

A Survey : Expression Based Music Player

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ABSTRACT

The facial expression plays an important role in detecting the mindset of an individual. Facial Expression is one of the natural ways to express emotions. In the interpersonal communications, humans use nonverbal clues like facial expression, hand gestures and tone of voice. Detecting and understanding the facial expressions are challenging tasks. Expression based music player involved in various fields like computer science, human computer interface and psychology. The facial Expressions are detected by using various feature extraction techniques from an image as well as from real-time videos. Expression based Music Player involves the image processing, facial feature detection, expression classification and audio feature extraction. This paper provides the information about various research works carried out by many authors in the field of expression based music player.

Keywords : Human Computer Interface; Facial Feature Detection; Expression Classification; Audio Feature Extraction; Principle Component Analysis; Singular Value Decomposition; Sentimental Analysis

I. INTRODUCTION

Image processing is a technique where the images are pre-processed and the features are extracted out by performing various operations. There are literally two types of image processing namely, digital and analog image processing. The analog images are images which are in hard copies. Example: medical reports and photographs. Digital image processing uses various algorithms to perform image processing on various digital images. There are some techniques involved in digital image processing. They are image editing, image restoration, independent component analysis and neural networks, partial differential equations and linear filtration. Image processing also includes different steps like: image enhancement, image restoration, colour image processing, wavelets, compression, segmentation, representation and object recognition.

Music is a melody that connects the soul and mind of the person together. It plays an important role in human life. Emotions affect us physically as well as mentally. Our body reacts to different emotional states. The strong emotions are brought out by hearing the music according to their situation.

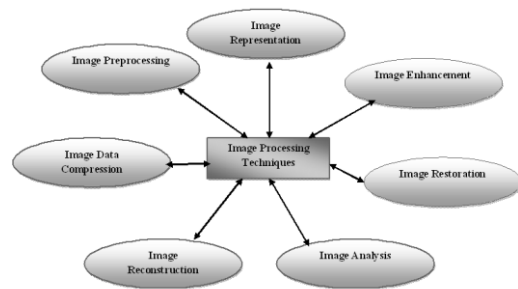


Figure 1. Image Processing Techniques

Here, this paper deals with connecting emotion of the user along with music systematically. The main objective of this paper is to learn about various algorithms and techniques suggested by different authors in their research and it says about connecting the music player along with human emotions (expressions, gestures and voice of tone) by using various Restoration algorithm.



Figure 2. Emotion Based Music Player

This paper refers the connection between human emotion and music player by using image processing.

II. LITERATURE SURVEY

Jayshree et al. creates a bridge between the music player and users' expression [1]. Extracting the song from the audio player and playing it leads to time difficulty. This technique reduces the time consumption and plays songs automatically according to the mood of the user. The face of the user is detected by the camera and the image is imported using the artificial neural network back propagation method. The expressions are classified and the noise is removed by emotion recognition algorithm. The expressions are already imported by using algorithm and they can be verified using the graphical based classification method. The audio from the phone are scanned and extracted using audio feature extraction and it provide a graphical input. Based on the expressions of the user, the audio files are sorted and the songs are played from the created playlist.

Jyoti et al. provides the way to capture the image of an individual that includes user's expressions [2]. It displays the state of an emotion according to their different mindset. There are different types of emotions namely angry, fear, surprise and happy. The face of the user is detected by using the automated facial expression recognition algorithm and the noisy data's are removed by normalization method, so that the image gets good quality. The facial features are extracted and the emotions are classified using emotion detection method. The main process involved in automated facial recognition system includes the calculation of dimensions. The scattering of image are cut shorted using principle component analysis (PCA) technique. This system accepts all ages and gender.

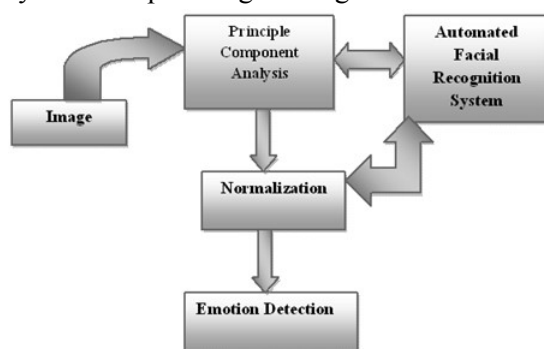


Figure 3. Techniques used for Facial Expression Recognition

Devi et al. deals with classifying the emotion of the person using their facial expression systematically [3].

The different steps involved in constructing the facial expression recognition system are face detection, facial feature extraction and emotion classification. The two basic expressions are happy and anger. While the user is in anger, the eyelids and the eyebrows are drawn together. There are different steps involved in classifying the facial expression namely image detection, recognition and testing phase. The images are taken by using camera and it is stored in the JPEG format. The images can be detected by using neural networks and statistical approach. The data's collected can be assembled together by ekmen and friesen methodology. This recognition technique is used for identifying the facial features such as eyes, mouth, eye brows etc. The data are extracted by using holistic and analytic approach. After recognition, the images are analysed for duplication. This process is a statistical method. The number of variables and the spatial dimensions are reduced by fisher's linear discrimination. The storage size and the good stability for face image are done by using the singular value decomposition (SVD) method. Finally the testing phase occurs where the image is checked with all databases and when the image is matched, the data are taken and the remaining data are left unconsidered.

Nikhil et al. determines the mindset of the user by using facial expression [4]. Humans often express their feeling by their expressions, hand gestures, and by raising the voice of tone but mostly humans express their feelings by their face. Emotion based music player reduces the time complexity of the user. Generally people have large number of songs on their playlist. Playing songs randomly does not satisfy the mood of the user. This system helps user to play songs automatically according to their mood.

The image of the user is captured by the web camera and the images are saved. The images are first converted from RGB to binary format. This process of representing the data is called as feature-point detection method. This process can also be done by using Harr Cascade technology provided by Open CV. If the values go behind 110, the image is replaced with white pixels otherwise it is replaced with black pixels. Open CV (open source computer vision library system) is a cross-platform where it can recognize multiple number of face. It can be installed in the system. The objects are

detected by using Harr Cascade method and it is marked inside a rectangular boxes. Each and every feature is extracted by using edge, line and four-rectangle feature method. The music player is developed by using java program. It manages the database and plays the song according to the mood of the user.

Deepa et al. deals with emotion based music player using gesture recognition [5]. This system connects the music and emotion of a person into a single strand. The emotions are expressed using hand gestures. The hand gesture are captured using the camera and detects whether the hands remains still in the static motion or it changes in the dynamic motion. This process deals with the human-machine interaction system. The hand gesture images are detected by using OpenCV and Harr Cascade, where the system stores all the data. OpenCV is an open source which can run under several operating systems namely Linux, Windows, and Mac OS.

The images are taken using the camera and they are stored by using OpenCV. The Harr Cascade training is a tool used to accurately detect and recognize the hand gestures. In the Harr Cascade algorithm, the data are stored in Xml format. qt is a cross-platform that is widely used for developing application software using graphical user interface (GUI). The motion of the hand gestures is stored in the OpenCV database. The arm controller recognizes the hand gestures and sends to RS232. The RS232 acts as a interface between arm controller and the PC. The songs are sorted in playlist and played automatically according to the hand gesture.

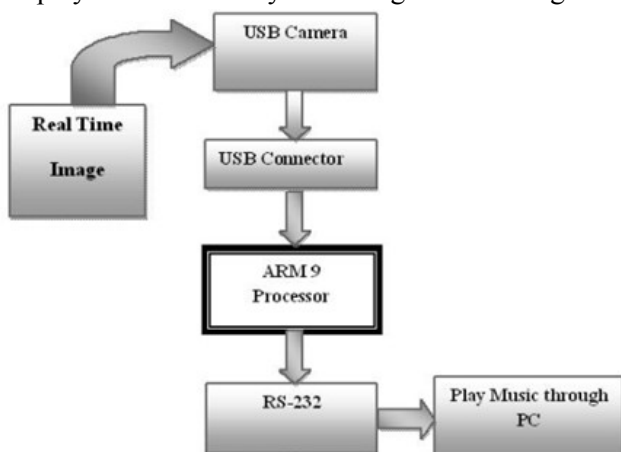


Figure 4. Block Diagram for Gesture Recognition

Henal et al. proposed intelligent music player according to the user's mood by using sentimental or emotion

analysis [6]. This system is different from the above mentioned system. It gets the input from the user in the form of textual information. It extracts the lyrics of the song and mood of the user gets analysed. Then the playlist is generated in a complete format. The proposed system not only reduces the time of the user but it also helps in sorting the data in music player automatically and playing it according to the user's mood.

III. CONCLUSION

In the present world all the process are done systematically. The survey study done has led to conclusion and selection of the various techniques and algorithms that can be used to obtain the objectives mentioned. Various technologies are found to reduce the efforts of the humans. Thus the proposed project will reduce the efforts of user in creating and managing playlist. It will provide better enjoyment to the music listeners by providing the most suitable or appropriate song to the user according to his/her current expression. It will help users to store the songs systematically and sort it. It also helps to determine the mood of physically challenged people and to provide the most suitable song according to their current situation.

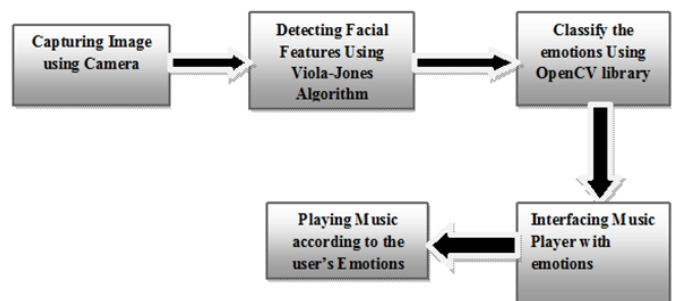


Figure 5. Block diagram of the proposed system

IV. REFERENCES

- [1] Jayshree Jha, Akshay Mangaonkar, Deep Mistry, Nipun Jambaulikar, Prathamesh Kolhatkar. "Facial Expression Based Music Player". International Journal of Advanced Research in Computer and Communication Engineering. Vol. 4, Issue 10, Oct 2015.
- [2] Jyoti Rani, Kanwal Garg. "Emotion Detection Using Facial Expressions -A Review". International Journal of Advanced Research in Computer Science

and Software Engineering . **Vol 4, Issue 4, April 2014.**

- [3] **Devi Arumugam, S. Purushothaman.** “Emotion Classification Using Facial Expression”. (IJACSA) International Journal of Advanced Computer Science and Applications. **Vol. 2, No. 7, 2011.**
- [4] **Nikhil Zaware, Tejas Rajgure, Amey Bhadang, D. D. Sapkal.** “Emotion Based Music Player”. International Journal of Innovative Research and Development ISSN 2278 – 0211 (Online). **Vol 3, Issue 3, 2014.**
- [5] **G. Deepa, G. Bhaskar Phani Ram.** “Emotion based Music Retrieval for Gesture Recognition”. International Journal of Computer Applications (0975 – 8887). **Vol 78 – No.14, Sep 2013.**
- [6] **Henal Shah, Tejas Magar Purav Shah, Kailas Devadkar.** “An Intelligent Music Player Using Sentimental Analysis”. International Journal of Innovative and Emerging Research in Engineering. **Vol 2, Issue 4, 2015.**