Music Recommendation based on Facial Expression using Deep Learning

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Abstract— Music is a fantastic way for people to express themselves as well as a good source of enjoyment for music fans and listeners. Furthermore, relaxing music is an effective technique for evoking strong emotions and sending a quiet message. With technological advancements, the number of artists, their music, and music listeners is growing, which brings up the issue of manually exploring and picking music. This study offers a system that uses facial expressions at real time of a user to assess the user's mood (Emotion detection Model), output of which is then combined with mapped music from the music dataset to create a user-specific music playlist (music recommendation model).Convolutional neural network is used to classify the users emotions in 7 different categories with an accuracy rate of 94 percent, thus satisfying the actual aim of the study.

Keywords—Convolutional Neural Network, Fisherface ReLu, Softmax, HAAR Cascade Classifier, Dropout, Dense layer, Overfitting, tkinter.

I. INTRODUCTION

As quoted by Ray Charles "Music has the power of healing an individual". Music elicits a strong emotional response in its listeners, according to recent studies in the area of music psychology [1]. Musical preferences have been shown to have a strong link to personality traits and emotions. Emotional and mood-related brain areas control the meter, timber, rhythm, and pitch of music [2].

Gender, age [3], culture [4], mood, personal tastes, and context [5] are all elements that influence a user's emotional response to a music clip. (Considering the time of day or the location, for example). Putting aside these environmental influences. humans can reliably classify music as happy, sad, enthusiastic, or calm.

Individuals' facial expressions can reveal a lot about their mental state. It is, without a doubt, the most natural and fundamental means of expressing emotions [6, 7, 2]. Despite this tight connection, the majority of today's song-related software still lacks the ability to create mood-aware playlists.

The music database continues to grow as the number of songs and artists available in the digital world grows. There hasn't been much progress in terms of keeping records for this type of database. The network of people who are interested in music is always growing as a result of technological advancements and the continual growth of the internet. This has resulted in a large collection of music that is difficult to distinguish manually based on the moods of the music. As a result, there is a necessity to develop a less time-consuming method for the same. which is a major undertaking. The changing connotations of a mood through time has also resulted in an increased difficulty in categorizing it. For example, the music we listen to today is not the same as what we listened to 20 years ago.

The main goal of this study is to design a low-cost music player that automatically plays a tune according to the user's emotional state using real-time video and CNN using as few resources as possible. The emotion module uses real-time video to assess the user's current feeling and maps it to songs in the mood type collection, as well as recommending numerous songs. This system could be a solution to the present problem of manually choosing a song.

The organization of the paper is as follows:

The section II of the paper summarizes past research on the subject. Sections III and IV discuss the datasets and models used for emotion. music mapping, and suggestion, as well as the findings produced for each. Finally. Section V summarizes the findings and briefly highlights the methodology's potential for improvement.

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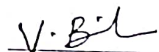has successfully presented the paper entitled

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