



MOODIFY: Music and Movie recommendation system using Facial Emotion Recognition

Sarvjeet Pal | Kshitij Jaiswal | Ram Babu Yadav | Sonali Dubey

Department of Information Technology, Babu Banarasi Das Engineering College, Lucknow, Uttar Pradesh, India
Corresponding Author Email Id: jaiswalkshitij081@gmail.com

To Cite this Article

Sarvjeet Pal, Kshitij Jaiswal, Ram Babu Yadav and Sonali Dubey. MOODIFY: Music and Movie recommendation system using Facial Emotion Recognition. International Journal for Modern Trends in Science and Technology 2022, 8(06), pp. 217-220. <https://doi.org/10.46501/IJMTST0806036>

Article Info

Received: 10 May 2022; Accepted: 05 June 2022; Published: 08 June 2022.

ABSTRACT

Face recognition technology is gaining widespread attention due to its tremendous application value and market potential. It is being used in several areas such as robotics, artificial intelligence, monitoring systems and many more. By developing a recommended system, it can help users decide what music they will listen to reduce their stress level. Users don't have to waste time searching for songs and movies. Then, the best track and film that suits the user's mood is recognized then the song and movie is displayed to the user. According to his / her whims. The user's image is captured using a webcam or take a picture of the user and create the right song according to the user's mood and emotions.

KEYWORDS: Facial Emotion Detection, Music Recommendation, Movie Recommendation

1. INTRODUCTION

People tend to express their emotions primarily through facial expressions. The expression of human feelings gives an important role, it provides the 'mood' of a person, with the use of CNN to design an effective video surveillance system. The person's feelings are expressed through current characteristics such as "Happy, Sad, Neutral, Exclamatory and Angry" through his facial expressions, as per the psychology, the EEG patients make them happy to listen to the music. The facial expression is read from the input and extracted the information from the camera. The camera is the first object to identify and detect the mood of the person the person can't keep identifying the mood of the person. It needs a separate application for the identification and observation of the person. This Music and Movie recommendation system is designed to catch people Emotions through the webcam interface

available on the computer system. The software capture user images, then image segmentation and image processing techniques It extracts features from the target human face and tries to recognize the emotions that person is trying to express. Whenever the user clicks on the songs, they are redirected to the Spotify and for movies, they are redirected to the IMDB website for the reviews and recommendation.

2. LITERATURE REVIEW

Currently, there are various methods proposed by researchers to classify the emotional states of human behavior. We have focused only on some of the basic human emotions.

Renuka R Londhe proposes an accurate and efficient approach for examining the extracted facial expressions. These documents focus primarily on examining changes in surface curves, as well as the intensity of the

corresponding pixels. Using an artificial neural network (ANN), we categorized the extracted features into six major universal emotions: anger, disgust, fear, happiness, sadness, and surprise. A scaled conjugate gradient backpropagation algorithm that correlates with a two-layer neural network was used to achieve a detection rate of 92.2%. Different approaches have been proposed in relation to different classes of emotions and moods to reduce the human effort and time required to manually separate songs from playlists.

W. Amelia et al. has developed a hybrid method that combines a keyword detection method and a learning method. Emotion recognition is based on Paul Ekman's basic emotions: anger, disgust, fear, joy, sadness, and surprise. The learning-based method used three algorithms: multinomial logistic regression and support vector machine (SVM) and multinomial naive bayes. The entry here is a short story, and the system determines the type of emotion it evokes to the reader. This technique uses multiple learning methods to derive emotions and is costly to calculate the model. Many approaches have been developed to extract the face and audio characteristics of audio signals. Few systems can create emotion-based playlists of human emotions. Several existing systems have been developed that can automatically create playlists. But they used an additional device. Devices such as sensors and EEG systems. Using such a device further increases the overall cost of the proposed design. Some of the drawbacks of existing systems are: Existing systems are very complex and it takes time to extract facial features in real time. Existing systems can create playlists, but they are less accurate.

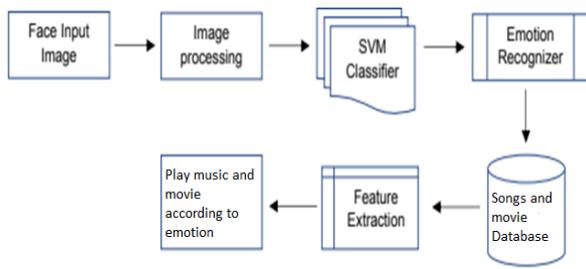
3. METHODOLOGY

The proposed algorithm is powerful enough to counter large pose changes. Large variations in poses tend to reduce the efficiency of existing algorithms. This standard image input format is used for reduction. Few systems recognize the face first and then locate it.

On the other hand, some other algorithms rarely detect and identify faces at the same time. Each Face detection algorithm mainly has common steps. First, achieve a response time, then run the data dimension. Focusing on the data dimension, some algorithms extract facial measurements and then react to specific facial regions.

Advantages of the proposed algorithm. One of the main advantages of using static images is that there is no change in pose. The three most common problems are the presence of indistinguishable items such as glasses and beards, the quality of static images, and indistinguishable facial gestures. Face Feature Extraction Pictures are spoken to as weight eigen vectors that are consolidated and known as "Eigenfaces". One of the main focal points of eigenfaces is the comparability of pixels between images by the method of covariance networks.

In this facial recognition - based music and movie recommendation system frameworks, get the face first and afterward track the segregation of the music and movie. Then again, different calculations seldom endlessly identify faces simultaneously. Each face location calculation as a rule has standard advances. To start with, accomplish reaction time, and afterward makes the musical segregation. Zeroing in on information size a couple of calculations produce looks and the accompanying answers a particular facial region. Benefits of this approach, utilizing an upward picture (Nose, eyes and mouth) gives an incredible benefit to identify the characteristic ("Happy, Sad, Exclamatory, Angry and Neutral). The three most normal issues are the presence of obscure articles like mirrors or stubbles, the nature of still pictures and undetectable looks. Face Disposal Images are called coordinated eigenvectors integrated otherwise called "Eigenfaces". One of the significant things taken from Eigen's face is the correlation between pixels between pictures as far as their covariance between the face and segregation of the music. This methodology focuses on eigen faces. The Eigen's face gives the facial expression are emotional alert. This fundamental truth is regarded as important and useful. Face-to-face techniques focus on seeing the eyes, nose, cheek, and brow and how to change with deference. Regions with tremendous change, genuinely, regions with high changeability are focused on following architecture.



Graphic 1. Block Diagram.

Deep Learning

A ML technique that makes computer to behave what humans behaves naturally learns by example. Deep learning is a main tech which works under the hood in driverless cars, that helps in recognizing a stop sign, distinguishing a pedestrian from a lamppost. Its main technique in voice control in devices like phone, tablet, TV, and hands-free speaker. As technologies are rising deep learning is getting lots of attention in this tech era. It has achieved a great result that were not possible before.

In Deep Learning, on the basis of images, text or sound a computer model learns to perform classification. Deep learning computer model may achieve highest accuracy, sometime exceeds human-level performances. Computer model is trained by using large sets of labelled data and neural network architecture that contains many layers.

Open cv

OpenCV is a library used for solving computer vision problems. It is used to perform tasks like face detection, objection tracking, landmark detection, and much more. It supports many languages like Java, C++, Python.

OpenCV (Open-Source Computer Vision Library) is a library mainly aimed at real-time computer vision. It was developed by Intel it was later supported by Willow Garage. The library is cross-platform and free for use under the open-source Apache 2 License Starting with 2011, OpenCV features GPU acceleration for real-time operation.

TensorFlow

TensorFlow is a library developed for mainly solving deep learning applications. It supports typical machine learning. It was developed for computing numerical

problems regardless of deep learning. Soon it proved itself to be very helpful in development of deep learning problems and after this Google open-sourced it.

TensorFlow takes multi-dimensional array of higher dimensions also known as tensors. Multi-dimensional arrays are very useful in handling large amount of data. It works keeping data flow graphs that have nodes and edges as base. The execution mechanism is in the form of graph so it is much easier to execute TensorFlow code in a distributed manner across a cluster of computers while using GPUs. TensorFlow is the core platform and library for ML. TensorFlow's APIs uses Keras to allow users to make their own machine learning models.

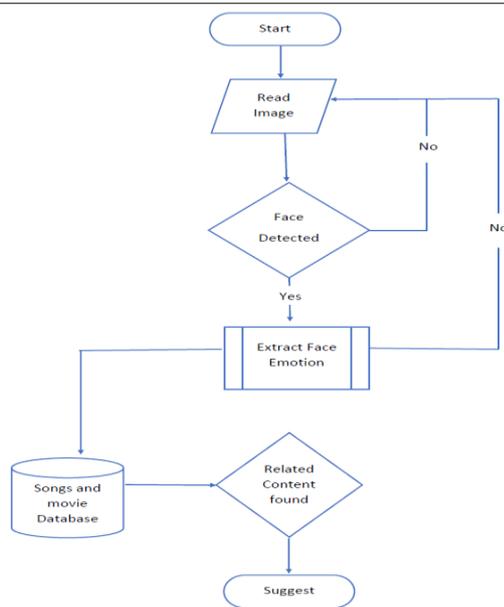
4. MODULE IDENTIFICATION

Music Feature

Music may be suggested on the basis of available information such as the album and artist. Another way of identifying the mood based on pitch and rhythm. This will lead to predictable recommendations. For example, recommendation of a song based on the artists that the user is known to enjoy particularly is not useful. With developing procedures, the optimization of Neural Networks has turned out to be progressively famous. We optimize an Artificial Neural Network (ANN) to arrange the melodies in individual classes. The dataset we used for preparing the model is million song datasets given by Kaggle.

Movie Feature

Movie may be suggested on the basis of information available on the IMDB. Another way of classifying the mood based on the output. But this will lead to predictable recommendation so this is movie recommending system based on the data provided by user with his facial expressions. The primary focus of our recommendation system is to filter and predict only the movies that users like when given data about themselves.



Flow chart of the proposed system.

5. CONCLUSION AND FUTURE SCOPE

A simple system is proposed here for the music and movie recommendation using facial emotion detection. It suggests by extracting different facial emotion of a person: Happy, anger, surprise, neutral. There are degrees for further upgrades and improvements. Due to the one-sided nature of each item set, you need to make sure to consider a progressively effective approach to integrating different highlights and features. We also find that we can further extend the collection of information used to build clustering models to improve the accuracy of the layout framework. The Emotion Based Music and Movie Recommendation System will be of great advantage to users looking for music and movie based on their mood and emotional behavior.

The proposed system might have functions and it maybe user-friendly, but the proposed system could have further advancement in future. The future scope of this system will be to add some books and novels according to the mood of the person so that the user can go through that particular section for reading books and a gaming section can be added so that if the user is in a mood to play some games so they can go to that recommended link provided by the system according to the facial emotion detection and can enjoy the game online. The proposed system is now available for Windows operating systems. In the future,

it will be available to users of other operating systems such as IOS, Ubuntu, etc. and mobile phone platforms as well. In the proposed work, only single emotion is detected at a time, so that it can be further enhanced to detect mixed emotions.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

REFERENCES

- [1] D. Meena and R. Sharan, "An approach to face detection and recognition," 2016 International Conference on Recent Advances and Innovations in Engineering (ICRAIE), Jaipur, 2016, pp. 1-6, doi: 10.1109/ICRAIE.2016.7939462.
- [2] Nikhil Zaware, TejasRajgure, AmeyBhadang, D.D. Sakpal "EMOTION BASED MUSIC PLAYER" International Journal of Innovative Research & Development, Volume 3, Issue 3, 2014.
- [3] Renuka R. Londhe, Dr. Vrushshen P. Pawar, Analysis of Facial Expression and Recognition Based On Statistical Approach, International Journal of Soft Computing and Engineering (IJSCE) Volume-2, May 2012.
- [4] Henal Shah, Tejas Magar, Purav Shah and Kailas Devadkar "AN INTELLIGENT MUSIC PLAYER USING SENTIMENTAL ANALYSIS" International Journal of Innovative and Emerging Research in Engineering, Volume 2, Issue 4, 2015.
- [5] AnukritiDureha "AN ACCURATE ALGORITHM FOR GENERATING A MUSIC PLAYLIST BASED ON FACIAL EXPRESSIONS" International Journal of Computer Applications, Volume 100-No.9, 2014.
- [6] Hafeez Kabini, Sharik Khan, Omar Khan, Shabana Tadvi "EMOTION BASED MUSIC PLAYER" International Journal of Engineering Research and General Science, Volume 3, Issue 1, 2015.
- [7] G. Tzanetakis, and P. Cook: "MARSYAS: A framework for audio analysis," Org. Sound, Vol. 4, No. 3, pp. 169-175, 1999.
- [8] O. Lartillot, and P. Toiviainen: "A MATLAB TOOLBOX FOR MUSICAL FEATURE EXTRACTION FROM AUDIO," Proceedings of the International Conference on Digital Audio Effects (DAFx'07), 2007.
- [9] S. Dornbush, K. Fisher, K. McKay, A. Prikhodko and Z. Segall "Xpod- A Human Activity and Emotion Aware Mobile Music Player", UMBC Ebiqity, November 2005.
- [10] Chang, C. Hu, R. Feris, and M. Turk, "Manifold based analysis of facial expression," Image Vision Comput, IEEE Trans. Pattern Anal. Mach. Intell. vol. 24, pp. 05-614, June 2006.
- [11] Z. Zeng, M. Pantic, G. I. Roisman, and T. S. Huang, "A survey of affect recognition methods: Audio, visual, and spontaneous expressions," IEEE. Transaction Pattern Analysis, vol 31, January 2009.