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FACE EMOTION BASED MUSIC DETECTION SYSTEM

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Abstract: - A novel approach that provides, the user with an automatically generated playlist of songs based on the mood of the user. Music plays a very important role in human's daily life and in the modern advanced technologies. The difficulties in the creation of large playlists can overcome here. This Music player itself selects songs according to the current mood of the user. An automatic Facial Expression Recognition system needs to solve the following problems: detection and location of faces in a cluttered scene, facial feature extraction, and facial expression classification. Then, the application returns songs which have the same mood as the user's emotion. The experimental results show that the proposed approach is able to precisely classify the happy emotion.

Keywords: - *Audio Emotion Recognition, Music Information Retrieval, Extraction Module, Audio Feature Extraction Module, CNN, Confusion Matrix, Cluster Music.*

I. INTRODUCTION

From others this plays a novel approach that removes the risk that the user has to face the task of manually browsing here an efficient and accurate algorithm that would generate a playlist based on current emotional state and behaviour of the user. The introduction of Emotion Recognition and Music Information Retrieval in the traditional music players provided automatically parsing the playlist based on various classes of emotions and moods. Facial expression is the most ancient and natural way of expressing feelings, emotions and mood and its algorithm requires less computational, time, and cost.

1.1 Motivation

Our motivation in this work is to use emotion recognition techniques with wearable computing devices to generate additional inputs for music recommended system's algorithm, and to enhance the accuracy of the resulting music recommendations. In our previous works, we have studied emotion recognition from only GSR signals. In this study we are enriching signals with PPG and propose a data fusion based emotion recognition method for music recommendation engines The proposed wearable attached music recommendation framework utilizes not only the user's demographics but also his/her emotion state at the time of recommendation. Using GSR and PPG signals we have obtained promising results for emotion prediction.

1.2 Objectives and goals

1. To implement Convolution Neural Networks for classification of facial expressions.
2. User facial expression based recommended music player.
3. This system based on extraction of facial expressions that will generate a playlist automatically thereby reducing the effort and time.

II RELATED WORK AND LITERATURE SURVEY

"Emotion Based Music Player"

Nowadays, people tend to increasingly have more stress because of the bad economy, high living expenses, etc. Listening to music is a key activity that assists to reduce stress. However, it may be unhelpful if the music does not suit the current emotion of the listener. Moreover, there is no music player which is

able to select songs based on the user emotion. To solve this problem, this paper proposes an emotion-based music player, which is able to suggest songs based on the user's emotions; sad, happy, neutral and angry.. An Intelligent Music Player based on Emotion Recognition This paper proposes an intelligent agent that sorts a music collection based on the emotions conveyed by each song, and then suggests an appropriate playlist to the user based on his/her current mood. The user's local music collection is initially clustered based on the emotion the song conveys, i.e. the mood of the song. This is calculated taking into consideration the lyrics of the song, as well as the melody. Every time the user wishes to generate a mood-based playlist.

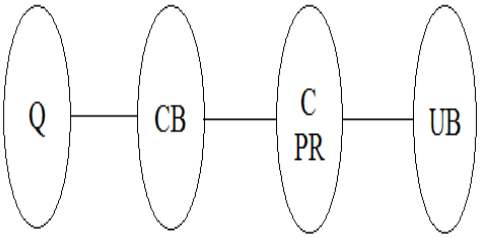
"Emotion Based Music System"

The human face is an important organ of an individual's body and it especially plays an important role in extraction of an individual's behaviour and emotional state. Manually segregating the list of songs and generating an appropriate system based on an individual's emotional features is a very tedious, time consuming, labour intensive and upheld task. Various algorithms have been proposed and developed for automating the system generation process. However the proposed existing algorithms in use are computationally slow, less accurate and sometimes even require use of additional hardware like sensors. This proposed system based on facial expression extracted will generate a system automatically thereby reducing the effort and time involved in rendering the process manually.

"Emotion Based Music Player – Xbeats"

This paper showcases the development of an Android platform based application named X Beats which acts as a Music Player working on Image Processing fundamentals to capture, analyse and present music as per the emotion or mood of the user using this application. The Android application was developed using the Android SDK software and Open CV software was used to implement facial recognition algorithms and cascades. Emotion Based Music Recommendation System Using Wearable Physiological Sensors Most of the existing music recommendation systems use collaborative or content based recommendation engines. However, the music choice of a user is not only dependent to the historical preferences or music contents. But also dependent to the mood of that user. This paper proposes an emotion based music recommendation framework that learns the emotion of a user from the signals obtained via wearable physiological sensors. In particular, the emotion of a user is classified by a wearable computing device which is integrated with a galvanic skin response (GSR) and photo plethysmography (PPG) physiological sensors. This emotion information is feed to any collaborative or content based recommendation engine as a supplementary data.

III MATHEMATICAL MODULE



Where,

Q = User entered input
CB = Check face
C = face emotion detect
PR = Recommend
UB = Recommend music

Set Theory

1) Let S be as system which input image

S = {In, P, Op,Φ}

2) Identify Input In as

In = {Q}

Where,

Q = User entered input image (dataset)

3) Identify Process P as

P = {CB, C, PR}

Where,

CB = System check face

C = face emotion detect

PR = Pre-process request

4) Identify Output Op as

Op = {UB}

Where,

UB = Update Result

Φ=Failures and Success conditions.

Failures:

1. Huge database can lead to more time consumption to get the information.
2. Hardware failure.
3. Software failure.

Success:

1. Search the required information from available in Datasets.
2. User gets result very fast according to their needs.

Space Complexity:

The space complexity depends on Presentation and visualization of discovered patterns. More the storage of data more is the space complexity.

Time Complexity:

Check No. of patterns available in the datasets= n

If (n>1) then retrieving of information can be time consuming. So the time complexity of this algorithm is O(n^n).

IV EXISTING SYSTEMS AND DISADVANTAGES

In this paper, we shed light on the utilization of a deep convolution neural network (DCNN) for facial emotion recognition from using the Tensor Flow machine-learning library In existing system there is no computerized system to detect face emotion

Disadvantages:

1. There is no guarantee that the detection result is correct. Mostly.
2. Time consuming process.

V ADVANCED SYSTEMS AND ADVANTAGES

In this study, geometric information is used to reduce the search regions for the facial component from the detected face In order. The existing scheme cannot work reasonably balance privacy and data utility. Existing systems are very complex in terms of time and memory requirements for extracting facial features in real time. Some existing systems tend to employ the use of human speech or sometimes even the use of additional hardware for generation of an automated playlist, thereby increasing the total cost incurred.

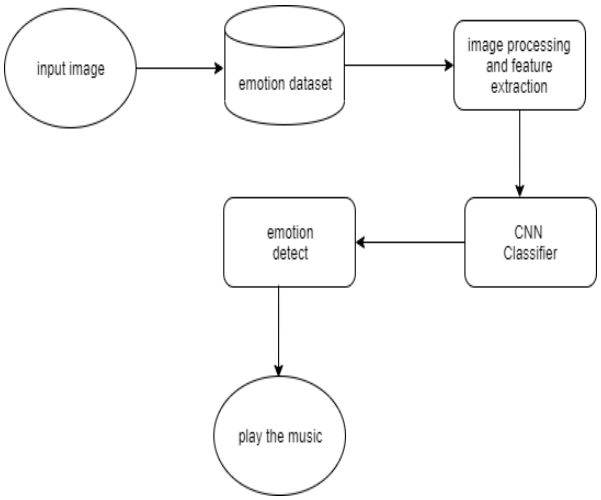


Figure 1: Advance System Architecture

Advantages:

1. Extremely fast feature computation.
2. Efficient feature selection.
3. Instead of scaling the image itself (e.g. pyramid-filters), we-scale the features.

VI CONCLUSION

In this paper, we proposed an algorithm for web cam based emotion recognition with no manual design of features using a CNN.

Future Scope:

Future work should attempt to combine our technique with other modalities such as audio modality, including working with other data sets.

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