International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 04 | Apr 2021 www.irjet.net p-ISSN: 2395-0072

EMOTION BASED MUSIC PLAYER

Madhura Gijam[1], Akanksha Galwe[2], Darshita Gilda[3], Prof. S.P. Joshi[4]

[1]Student, Dept. Information Technology, A. C. Patil College of Engineering, Maharashtra, India
[2]Student, Dept. Information Technology, A. C. Patil College of Engineering, Maharashtra, India
[3]Student, Dept. Information Technology, A. C. Patil College of Engineering, Maharashtra, India
[4]Associate Professor, Dept. Information Technology, A. C. Patil College of Engineering,Maharashtra, India

---

Abstract - *This document is an overview of the project completed by our group Emotion Based Music Player. In which user can play the music based on his/her emotion detected by the System. Once the user face is detected automatically the song gets played. Also, the system hails the search and filtering of songs as per the mood detected using some of the python libraries. The system is based on real time environment. Thus, it yields better accuracy in terms of performance and reduce the time taken.*

Key Words: Face detection, Emotion recognition, Automatic Music player, Lyrics Search, Queue Mode, Random Mode.

1. Introduction

Facial expressions recognition is used to identify the basic human emotions. Facial expressions are crucial to determine the emotions. Computer systems based on affective interaction could play an important role in the next generation of computer vision systems. Face emotion can be used in areas of security, entertainment and human machine interface (HMI). Through lips and eyes humans can express their emotion. Generally, users have a huge collection of songs in their database or playlists. It is very tedious to select the song form the large playlist so the user selects a random song which is not according to the user mood. As a result, the songs are not matching to the user's current emotion. However, there is no application where the user could listen the songs based on the mood. Music is an important part and a source of entertainment. Music can change the man life can help a human to come out of depression.

Literature Survey

[1] Yong-Hwan Lee, Woori Han and Youngseop Kim proposed system based on Bezier curve fitting. This system used two steps for facial expression and emotion first one is detection and analysis of facial area from input original image and next phase is verification of facial emotion of characteristics feature in the region of interest.

[2] Arto Lehtiniemi and Jukka Holm proposed system based on animated mood picture in music recommendation. On this system the user interacts with a collection of images to receive music recommendation with respect to genre of picture. This music system is developed by Nokia researched Centre. This system uses textual Meta tags for describing the genre and audio signal processing.

[3] Anukriti Dureha proposed system based on Viola-Jones Algorithm. Published on 2017.This system was accurate but more time consuming

2. Proposed System

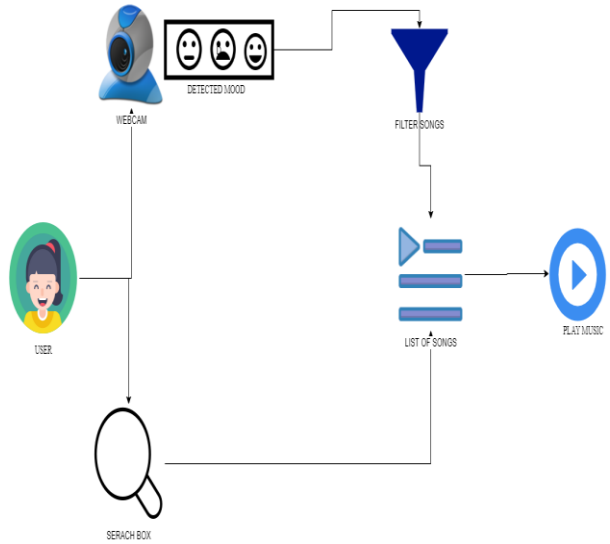

Fig.2.1 Architecture diagram

The objective of this work is to detect emotion and select music to be played based on the detected emotion. Human emotions can be describe through music, We are trying to build and application which will detect the user emotion and play the song according to the mood and also helps to search song based on song name.

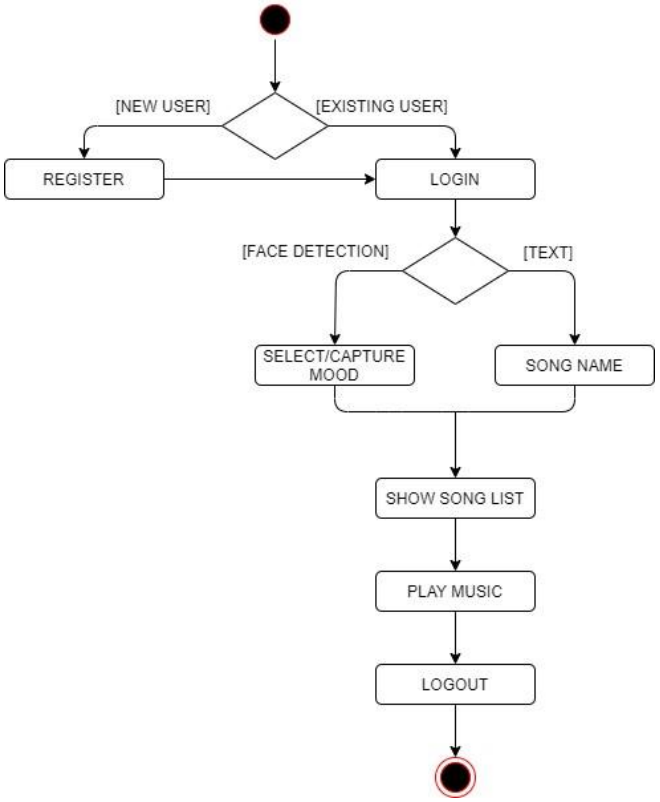

Fig.2.2 Activity Diagram

3. Implementation

Working of the system

The working of the system consists of two parts

a. Search by song name

b. Capture the mood

In search by song name user need to input the song name the system will search the song using linear search algorithm.

In capture mood the user face would be detected using the OpenCV library. The image would be capture and using FisherFace Algorithm the mood will be detected and the songs will be played.

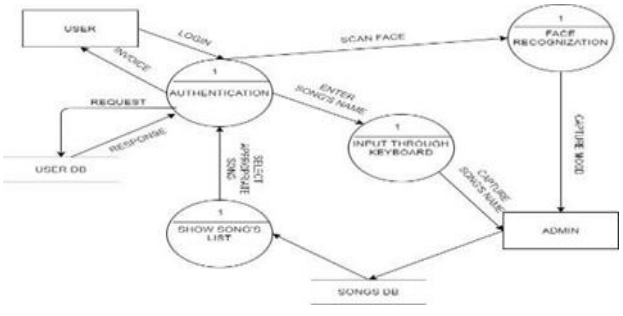

Fig.2.3 DFD Level 1 Diagram of the Proposed System

3.1 Face Detection

OpenCV – It uses machine learning algorithms to detect and recognize face, identify objects, classify human actions in videos, from camera to find similar images from an image database. OpenCV uses Haar Cascade classifier. Haar cascade classifier is a machine learning concept where a cascade function is trained from images both positive and negative. Based on the training it is then used to detect the objects in the other images. The algorithms break the task of identifying the face into thousands of smaller, bite-sized tasks, each of which is easy to solve. These tasks are also called classifier this is what the initial dataset looks like. The dataset has various fields which need to be cleaned and all the category types have been converted to numeric.

Steps for OpenCV Algorithm

- Detect face using Haar cascade classifier.
- Load the image and convert it into grayscale.
- Once the image is converted from RGB to grey, the system will locate the features in face using "detect Multiscale" function.
- From the above step, the function detect Multiscale returns 4 values – X-coordinate, Y-coordinate, width(w) and height(h) of the detected features of the face. Based on these

  4 values systems will draw a rectangle around the face.

3.2 Face Recognition

FisherFace – This algorithm extracts principle components that distinguish one user from another. So, now a user's features can't suppress another user's features. By applying PCA method face spaces are reduce and then obtaining the feature of image by applying LDA method.

Steps for FisherFace Algorithm

- Using webcam or already saved image the similar data gets collected in the form of images.
- Image Processing

  Pre-processing stage: The collected images are then converted into greyscale and then divided into two sub parts training data and testing data.

  Processing stage: Vector of facial image is generated by applying the facial method and later it is match with the vector of traits of training image with vector characteristic of test image using Euclidean distance formula.

- Feature generation : Features are extracted

3.3 Search by Song Name

Linear Search – In this algorithm, the search of a song name is done and the related songs are to be displayed. Linear search is a very basic and simple search algorithm. . It is an searching techniques in which the element is searched in the array by traversing through the array, it start from the starting position and continue traversing till the preferred values is found.

Step for Linear Search

- Traverse the array using a for loop.
- In every iteration, the targeted value is compared with the current value in array.
- The index of the value is returned if the value matches else move to the next element.

4. Dataset

In FER-2013 dataset the training dataset consist of 28,000 images, the development set contains 3,500 images, and 3,500 images in the test set. The dataset has seven emotions: happy, sad, angry, afraid, surprise, disgust, and neutral, with happy being the most prevalent emotion, providing a baseline for random guessing of 24.4%. The images in FER-2013 consist of both posed and unposed headshots, which are in grayscale and 48x48 pixels. The FER-2013 dataset was created by gathering the results of a Google image search of each emotion and synonyms of the emotions.

Fig 4.1

5. RESULT

After detecting the face and processing the user will be able to listen to the music based on his/her mood or emotion.

5.1 Search by Song Name

In this page user will be provided with the input box to enter the song name and will display the related search.

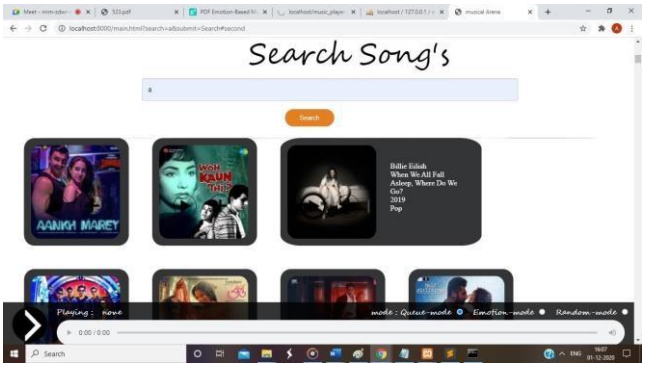

Fig.5.1

5.2 Emotion Mode

In this the users face will be detected and based on the data processed by the system list of song will be displayed on the user mood. The moods are Happy, Sad, Neutral and Angry.

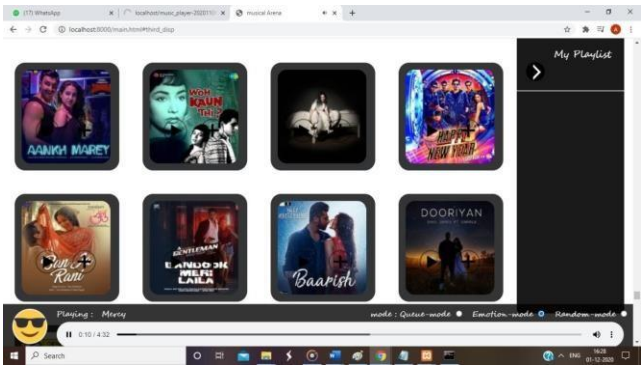

Fig.5.2 Happy Mood

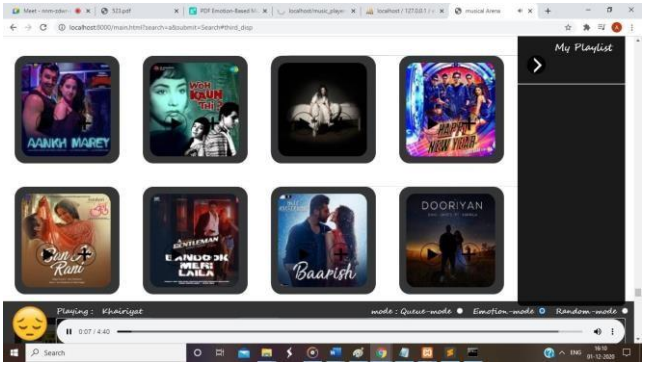

Fig.5.3 Sad Mood

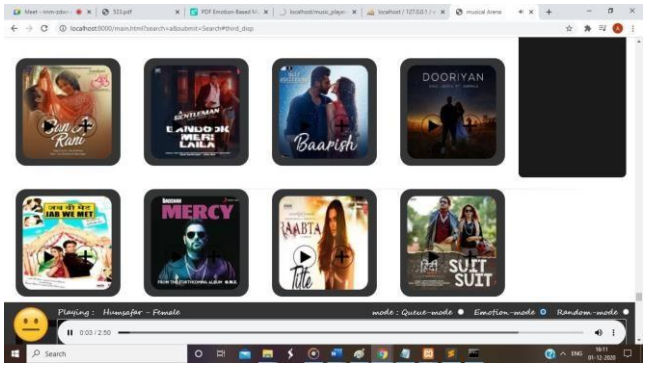

Fig.5.4 Neutral Mood

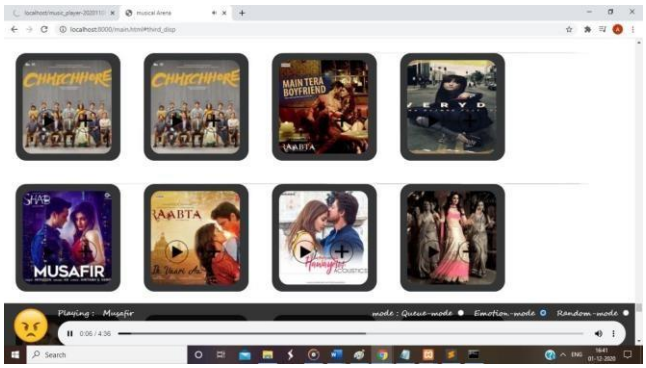

Fig.5.5 Angry Mood

5.3 Input for mood

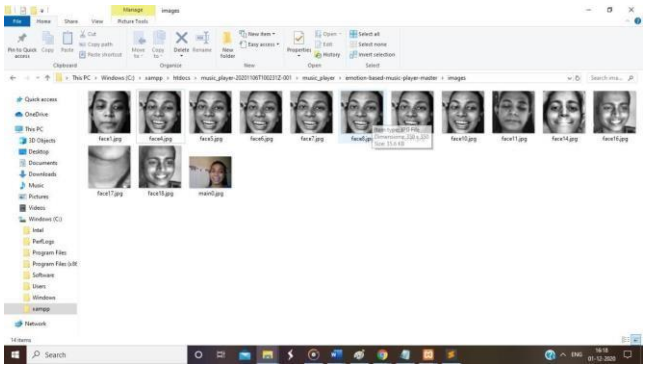

Fig.5.6

In this figure shows the input an image detected by the system to provide the output this is the temporary data set to match the face with the system dataset.

6. Conclusion

Music Player has changed in many different ways since it was first introduced. Now-a-days people like to get more out of different applications, so the designing of applications and the thought process behind it has changed. The users prefer more interactive & sophisticated yet simple to use applications. The proposed system (Facial Expression based Music Player) presents a music player capable of playing the songs based on emotion detected and thereby providing the user with an easy way to play.

Similarly, we have imported the data sets and libraries and needed data for the final implementation of the system.

7. Acknowledgment

Me and my group members would like to express our special thanks for gratitude to our guide Mrs. S.P. Joshi for their guidance and their assistance in completing our project. They always helped us by showing us the right path for the project and clearing our doubts whenever approached by us at the various stages of the project.

8. References

[1] Anagha S. Dhavalikar and Dr. R. K. Kulkarni, “Face Detection and Facial Expression Recognition System” 2014 Interntional Conference on Electronics and Communication System (ICECS 2014).

[2] Yong-Hwan Lee, Woori Han and Youngseop Kim, “Emotional Recognition from Facial Expression Analysis using Bezier Curve Fitting” 2013 16th International Conference on Network-Based Information Systems. 3. Thayer || The biopsychology of mood & arousal||, Oxford University Press ,1989.

[3] Arto Lehtiniemi and Jukka Holm, “Using Animated Mood Pictures in Music Recommendation”, 2012 16th International Conference on Information Visualisation.

[4] F. Abdat, C. Maaoui and A. Pruski, “Human-computer interaction using emotion recognition from facial expression”, 2011 UKSim 5 European Symposium on Computer Modelling and Simulation

[5] https://iq.opengenus.org/face-recognition-using-fisherfaces/