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HUMAN CONCERN ALLEVIATION SYSTEM

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ABSTRACT

Human concern alleviation system is a recommendation system that is capable of predicting the preferences of a user. In day-to-day life, people are facing many challenges in their life and undergoing stress in their day-to-day life. Recent studies prove that people used to listen to music to overcome emotional circumstances in their life. Music heals stress and provides a soulful vibe. Here a system is proposed for analyzing the human sentiments based on their facial expression and recommended songs. The existing systems are based on text and voice inputs. The objective of the system is to extract the human sentiments through their facial expression and suggest songs according to their facial expressions, if the user accepts the song then the system plays the song. It is suspected that this system will be useful for human concern alleviation.

Keywords: Song dataset, OpenCV, Face Expression Analysis.

1. INTRODUCTION

With the introduction of music apps like Spotify, Ganna, Wynk Music and Jio Saavn, the world of music is spinning faster than ever before.In the fast-growing world, People don't have the time or patience to listen and to enjoy the new songs, so having a system to recommend songs to them is incredibly useful. Every individual has a suitable manner of alleviating their stress in today's tough environment. There are numerous stress-relieving strategies accessible. Music plays an essential impact in reducing stress and improving emotional state. People's state of mind is expressed by their facial expressions, which reveal their feelings. Our technology attempts to propose songs based on the user's facial expressions. People do not have time to look for tunes in their restless lifestyle. So here we have a recommendation system that will assist the user in overcoming their tension while also saving time. The software takes the user's image and then extracts information from the target user's face using image segmentation and image processing techniques in order to discern the emotion that the person is attempting to express. The song will then be played in accordance with the emotion captured.

2. PROBLEM STATEMENT

In the day to day fast moving life with a lot of stressful environment in external life and working place and there is a truancy for an appropriate relaxation time for all working professionals. To keep a person stress free in both physically and mentally songs plays a major role. There are various technical and non-technical stress releasing songs which can help the human being to chill out and also reduces their stress.

Music skillfully plays with our emotions which interns influence our mood. Most of the existing approaches involve playing music manually using a classification based on audio files where the user has to select the songs from the bucket list. This system proposes to change the manual sorting and playing.

3. RELATED WORK

Music recommendation systems have existed for a long time, albeit their capabilities were restricted by the technology available at the time. The individual merits of each existing filtering system are separately highlighted in a music recommendation system based on both content-based and collaborative filtering algorithms which allow the user to properly choose their playlist depending on the available data.

A music recommendation system is one that helps to suggest songs according to the previous listening experiences of the user.

The speech and lyric-based Doc2Vec Music recommendation system provides a foundation for a speech and lyric-based music recommendation system in which the user can speak out a song and receive comparable songs based on the lyrics. When there is minimal user input, a lyric-based system for locating related music and it is the way to go and it is possible by content-based recommendation system with Doc2Vec embedding Context-Based Social Music Recommendation Service: LogMusic- This study proposes a music recommendation system based on the assumption that the user's contextual elements, such as weather, temperature, time and location, have a major impact on his or her music choices.

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4. EXISTING SYSTEM

There are many kinds of music streaming systems across the world. Although the majority of the existing system is based on manual selection of songs or playlists. The user has to do tasks manually by browsing the playlist or song according to their current mood and behavior. Another streaming system has voice recognition to play music on their system. Some of the existing systems are Gaana, Spotify and Jio saavn.

5. PROPOSED SYSTEM

Proposed System : facial landmarks, which would then be classified to get a particular emotion of the user. Once the expression of the user has been classified, the songs matching the user's emotions would be shown to the user. The proposed system is to enhance the user's emotions. This system is better than a static recommendation system as it will suggest music according to the facial expression to help users to improve their state of mind.

6. FEASIBILITY STUDY

The proposed system can detect the facial expressions of the user based on their facial expressions and extract the facial expressions As stated , the focus of the system will be entirely on the detection of facial expressions and integration into the music player. As a prototype, the proposed model will detect only the basic emotions. To understand the scope of the project in-depth, massive research needs to be done in order to figure out the current Algorithm and their challenges in facial expression detection and song recommendation.

7. MODULES AND METHODOLOGIES

AUTHENTICATION MODULE- Considering the privacy and the security of the user, unique identification will be provided. The user can log in at any time using their unique ID and can access the song recommendation system. This module is introduced for the safety consideration of the users.

EMOTION DETECTION MODULE - The image of the user is captured with the help of a webcam. Once the image is captured, the frame of the captured image from the webcam is converted into a grayscale image to improve the performance of the classifier, which is used to identify the facial features in the image. Once the conversion is completed, the image is sent to the classifier algorithm which, with the help of feature extraction techniques can extract the facial features from the frame of the web camera feed. From the extracted face, facial features are obtained and the features are sent to the trained network to detect the expression of 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 can extract the position of facial landmarks from those images and detect the facial expression by training dataset. The network is trained with the help of CK's extensive data set. This is used to identify the emotion being expressed by the user.

MUSIC RECOMMENDATION MODULE - Once the emotion detected is properly, the playlist of songs will be generated. The user can enjoy the songs and they can save their time by manually searching for songs.

EMOTION-MUSIC INTEGRATION MODULE - The emotions which are extracted for the songs are stored and the songs based on the emotion are displayed to the user. For example, if the facial expression is categorized under sad, then sad song collection is displayed to the user.

METHODOLOGIES - OpenCV is a library of python mainly aimed at real-time capturing of images.

LIBRARIES USED:

DEEP FACE - is a lightweight face recognition and facial attribute analysis framework of python Language. fial attribute analysis means analyzing the age, gender, emotion and race of a person through their facial attributes.

CV2 - OpenCV has a function to read video through webcam , the video accessed through cv2. VideoCapture() method. Which is used to lively capture images of users.

TKINTER - it is Python's standard GUI package.it is used to provide a better graphical user interface to the user,by using the package we can handle labels, buttons, images, color for our window.

PLAYSOUND - The play sound module is a cross-platform module that can help to handle audio files. By using this module we can directly handle audio files without any external interfaces.

PIL - PIL is an abbreviation of Python Imaging Library and it adds image processing to Python, By using this library we can effectively handle the images for designing the user interface .

OS - The OS module in Python provides functions for creating and removing a directory or folder, fetching the contents of the folders or changing and identifying the current of the folder, etc.

8. SYSTEM ARCHITECTURE

The proposed system is used to detect the facial expressions of the user and then based on their facial expressions the system extracts their facial landmarks, which would then be classified to get a particular emotion of the user based on

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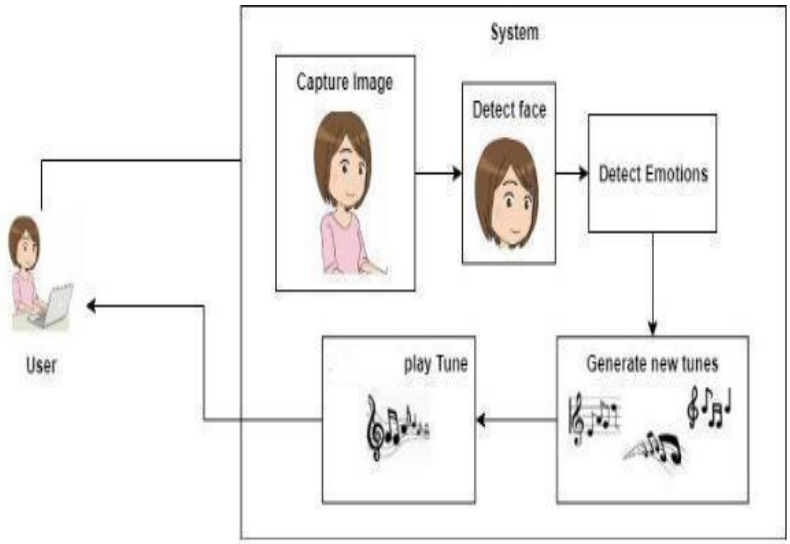
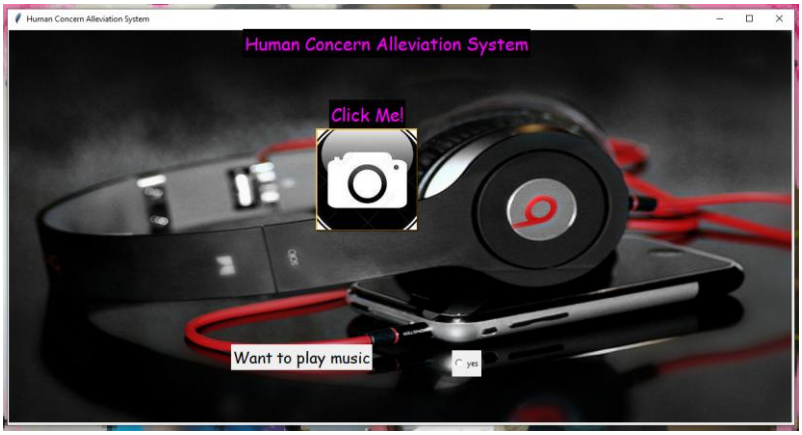
their expression. Once the emotion of the user has been classified then the matching song of the user's emotions would be shown to the user.



9. RESULTS AND ANALYSIS

This proposed system is a music recommendation system which captures the image of the user.The image is captured with the help of a camera attached to the computing platform. Once the image has been captured, the captured frame of the image from the webcam is then converted to a grayscale image to improve the performance of the classifier that is used to identify the face features in the image. Once the conversion is complete, the image is sent to the classifier algorithm which, with the help of feature extraction techniques, is able to extract the face of the user from the frame of the web camera. The overall idea behind making the system is to enhance the experience of the user and ultimately relieve some stress or lighten the mood of the user and create a funful experience. The user does not have to waste any time in searching for a song or to look up random songs and the best track matching the user's emotion is detected and played automatically by the music player. The image of the user is captured with the help of a webcam in a system. The image of a user is taken and then as per the expression of the user an appropriate song from the playlist of the music player is played to the user.



The system has successfully been able to capture the expression of a user. It has been tested in a real time environment for this predicate. It has to be, however, tested in different lighting conditions to determine the effectiveness of the developed system. The system was designed to classify the user emotion using the facial landmarks and is tested under various scenarios for the result that would be obtained. It is seen that the system has an accuracy of more than 75 percent for most of the test cases, which is pretty good accuracy in terms of facial expression 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.

10. CONCLUSION

Emotion recognition of a user by using their facial expressions is one of the most important topics of research and it 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 new ways and methods being developed to make use of image processing technology. The algorithms to extract the expression of the user and make use of the extracted emotion to treat the user. Emotion recognition or facial expression detection has gained a lot of importance in all aspects of day to day life and if a robust algorithm implemented with 100% of accuracy that detect emotions of the person, then it would be a great deal of advancement in many industry in the world and it can be solve many problems with the help of this system.

11. FUTURE SCOPE

A simple idea of the system is to recommend music to the users based on their facial expressions. It suggests songs to the user by extracting their facial expressions. There is a degree for further upgrades and enhancements to the system. Progressively effective approaches to incorporate different highlights and functionalities should, in any case, be investigated due to the lopsided nature of each element set. It is additionally seen that to improve the arrangement of the frameworks and the informational collection used to construct the grouping model could be modified or expanded further.

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