

FACIAL EXPRESSION BASED MUSIC PLAYER

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ABSTRACT: Today, In this busy world there is no time to make the changes in small each and everything. Nowadays people spare more time on music then with family. So we are trying to make useful product which help them and it will be time saving and efficient. We will make “Facial Expression Based Music Player”. It will detect emotion from our facial expression and play playlist from database. For example, if we are happy then it will detect happy and based on that the playlist is shown. Firstly our face is detected through camera then it will detect emotions there and give then from database playlist is played to user. It will help user to get rid of the creating and editing playlist after sometime.

KEYWORDS: Music, Facial Expressions, Emotions, Playlist, Camera

1. INTRODUCTION

Music is important in everyone’s life. It play a important role in enhancing the person life. It is an important medium of entertainment for music lovers and listeners. Computer systems based on affective interaction could play an important role in the next generation of computer vision systems.

The Facial Expression Based Music Player web application solve the problem of making playlist always. This allow user to feel relax of creating playlist. The problem of creating the playlist is solved by this web application. User get playlist based on their emotions and they don’t have to worry of making playlist in harder time. If a user is in frustration then how he can create the playlist in harder time. If a user is in frustration then how he can

create the playlist and he/she don’t want to listen a existing playlist so he/she need change it based on emotions. Thus, this web application will help them as this is solution to get rid of that problem.

Objectives

The aim of this project is making a system that will help user to play the playlist based on emotions. This enable to feel the emotion of the user and help them in their harder time. It recognizes the facial emotions of the user and plays the songs according to their emotion. 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. The webcam captures the image of the user. It then extract the facial features of the user from the captured image. According to the emotion, the music will be played from the predefined directories.

Related Work

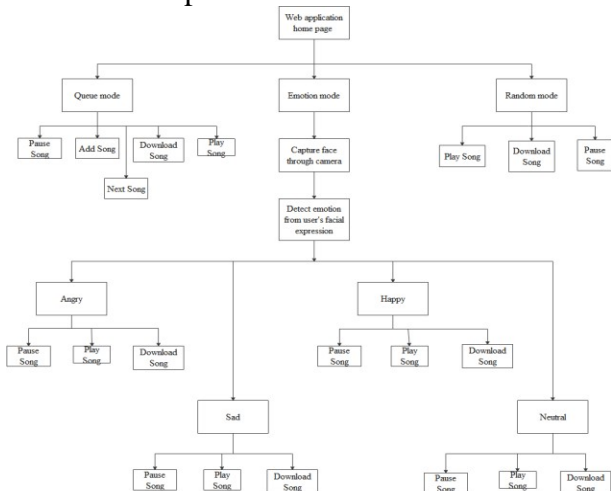
Currently, there are no dedicated web applications to suggest songs based on emotion of music listeners. Other web applications or application suggests predefined (not user- specific) song play-lists. Some popular music websites like Wynnk, Spotify provide users defined play-lists that needs to be created and updated manually. Many widely used Facial Expression categorization techniques like Viola and Jones etc., can be used for initial phase to capture and determine the user’s emotion, but these techniques have high computational requirement.

Problem in existing system

Using traditional music players, a user had to manually browse through his playlist and select songs that would soothe his mood and emotional experience. Currently in existing website, music is organized using play-list, and play-list songs cannot be modified or altered in one click. User's have to manually change or update each song in their play- list every time. Currently, there are no website that allows users to play songs on-the-go without selecting songs manually or from a play-list.

2. SYSTEM DESIGN

There are three different modes in our web application. They are Queue mode, Emotion mode and Random mode. In Random mode, randomly any song can be played. In Queue mode, songs are added to queue and then from queue songs are played one after another. In Emotion mode, image is captured through webcam, then face is detected and then facial expression is recognised. After that the emotion is detected happy, neutral, angry or sad and then playlist is played according to emotion from pre-defined database.



Software and Hardware Requirements

Hardware Requirements:

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. The hardware requirements required for this project are:

- Intel i3
 - 4GB RAM
 - Webcam
 - Speaker
- Software Requirements:

Software Requirements deal with defining software resource requirements and pre-

requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or pre-requisites are generally not included in the software installation package and need to be installed separately before the software is installed. The software requirements that are required for this project are:

- Ubuntu OS
- Python 3.7
- Open CV 4.5.1.48

Open CV

Open CV (Open Source Computer Vision Library) is a library of programming functions mainly focused on real-time computer vision. The library is cross-platform. It mainly aimed at real- time image processing. Open CV provides multiple numbers of functions for face recognition and facial detection. Open CV comes with a trainer as well as detector. Face detection is done by haar-cascade classifier. Face recognition is done by Fisherface algorithm.

Haar-Cascade classifier:

Haar cascade classifier is an effective object detection method proposed by Paul Voila and Michael Jones in their paper. It is a machine learning based approach where a cascade function is trained from a lot of positive and negative images. It is then used to detect object in other images. Then features are extracted from it. For this, haar features shown in below image are used. Each feature is a single value obtained by subtracting sum of pixels under white rectangle from sum of pixels under black rectangle.

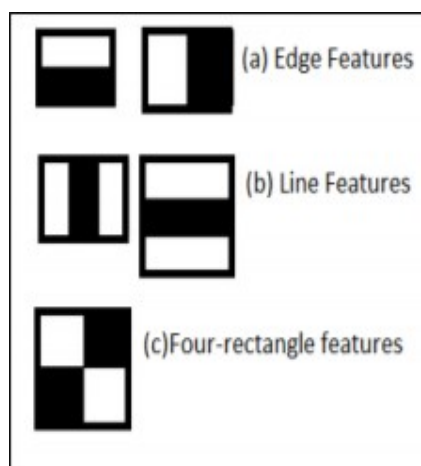


Fig: Common Haar Feature

In the figure below top row shows two good features. The first feature selected seems to focus on the property that the region of the eyes is often darker than the region of the nose and cheeks. The second feature selected relies on the property that the eyes are darker than the bridge of the nose.

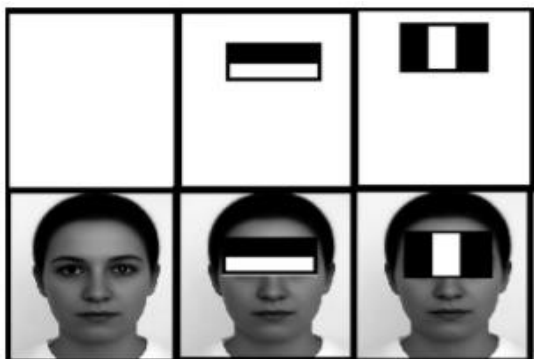


Fig: Feature Extraction from Face Fisherface algorithm:

Fisherface algorithm extracts principle components that separates one individual from another. So, now an individual's features can't dominate another person's features. Then image is converted to grayscale and then data is trained to detect emotions.

System Flow

Initially we have to select any one mode from three modes present in web-application. In Queue mode we have to add song from playlist to queue. Listing of songs are shown in queue and one after another song is played from queue. In Random mode, any song can be played randomly from playlist. In Emotion mode, image is taken through camera by using haar cascade classifier and then by using Fisherface algorithm image is converted into grayscale and then data is trained and tested and emotion is detected. After detecting and identifying emotion playlist is played according to emotion detected from pre-defined directories. And any song can be downloaded in any mode anytime.

3. CONCLUSION

We have designed "FACIAL EXPRESSION BASED MUSIC PLAYER", a emotion based music player which detect a facial expression and play song according to users emotions. Integrating all the features of the web application in Facial Expression based Music Player will be major breakthrough, this will enhance Music Player capabilities based on emotions and help user in better way. The

system will help to reduce the time to search the music according to the mood of the user.

4. FUTURE SCOPE

Facial expressions are a great indicator of the state of a mind for a person. Indeed the most natural way to express emotions is through facial expressions. The proposed system might have many function and it may be user friendly but the proposed system can have further advancement in future. The future scope in this system will be to create a mechanism that will be helpful in music therapy treatment and will provide the music therapist needed to treat patients suffering from disorders such as mental stress, anxiety, acute depression, and trauma.

5. REFERENCES

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