International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

COPY RIGHT

ELSEVIER
SSRN



IJIEMR Transactions, online available on 12th June 2022.

Link : https://ijiemr.org/downloads/Volume-11/Issue-06

**Title: MUSIC RECOMMENDATION SYSTEM BASED ON EMOTION USINGFISHER FACE ALGORITHM**

volume 11, Issue 06, Pages: 1484-1491

Paper Authors: **Mr.Pavan.Movva, I.Gopichand,P.Someswarababu,A.Govind,Y.Vardhan**


USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

# MUSIC RECOMMENDATION SYSTEM BASED ON EMOTION USINGFISHER FACE ALGORITHM

[1]Mr.Pavan.Movva, [2]I.Gopichand,[3]P.Someswarababu,[4]A.Govind,[5]Y.Vardhan
[1]Associate Professor CSE, PSCMR College of Engineering & Technology, Vijayawada, Andhra Pradesh
[2,3,4,5]Student, CSE, PSCMRCET, Vijayawada, Andhra Pradesh

## ABSTRACT

As all we realize music performs an crucial position in our way of life, music alters one'stemper.Itmaybeveryperplexingf oraconsumer/manorwomantoworkout whichmusiche/she needs to listen to from a decent sized series of present alternatives relying upontheir mood. There were several concept frameworks available for issues like as music, dining, and purchasing that were dependent on the user's mood. The first goal of our music recommendation system is to provide consumers with suggestions that are tailored to their preferences. The analysis of the user's facial expression/emotion may also lead to a better understanding of the patron's current emotional or intellectual state. it's a famous truth thatpersons specific greater actually what they have to say and therefore the context whereinthey supposed their phrases via way of means of their facial expressions. Over 60% of users believe that their playlist's large number of songs will make it difficult for them to find the music they want to listen to at some point. Creating an advise device might aid a customer in determining which music to listen to, so assisting the customer in lowering his or her blood pressure. The customer will no longer have to waste time browsing for songs, since high-quality music that matches the customer's mood will be identified and songs will be played to the customer in accordance with his or her mood. With the use of a camera, the patron's image is taken. The customer's photo is captured, and appropriate music from the user's playlist is played to fulfil the customer's requirements, based on the customer's mood/emotion.

**Keywords** Fisherface, ImageProcessing, FDL

## 1. INTRODUCTION

Different music recommendation systemshad already living that recommend music.Mostofthepresentmusicrecom mendationsystemsweredesignedby using psychological sensors, during

thisproposed system we use the facialexpressions of a user to recommend music.This proposed system uses the fisher facealgorithm which is employed for facerecognition and image classification The goal of the project is to capture someone's feelings through their facial expressions Through an online camera interface available on computing platforms, a music player aims to record human expression. The software records the user's image and, using image segmentation and image processing techniques, extracts information from a target person's face in order to try to discern the emotion that the person is attempting to express. specific, and plays songs supported theuseremotion that's detected.

## 2. RELATEDWORK

[1] ShanthaShalini et al. This research study proposes a theoretical proposal for a music recommendation technique based on emotion. They combine computer vision and machine learning techniques in this suggested system to connect facial featuresmusic recommendations based on emotion For coding, they used the PyCharmprogramme. They used a webcam to capture a real human face, and then image processing techniques were applied to the captured image. A point detection algorithm is used to extract features from the input photos.The input photos are trained for facial emotion recognition using the classification method OpenCV. Music would be played automatically based on the emotions observed.

**[2] DegerAyata et.al** used wearable physiological sensors to create an emotion-based music recommendation system. This research provides an emotional-based music recommendation framework that learns a user's emotion using wearable physiological sensor inputs.In this, there are 2 physiologicalsensors. 1) Skin Galvanic Response (GSR) 2) Photoplethysmography (photoplethysmography) (PPG) The Galvanic Skin Response (GSR) is a term that refers to variations in sweat gland activity that are a reflection of our emotional state's intensity. Emotional arousal is another name for the Galvanic Skin Response. Photoplethysmography (PPG) is a straightforward optical technique for detecting volumetric changes in the peripheral circulation. PPG is a low-cost and easy-to-use material. It exhibits a PPG waveform, which is due to heart synchronised changes. With each heartbeat, the volume of blood in the body increases, as do the components

attributable to respiration.

**[3] RenataL.Rosaet.al**Sentiment analysis is being investigated in music recommendation systems to suggest a specific song based on a person's emotional state, as the song is linked to the person's current emotion and feelings.

This study describes a music recommendation system based on a sentiment intensity metric called enhanced Sentiment Metric (ESM), which combines a lexicon-based sentiment metric with a user-profile-based correction factor. Subjective testing in a laboratory context are used to discover this adjustment factor. The correction factor is generated and utilised to adjust the final sentiment intensity based on the experimental outcomes.The users' attitudes are derived from sentences posted on social media, and the music recommendation engine is run on mobile devices using a simple framework that proposes songs based on the current user's sentiment intensity.

**[4] Akihiro Ogino et.al** They present a study on retrieving emotion-based music information utilising lyrics information in this publication. Listeners wish to use a music library's information system to search for lyrics of music that are appropriate for their emotion (music impression). They created a system that retrieves the lyrics as an answer to the needs of listeners. of music based on the emotion (or impression) that the listener has chosen among 9 emotions and 9 impressions that are appropriate for the listener's feelings. They use natural language processing to select words, such as verbs and adjectives, from the bridge part of song lyrics that indicate emotion. Using a synonym dictionary, we condense the words into representative words. Using a machine learning method, they create a model that estimates a listener's 9 emotions/impressions of the representative words. Listeners also want to know why the music chosen by a system is appropriate for their feeling or perception. As a result, they choose representative words that are most closely associated to a listener's emotion/impression and utilise those words to explain why to the listener.

**Table 2.1 Comparitivestudy onExisting System**

| | AUTHOR | ALGORITHMS/ METHODS | ADVANTAGES | DISADVANTAGES |
|---|---|---|---|---|
| 1 | DegerAyata | GSR Signals & PhotoPlethysmography SignalsSensors. | It detects emotionaccurately.<br>These sensors are low-cost. | In some cases, both theheartbeat and sweat mayvary irrespective of theirmood/emotion. |
| 2 | ShanthaShalini | Point Detection AlgorithmandOpenCV Algorithms. | Itisfreeofcost.<br>The emotion of the useris perfectly detected asfacial expressions arethe most general way toexpresstheiremotion. | Themovementof thehead and different camerapositions produce wrongresults, pictures withbeards,producethe wrongresults. |
| 3 | RenataL Rosa | Sentimentalanalysis | It is useful, where everyuser has their uniquepreference formusic | It requires more storageand it requires more userinteraction. |
| 4 | AkihiroOgino | Natural language processing,decisionstump Algorithm. | Doesn't require highpreparation for pre-processing. | Instable, even a smallchange in data requires alargechangeinstructure. |
| 5 | H. ImmanuelJames | Linear classifier and SVM.Algorithms. | The emotion of the useris perfectly detected asfacial expressions arethe most general way toexpresstheiremotion. | It can be quite costlyComputationally.<br>Notsuitable forlarge data. |

## 3. PROPOSEDSYSTEM:

We presented a system to organise diverse music into different categories, such as joyful, sad, or furious, to avoid all of the complications in the existing approach. We employ algorithms to determine emotion from images in addition to physical devices. The methods we employ in the proposed systems are as follows:

1)FisherFaceAlgorithm.

As part of the deployment of fisher faces for facial expression identification, a music player is built that plays songs based on the user's emotion. The system is organised into various modules, each of which performs certain duties in a predetermined order. The technology first detects the user's face and captures the image's region of interest. FDL receives the taken image and learns features directly. The user's current emotion is determined by analysing the features. Each emotion will be tied to a music player, which will automatically play
The particularly built music playermusic that corresponds to that emotion.

A fisher linear discriminant (FDL) is a type of machine learning architecture that is used to recognise images. A FDL model is distinguished by important properties that process incoming data through its numerous levels. FDL's first applications for speech recognition and text recognition date back to the 1990s. Its applications are then expanded to include handwriting recognition and, eventually, natural image recognition.

**ADVANTAGESOFPROPOSEDSYSTEM**

Fisher face is similar to Eigenface, however it performs better in terms of class classification. With FLD, we were able to categorise the training set to cope with various personalities and face expressions. We could achieve a higher level of facial expression accuracy than the Eigenface method. Furthermore, because Fisherface eliminates the first three major components that cause light intensity shifts, it is more light intensity invariant.

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

**FISHERFACEALGORITHM**

Because these illuminations are regarded as vital traits, other people's features may be discounted as less useful.

Considering these illuminations as a significant asset, other people's flaws may be overlooked. We can remedy this by adjusting eigenfaces such that they extract features from each person separately rather than as a group. As a result, even if one person's face data has significant lighting changes, it will have little effect on the features of others. Considering them to be less useful The Fisher faces algorithm captures the main characteristics that distinguish one person from another. As a result, an individual'sThe features of one individual cannot be used to dominate the features of another.

**Step 1:**
The data is collected in the form of facial images. Photographs saved on your computer or from a camera can be used to collect data. The face must be fully visible and gazing ahead at all times.
**Step2**:ImageProcessing
**Pre-processingstage**:Converting RGB to grayscale and obtaining photographs from a camera or saved images. There are two types of picture data: training and test data. data.Processing stage :The fisher face method will be used to build a feature vector of facial image data for use by the system, and then the euclidean distance formula will be used to match the vector of traits of the training image with the vector characteristic of the test image.
**Step 3**: Feature generationFeatures of the faces are extracted.
**WhyfdlforImageClassification?**
Image classification is extracting features from an image in order to identify patterns in a dataset. Using an ANN for image categorization would be extremely time consuming due to the large amount of computation required.The number of trainable parameters increases dramatically.WeuseWe make use of If we have a 50 X 50 image of a cat and want to train our standard ANN on it to categorise it as a dog or a cat, the trainable parameters are – (50*50). * hidden layer multiplied by 100 image pixels + 100 bias + 2 * 100 output neurons + 2 bias =When utilising FDLs, use two filters. Filters come in a variety of

shapes and sizes, depending on their intended use. Fisherfaces is unaffected by noise-induced images or the blurring effect on the image. In Fisherfaces, an individual's features cannot outnumber those of others.

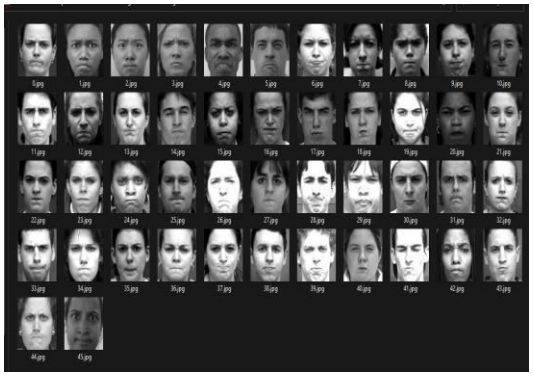


**Fig3.1 sample dataset**

**4.RESULT**

**LOADINGTHETRAININGMODEL**
All of the previous tasks are similar to pre-processing the photos in the dataset. This is the most crucial step in our detecting procedure. All of

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

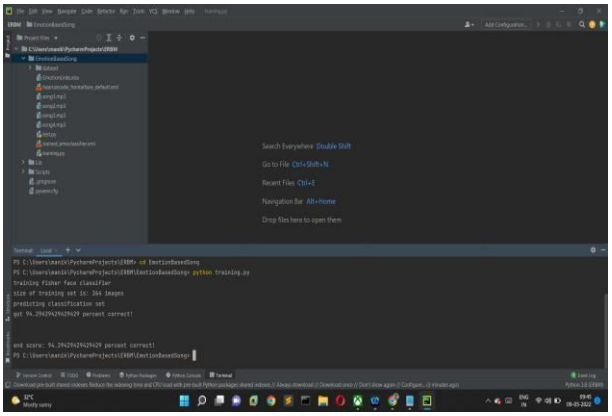


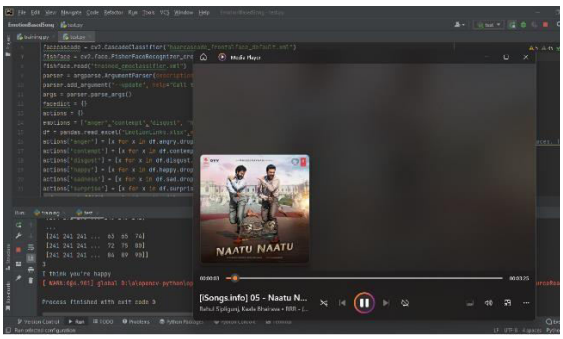
**Fig3.2 Trainingthe model**

**IDENTIFYING EMOTION**

**ANDSONG:**

When we execute our application, the webcam immediately opens, recognises the face in the image by enclosing it in a rectangle, and plays appropriate songs based on emotion.

**Fig3.3emotionRecognising-happy**




**FIig3.4PlayingHappySong**

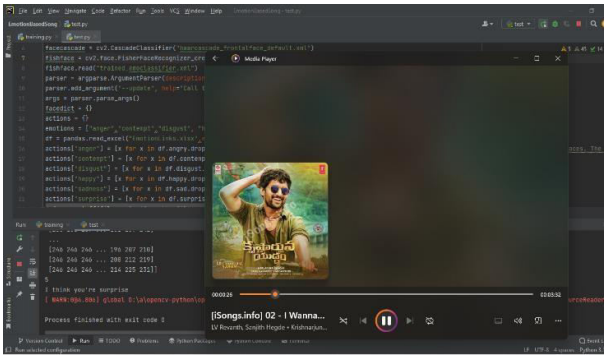


**Fig3.6PlayingSurpriseSong**

## 5..CONCLUSION

Emotion recognition via facial expressions is an important academic topic that has received a lot of interest in the past. It is clear that the problem of emotion recognition using image processing algorithms is becoming increasingly difficult. Researchers are always experimenting with different types of features and image processing technologies in order to find a solution. Image processing algorithms have a wide range of applications in medical and human science. There are constantly new approaches and methods being created that use image processing algorithms to extract the user's emotion and treat the user using the derived emotion. Emotion recognition has become increasingly important in all aspects of life, and if a robust algorithm is built that can reliably classify a person's emotions, a great deal of progress in the industry can be made. The system was able to successfully record a user's emotion. This predicate has been tested in a real-time context. However, to establish the robustness of the constructed system, it must be tested under various lighting circumstances.

## REFERENCES

1. ShaShaMo-”ANovelbasedmethodusingOMPGWforextractioninautomaticmoodclassification” ,IEEE transactionofeffective computing-2019
2. YuHaoChin-”Predictingtheprobabilitydensityfunction ofMusicemotionusingemotionspacemapping” ,IEEEtransactionof effectingcomputing-2018.
3. MallikarjunaReddy A, RupaKinnera G, Chandrasekhara Reddy T, Vishnu Murthy G. 2019. Generating cancelable fingerprint template using triangular structures. Journal of Computational and Theoretical Nanoscience 16(5–6):1951-1955
4. A Mallikarjuna Reddy, VakulabharanamVenkata Krishna, LingamguntaSumalatha and AvukuObulesh, Age Classification Using Motif and Statistical Feature Derived On Gradient Facial Images, Recent Advances in Computer Science and Communications (2020) 13:965. https://doi.org/10.2174/2213275912666190417151247.
5. DegerAyata-”Musicrecommendationusingwearablephysiological sensors”,Departmentcomputerengineering,IEEE,Istanbul,Technicaluniversity-2011
6. VaidS,SinghPandKaurC2015EEGsignalanalysisforBCIinterface:AreviewIn2015fifthinternationalconferenceonadvancedcomputing&communicationtechnologies 143-147 IEEE
7. Mallikarjuna Reddy, A., Venkata Krishna, V. and Sumalatha, L. Face recognition approaches: A survey. International Journal of Engineering and Technology (UAE), 4.6,6(7)(2018) 117-121. doi: 10.14419/ijet.v7i4.6.20446.
8. M. R. Ayaluri, K. Sudheer Reddy, S. R. Konda, and S. R. Chidirala, “Efficient steganalysis using convolutional auto encoder network to ensure original image quality,” PeerJ Computer Science, vol. 7, p. e356, 2021.
9. C Ramakrishna, G Kiran Kumar, A Mallikarjuna Reddy, and P. Ravi, “A Survey on various IoT Attacks and its Countermeasures,” Int. J. Eng. Res. Comput. Sci. Eng., vol. 5, no. 4, pp. 2394–2320, 2018, [Online]. Available: http://ijercse.com/specissue/april-2018/27.pdf.
10. Swarajya Lakshmi V Papineni, SnigdhaYarlagadda, HaritaAkkineni, A. Mallikarjuna Reddy. Big Data Analytics Applying the Fusion Approach of Multicriteria Decision Making with Deep Learning Algorithms International Journal of Engineering Trends and Technology, 69(1), 24-28, doi: 10.14445/22315381/IJETT-V69I1P204.