist based on your mood, An image of a person's face is received by the application from a desktop camera. The classification approach is then used to determine the user's emotion. identifying the user's sentiment The user is then presented with a playlist of music that best expresses this emotion.
Keywords-Music player, Emotion, facial image

I.INTRODUCTION

Music has always played a significant role in human life, regardlessof age, place, culture, or level of musical competence, from ancient times to the present. It is reasonable to assert that, One of the most prevalent pastimes is listening to music.given that listening to music via the Internet is becoming easier and cheaper every day.that digital and streaming music has steadily supplanted traditional music. In the recorded music industrythere are a lot of physical recordings.Online music services such as Spotify[1], SoundCloud[2], and YouTube Music[3]

are garnering attention.Workouts, viewing movies, meditation, and listening to music are all effective strategies to relieve stress. According to numerous studies, music can help.people to be less stressed and more focusedUnfortunatelyIf the music does not fit you, listening to it may be counterproductive.the listener's current state of mind, As a result, music with the appropriate mood should be chosen to reduce stress.Furthermore, despite the fact that there are numerous music players available,There isn't a single application that can choose amongst options.Songs that are based on the user's mood.To address these issues, this work presents a desktop music player applicationthat suggest songs based on the user's mood. Most music lovers have large music collections that are frequently organized solely by artist, album, genre, and number of times played. However, this frequently leaves users with the difficult task of creating mood-based playlists, which entails classifying music according to the emotion given by the songs

something that is far more important to the listening experience.With larger music collections, the task becomes more complex, and automating it would save many users the time and effort of performing it manually, while also improving their overall experience and allowing them to appreciate the music more. A music player that creates a sentiment-aware playlist automatically based on the user's emotional state. The application is made to use as little system resources as possible. The user's emotion is determined by the emotion module. The music classification module extracts relevant and crucial audio information from a song. To recommend songs to the user, the recommendation module integrates the results of the emotion and music classification modules.We study methods for classifying moods using audio file attributes and suggest methodologies for this research based on machine learning classifiers.The emotional meaning of music is subjective, and as a result, it is influenced by a variety of elements such as location, tradition, and culture, although the mood category of a song fluctuatesnumber of psychological issues Listeners, collectors, and fans

of music. Music can be used by psychologists to classify people based on their moods. their music library, or to assist their clients in de-stressing.

II.RELATED WORK

The literatures of Emotion based music player in this work are as follows:

R. Thayer [1] The analysis of music utilising various DSP and music theory techniques involving rhythm, harmony, and spectral aspects will be covered in this article. Because everyone's emotional response to music is different, analysing it is unlikely to provide ideal findings. The strategy is then to choose a few foundation songs that best represent a particular mood and then match music to these categories.

M. T. Quazi [2] Emotions play an important role in people's daily lives. It's a mental condition that doesn't happen by accident and is frequently accompanied by physiological changes. As a result, monitoring these changes is critical since they are perceptions of emotional changes that can aid in spotting problems before they become serious. When it comes to human-machine interaction, emotion recognition has become a hot topic. Various approaches for detecting and evaluating human emotions have been utilized in the past. Textual information, facial expressions, conversation, body motions, and physiological indications are among the most often employed modalities.

Yading Song, Simon Dixon, Marcus Pearce [3] Because music has the ability to express and evoke emotions, a great deal of research has been done on music emotion identification. Previous studies have related musical mood to elements such as rhythm, timbre, spectrum, and lyrics. Sad music, for example, has a sluggish pace, but happy music has a rapid tempo.

Wendy E. J. Knight Nikki S. Rickard, Ph.D. [4] While soothing music reduces perceived anxiety, the effect of music on physiological stress indicators is less consistent, according to this research. The effect of soothing music on participants' subjective and physiological responses to stress was investigated in this study, with special attention made to methodological aspects and mediating variables that may have led to prior study inconsistencies.

III. PROPOSED SYSTEM

In proposed system which is able to recommend songs based on the user emotion. To classify the user emotion, the proposed application applies face image. When the application captures face image from a camera, it analyses what the user emotion is. The system then proposes music with moods that are similar to the user's emotion.User can change the songs by giving the voice input to the system.“emotion based music player”, this application generates playlist and play music as per emotion.the support vector machine (SVM) algorithm. The music player system provides a text box for the user to input text for emotion extraction from text.The technique of mood boosting is used to improve one's mood. Motivational songs are used in mood boosting techniques to shift a person's feeling/mood from sad/bored to joyous.The usage of motivational music to modify mood is based on songs that have been mapped to elevate the mood. Here, 4 emotions: Happy, sad, angry, neutral are used. we are using Deep CNN to detect the emotion of the person.
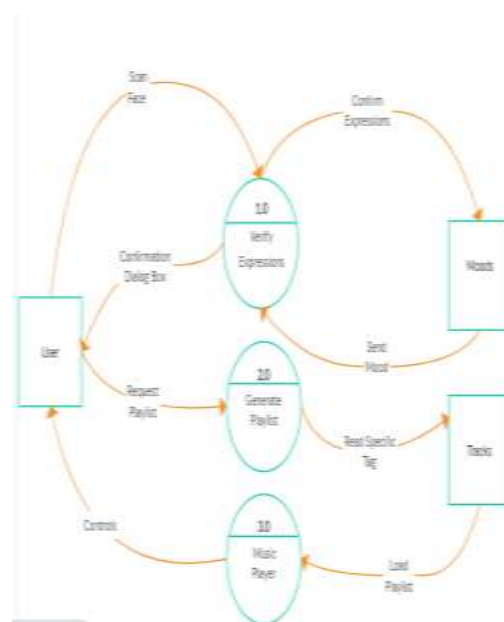

Figure 1.Emotion based music player data flow

IV. SYSTEM REQIREMENTS

Languages Used for Implementation
- Python 3.6
- HTML
- Javascript

Platforms Used for Implementation

1.Anaconda: Anaconda is a Python and R programming language distribution aimed for simplifying package management and deployment in scientific computing (data science, machine learning applications, large-scale data processing, predictive analytics, and so on).

2.Opencv: The Open Source Computer Vision Library is a free and open source software library

for computer vision and machine learning. OpenCV was created to serve as a foundation for computer vision applications.

3.Keras:is an open-source software library for artificial neural networks that includes a Python interface. Keras serves as a user interface for TensorFlow.

4.Tensorflow: Tensorflow is a machine learning software library that is free and open-source. It can be used for a variety of applications, but it focuses on deep neural network training and inference. Tensorflow is a dataflow and differentiable programming-based symbolic math toolkit.

V. SYSTEM DESIGN AND ARCHITECTURE

The following modules are included in the system:

1.Face Detection:Face detection technique's major goal is to reduce external noise and other elements in order to identify the face in the frame. The steps in the Face Detection Process are image pyramid Histogram of Oriented Gradients, Linear Classifier.The acquired data is picture pyramided into several scales and decomposed into the sampling image. The goal of this method is to extract features while decreasing noise and other variables. The low pass image pyramid technique (also known as Gaussian pyramid) involves smoothing and subsampling the frame by lowering the resolution.The process must be repeated several times to achieve a flawless result, with the ultimate result being a frame that is comparable to the original but with a lower resolution and a higher smoothing level.

2.Training Model:We utilize max-pooling as our pooling strategy.The max-pooling is done in three dimensions to accommodate video data.The model is built on two CNNs, one for extracting hand features and the other for extracting upper body data. There are three layers in each CNN.In the first two layers, local contrast normalization (LCN) is used, and all artificial neurons are rectified linear units (ReLUs).We provide training for the collected data by using CNN.

3.Emotion Classification: Once the face has been detected, a bounding box will be placed to the image as an overlay to extract the ROI (facial) for further analysis.The "Predictor" function, which is also a named script, will be used to extract the 68 facial landmark points and save them in an array from the extracted ROI.The data from the features array will be sent into a PCA reduction procedure, which will shrink the data and remove any associatedcoordinates, leaving only the essential points as principle components.The data is a 68x2 array containing 68 points, each with x- and y-axis

coordinates. The array will be transformed into a vector with 136 columns and 1 row.With a set of photos and landmark maps for each image, the face landmark extraction code "Predictor" is trained.

4.Music Recommendation:The input is gathered in real time, therefore the camera is utilized to capture the video, followed by the framing.The framed photos are processed using the hidden markovmodel classification. For the aim of emotion classification, the frames obtained are examined in all frames and pixel formats.The value of each facial landmark is calculated and saved for later use. The classifier's efficiency is around 90-95 percent. so that the system can still detect the face and the emotion being portrayed even if the face changes due to external circumstances.The emotions are then identified using the values that have been specified, and the value of the pixel that has been received is compared to the values that have been established as the code's threshold.The data is forwarded to the web service.. The song is played in response to the emotion that has been detected.
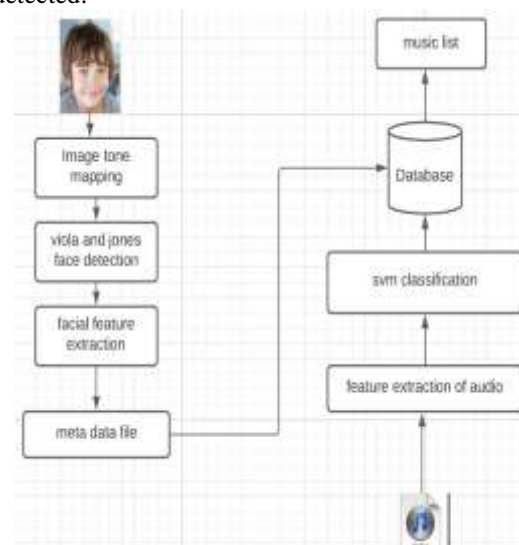

Figure 2.Emotion based music player design

Implemented system is a desktop application. This application requires hardware, camera. The application is able to analyze the users' emotions from their facial images by using the face detection method. Following the classification of the user's emotion, the algorithm will use that emotion to match and recommend music with the appropriate mood.Then, it will generate an emotion-based playlist and pickup the songs from a firebase database. Currently, there are 200 songs in the database. They are grouped into different emotion types by the system admin. The songs are suggested based on a user'spreference;

either positive or negative. For Example, if a user's current emotion is sad and his preference is set to positive, theapplication will suggest a happy song which contains a cheer up song element. On the other hands, if a user's preference is set to negative, a song in a sad mood will be suggested, and that song may be a heavy or pop song. The system also takes the voice input if the user wants to change the songs, He can speak and give the instructions. The system plays the songs as per the instructions. For example If the user wants to change the song he can give voice note like next or change.

VI. CONCLUSION AND FUTURE ENHANCEMENT

This work proposes a desktop application that implements an emotion-based music player. The app's goal is to recommend songs based on the users' preferences.The user's facial images are evaluated to classify the emotion.The application then proposes appropriate tracks based on the user's emotion and preference mode. The positive mode is selected by the user.The application will suggest tunes that are upbeat. Our spirits will be lifted as a result of this, and our days will be filled with joy.

We would like to use the user's social media data to automatically extract the user's current emotion.We will consider data from other sources such as YouTube, Facebook, Twitter, and others to gain a better picture of the user's preferences.

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