FACE EMOTION BASED MUSIC PLAYER SYSTEM

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Abstract: Songs, as a medium of expression, have always been a popular choice to depict and understand human emotions. Reliable emotion based classification systems can go a long way in helping us parse their meaning. However, research in the field of emotion-based music classification has not yielded optimal results. In this paper, we present an affective cross-platform music player, EMP, which recommends music based on the real-time mood of the user. EMP provides smart mood based music recommendation by incorporating the capabilities of emotion context reasoning within our adaptive music recommendation system. Our music player contains three modules: Emotion Module, Random music player Module and queue based Module. The Emotion Module takes an image of the user's face as an input and makes use of CNN algorithm to identify their mood with an accuracy more than 85%. The Music Classification Module makes use of audio features to achieve a remarkable result and while classifying songs into 4 different mood classes. The Recommendation Module suggests songs to the user by mapping their emotions to the mood type of the song, taking into consideration the preferences of the user.

Index Terms – **Human Emotion, Deep Learning Technology.**

I. INTRODUCTION

Current research in emotion based recommender systems focuses on two main aspects, lyrics, and audio features. Acknowledging the language barrier, we focus our efforts on audio feature extraction and analysis of modern American and British English songs in order to map those features to four basic moods. Automatic music classification using some mood categories yields promising results. Facial expressions are the most ancient and natural way of conveying emotions, moods and feelings. For the purpose of this paper, we categorize facial expressions into 4 different emotional categories, viz. happy, sad, angry and neutral.

The main objective of this paper is to design a cost-effective music player which automatically generates a sentiment aware playlist based on the emotional state of the user. The application is designed to consume minimal system resources. The emotion module determines the emotion of the user. Relevant and critical audio information from a song is extracted by the music classification module. The recommendation module combines the results of the emotion module and the music classification module to recommend songs to the user. This system provides significantly better accuracy and performance than existing systems.

II. LITERATURE SURVEY

[1] In this paper ,Authors states that ,Music plays a really important role in human's lifestyle and within the modern advanced technologies. Usually, the user has got to face the task of manually browsing through the playlist of songs to pick . Here we are proposing an efficient and accurate model, that might generate a playlist supported current spirit and behavior of the user. Existing methods for automating the playlist generation process are computationally slow, less accurate and sometimes even require use of additional hardware like EEG or sensors. Speech is that the most ancient and natural way of expressing feelings, emotions and mood and its and its processing requires high computational, time, and cost. This system supported real-time extraction of facial expressions also as extracting audio features from songs to classify into a selected emotion which will generate a playlist automatically such the computation cost is comparatively low.

[2] This paper proposes an intelligent agent that sorts a music collection supported the emotions conveyed by each song then suggests an appropriate playlist to the user supported his/her current mood. The user's local music collection is initially clustered supported the emotion the song conveys, i.e. the mood of the song. This is often calculated taking into consideration the lyrics of the song, also because the melody. Whenever the user wishes to get a mood-based playlist, the user takes an image of themselves at that instant. This image is subjected to facial detection and emotion recognition techniques, recognizing the emotion of the user. The music that best matches this emotion is then recommended to the user as a playlist

[3] In this paper , Authors states that , Nowadays, people tend to increasingly have more stress due to the bad economy, high living expenses, etc. taking note of music may be a key activity that assists to scale back stress. However, it's going to be unhelpful if the music doesn't suit the present emotion of the listener. Moreover, there's no music player which is in a position to pick songs supported the user emotion. To unravel this problem, this paper proposes an emotion-based music player, which is in a position to suggest songs supported the user's emotions; sad, happy, neutral and angry. The appliance receives either the user's pulse or facial image from a sensible band or mobile camera. It then uses the classification method to spot the user's emotion. This paper presents 2 sorts of the classification method; the guts rate-based and therefore the facial image-based methods. Then, the appliance returns songs which have an equivalent mood because the user's emotion. The experimental results show that the proposed approach is in a position to exactly classify the happy emotion because the guts rate range of this emotion is wide.

[4] Authors says that, Digital audio is straightforward to record, play, process, and manage. Its ubiquity means devices for handling it are cheap, letting more people record and play music and speech. Additionally , the web has improved access to recorded audio. So, the quantity of recorded music that folks own has rapidly increased. Most current audio players compress audio files and store them in internal memory. Because storage costs have consistently declined, the quantity of music which will be stored has rapidly increased. A player with 16 Gbytes of memory can hold approximately 3,200 songs if each song is stored in compressed format and occupies 5Mbytes. Effectively organizing such large volumes of music is difficult. People often listen repeatedly to a little number of favorite songs, while others remain unjustifiably neglected. We've developed Affection, an efficient system for managing music collections. Affection groups pieces of music that convey similar emotions and labels each group with a corresponding icon. These icons let listeners easily select music consistent with its emotional.

[5] In this paper, a sensible music system is meant by recognizing the emotion using voice speech signal as an input. The target of the speech emotion recognition (SER) system is to work out the state of emotion of a person's being's voice. This study recognizes five emotions-anger, anxiety, boredom, happiness and sadness. The important aspects in implementing this SER system includes the speech processing using the Berlin emotional database, then extracting suitable features and selecting appropriate pattern recognition or classifier methods to spot the emotional states. Once the emotion of the speech is recognized, the system platform automatically selects a bit of music as a cheer up strategy from the database of song playlist stored. The analysis results show that this SER system implemented over five emotions provides successful emotional classification performance of 76.31% using GMM model and an overall better accuracy of 81.57% with SVM model.
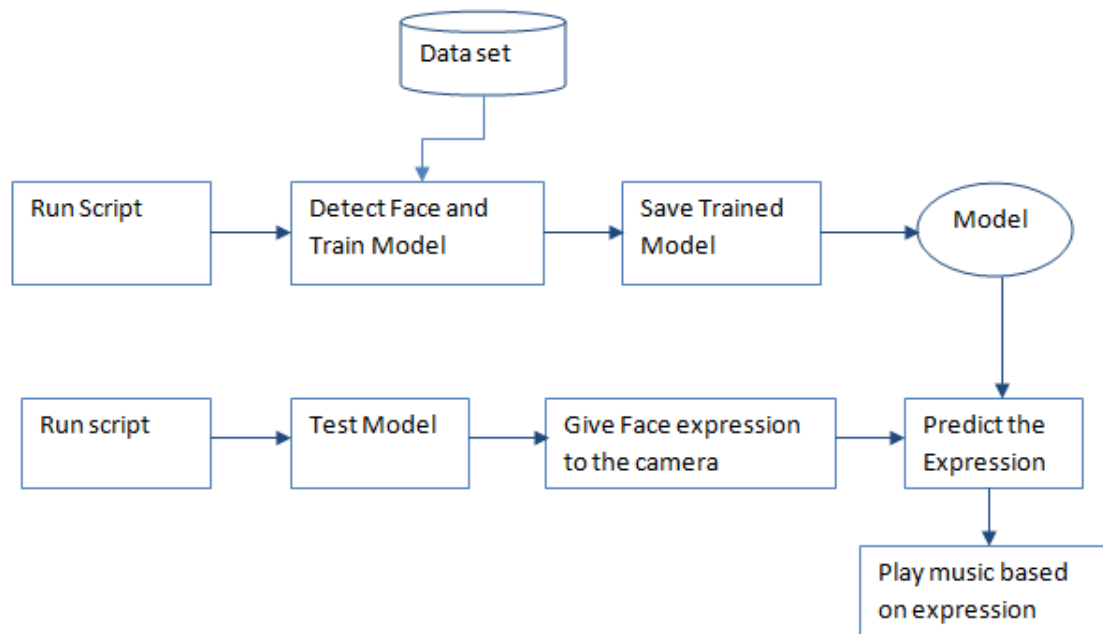
III. PROPOSED METHODOLOGY

Fig. 1.System Architecture

3.1 Modules

1. DATA COLLECTION MODULE

2. TRAINING MODULE,

3. EMOTION CLASSIFICATION MODULE.

MUSIC PLAYER:

1. PLAY BY QUEUE,

2. PLAY BY RANDOM SELECTION AND

3. PLAY BY FACE EMOTION BASED.

3.2 CNN Algorithm

A CONVOLUTIONAL NEURAL NETWORK (CNN) IS A CLASS OF DEEP NEURAL NETWORKS, MOST COMMONLY APPLIED TO ANALYZING VISUAL IMAGERY. CNNS USE RELATIVELY LITTLE PRE-PROCESSING COMPARED TO OTHER IMAGE CLASSIFICATION ALGORITHMS.

IV. CONCLUSION

In this project, we try to explore a novel way of classifying music based on human emotions/expressions. Thus a neural network based solution combined with image processing was proposed to classify the four universal emotion basic music: Happiness, Sadness, Anger, and neutral. Initially a face detection step is performed on the input image. Afterwards an image processing based feature point extraction method is used to extract the feature points. Finally, a set of values obtained from processing the extracted feature points are given as input to a neural network to recognize the emotion contained. The project is still continuing and is expected to produce successful outcomes in the area of emotion recognition and play the music from the dataset provided.

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