Applying Machine Learning Models Recommending The Music Based On Emotion

D. Bujji Babu 1, G. Srujana 2

#1Professor in the department of MCA at QIS College of Engineering and Technology (Autonomous), Vengamukkapalem, Prakasam (DT)

#2 PG Scholar in the department of MCA at QIS College of Engineering and Technology (Autonomous), Vengamukkapalem, Prakasam (DT)

Abstract_ It is often confusing for a person to decide which songs to listen from a massive collection of songs on the Internet. While music genre plays a huge role in building and displaying social identity, the emotion expression of a song and even more importantly its emotional impression on the listener is often underestimated in the domain of music preferences. Only a few decades back, choosing music by genre and/or artist was effectively the only option. This has changed hugely with the availability of custom playlists and personal recommendations on digital music platforms. People tend to listen to music based on their mood and interests. It is widely known that humans make use of facial expressions to express themselves. We propose a new approach for playing music automatically using facial emotion. Most of the existing approaches involve playing music manually, using wearable computing devices, or classifying based on audio features. Instead, we propose to change the manual sorting and playing. We have used a Convolutional Neural Network for emotion detection.Our proposed system tends to reduce the computational time involved in obtaining the results and the overall cost of the designed system, thereby increasing the system's overall accuracy.

1.INTRODUCTION

People frequently use their facial expressions to convey their feelings. It has long been recognized that music may change a person's disposition. A user's mind can be gradually calmed down and an overall nice effect can be produced by capturing and recognizing the emotion being uttered by the person and playing appropriate tunes matching the one's mood.[7] The goal of the project is to record a person's facial expressions as they exhibit emotion. The web camera interface for computer systems is used by a music player to record human emotion. The software takes

a user's image and uses image segmentation and image processing techniques to extract information from a target person's face in an effort to determine what emotion they are attempting to convey. The idea attempts to uplift the user's mood by playing music that fits their needs while simultaneously taking their photograph. Facial expression recognition has been the most effective method of expression analysis known to humanity since ancient times. Facial expressions are the best way that people may deduce or evaluate the emotion, sentiment, or thoughts that another person is attempting to express. Mood modification may occasionally be useful in overcoming depressive and sad circumstances. Many health dangers can be prevented with the use of expression analysis, and actions can be done to improve a user's mood as well. Our project focuses classification of songs based on acoustic features. Then system determines the mood of the user through its facial expressions and eventually system recommends songs to user according to mood of the user which was earlier classified into different emotions. In this way user can get recommendation of songs based on his current mood and will change dynamically based on current mood.

2.LITERATURE SURVEY

Emotions are a basic part of human nature. Human's emotional states and present moods can be quickly seen through their facial expressions. Basic emotions (happy, sad, angry, excited, surprised, disgusted, fear, and neutral) were taken into consideration when developing this system. In this research, face identification was accomplished using a convolutional neural network. Recommended manual playlist segregation and song annotation based on the user's emotional state as a timeconsuming and labor-intensive task. There have been many algorithms suggested to automate this process. However, the currently used algorithms are slow, use extra hardware, raise the system's overall cost, and have substantially the overall cost of the device and have much poorer precision. It aims to increase the accuracy of the system design. contrasting a face expression recognition module of the system with a dataset that is both user-dependent and userimpartial serves to validate it. According to AyushGuidel [1] et al, one may quickly determine a person's emotional condition by observing their facial expressions. Basic emotions (happy, sad, angry, excited, surprised, disgusted, fear, and neutral) were taken into account when developing this system. In this research, face detection was implemented using a convolutional neural network. On the whole, people refer to music

as a "language of feelings." Sadhvika [4] et al. recommended manual playlist segregation and song annotation based on the user's current emotional state as a time-consuming and labour-intensive task. There have been many algorithms suggested to automate this process. However, the currently used algorithms are slow, use extra hardware (such EEG structures and sensors), raise the system's overall cost, and have substantially lower accuracy. The report suggested by Ramya Ramanathan [3] described an intelligent music player that used emotion recognition. A fundamental aspect of human nature is emotion. They have the most significant role in life. Human emotions are intended to be shared and understood by others. The local music library of the user is initially sorted in accordance with the feelings the album arouses. The lyrics of the music are frequently taken into consideration to ascertain this. This paper discusses in detail the methods for human emotion detection that are available for use in developing emotion-based music players, the method a music player uses to detect human emotions, and the best way to use the proposed system for emotion detection. Additionally, it gives a brief explanation of how our systems work, how to create playlists, and how to classify emotions. Preema [2] et al. claim that creating and

maintaining a large playlist requires a lot of time and work. The report claims that the "music player itself selects a song based on the user's current mood, and the application analyses and categorizes audio files according to audio properties to construct playlists depending on moods..

3. PROPOSED SYSTEM

Personal Data Storage (PDS), which shifts from a service-centric to a user-centric approach, has started a significant transformation in how people can store and handle their personal data. PDSs give users the ability to compile the personal information they generate into a single logical vault. Once connected, such data can be used by appropriate analytical tools, shared with third parties, and controlled by end users.

The malware indicators of Sarma et al. are greatly outperformed by Fair Play. Additionally,we demonstrate that malware frequently commits search rank fraud as well: More than 75% of the gold standard malware apps were detected as phoney by Fair Play after it was trained on fraudulent and benign apps. Fair Play discovers hundreds of fraudulent apps.

Fair Play also enabled us to discover a novel, *coercive review campaign* attack type, where app users are harassed into

writing a positive review for the app, and install and review other apps

3.2 MODULES

3.1.1 Upload Images with Face: This module allows the user to upload an image containing one or more faces. The module uses the OpenCV library to read and display the image on the screen. It serves as the input step for subsequent face detection and emotion recognition.
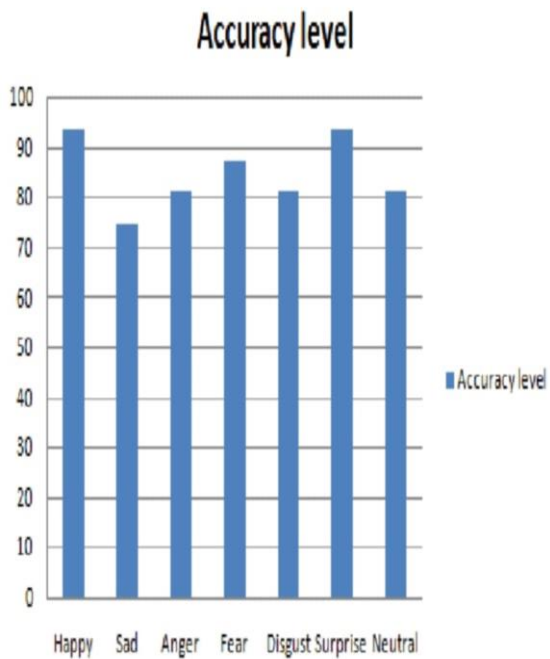
3.1.2 Pre-Process and Detect Faces: This module is responsible for detecting faces within the uploaded image. It uses the Haar Cascade Classifier, a popular algorithm for face detection provided by OpenCV. The Haar cascade classifier identifies regions of the image that are likely to contain faces based on predefined patterns (Haar features). Once faces are detected, rectangles are drawn around each face to visualize the result.

3.1.3 Detect Emotion: The emotion detection module leverages a pre-trained deep learning model for recognizing emotions from faces. The Haar cascade-detected face regions are then extracted, preprocessed, and fed into the emotion recognition model. The model outputs the predicted emotion label for each detected face, such as 'Angry,' 'Happy,' 'Sad,' etc.

The emotion labels are then displayed on the image next to each respective face.

3.1.4 Play Song: The play song module uses the pygame library to play a preselected song. This module enables some form of audio feedback or engagement, possibly to create a more interactive experience in the application. Overall, the combination of these modules forms an interactive application where the user can upload an image containing faces. The application then detects the faces in the image and proceeds to predict the emotions associated with each detected face. As a final touch, the application plays a song, which could be chosen based on the overall emotions detected from the faces, enhancing the user experience further
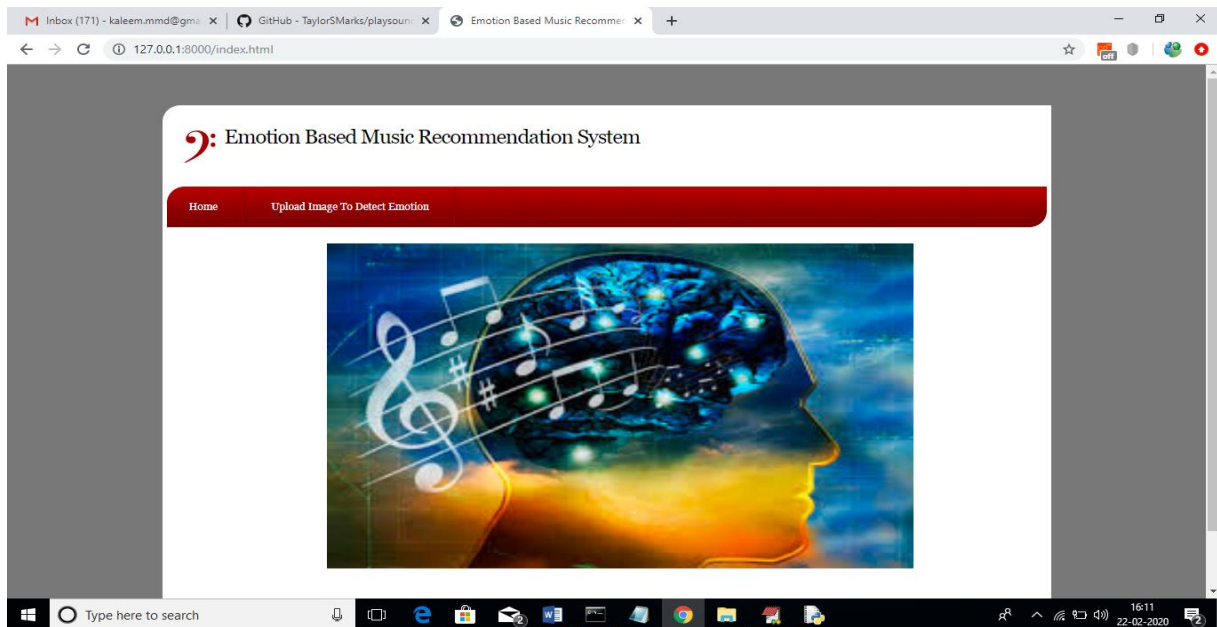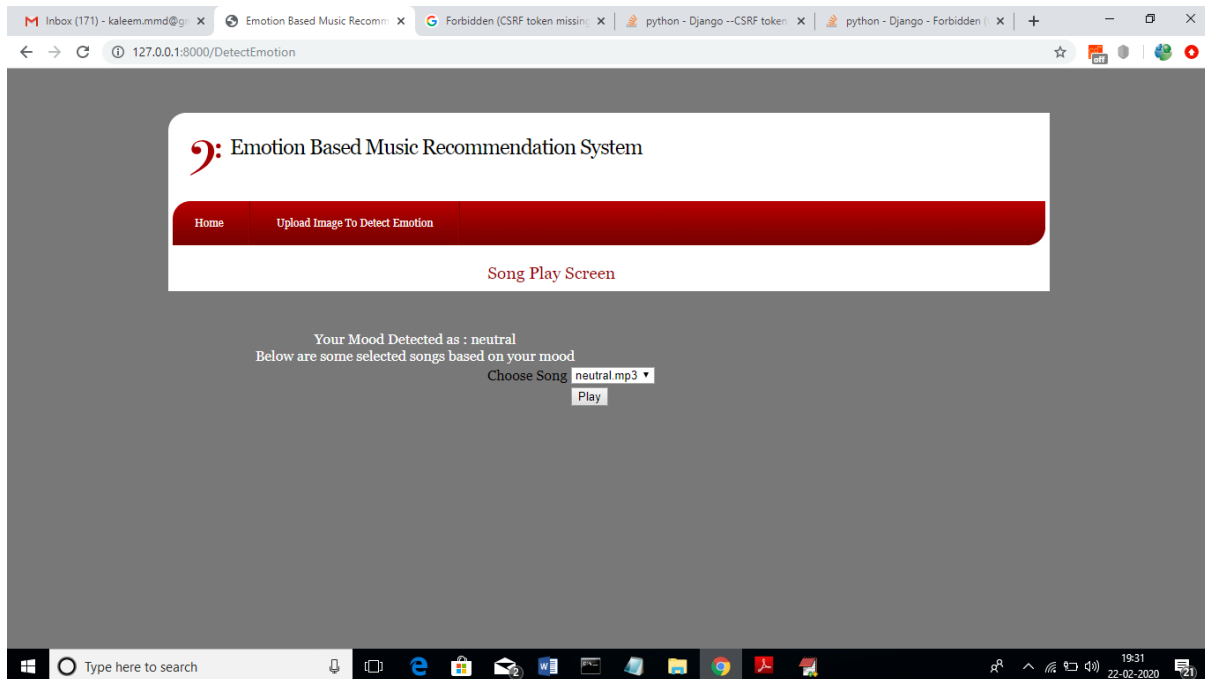
4.RESULTS AND DISCUSSIONS

Accuracy level

Accuracy level

Facial Expression	Accuracy level (%)
Happy	93.75
Sad	75
Anger	81.25
Fear	87.5
Disgust	81.25
Surprise	81.25
Neutral	93.75

Fig 2:Accuracy level

Fig1: expression recognition rate

Fig 3: Upload Image to Detect Emotion' link in above screen to get start web cam

Fig 4: In above screen we can see emotion is detected as neutral and we got list of songs. Select any song and click on 'Play' button to start playing song

5.CONCLUSION

music that suits the current emotional needs of the user. There already exists widely used audio and video recommender systems like Spotify, Netflix, Gaana, YouTube etc which work based on search queries and not emotional needs of the user. So, the proposed CNN based model detects the emotion and generate the playlist accordingly. The model is embedded with modules for detecting facially expressed emotions and sentiments expressed with a chatbot interaction which contribute to a robust music recommender system. As a futurer research direction of the propsoed work, the emotions detected from the proposed model can also act as input to various other emotion-based suse cases such as driver assisting systems, lie detector,surveillance,advertising/marketing , mood based learning, gaming etc.

REFERENCES

[1] S. Jhajharia, S. Pal, and S. Verma, "Wearable computing and its application," Int. J. Comp. Sci. and Inf. Tech., vol. 5, no. 4, pp. 5700– 5704, 2014.

[2] K. Popat and P. Sharma, "Wearable computer applications: A feature

perspective," Int. J. Eng. and Innov. Tech., vol. 3, no. 1, 2013.

[3] P. Melville and V. Sindhwani, "Recommender systems," in Encyc. Of mach. learn. Springer, 2011, pp. 829–838.

[4] N. Sebe, I. Cohen, T. S. Huang et al., "Multimodal emotion recognition," Handbook of Pattern Recognition and Computer Vision, vol. 4, pp. 387– 419, 2005.

[5] R. W. Picard, E. Vyzas, and J. Healey, "Toward machine emotional intelligence: Analysis of affective physiological state," IEEE Trans. Pattern Anal. Mach. Intell., vol. 23, no. 10, pp. 1175–1191, 2001.

[6] D. Ayata, Y. Yaslan, and M. Kamasak, "Emotion recognition via galvanic skin response: Comparison of machine learning algorithms and feature extraction methods," IU J. of Elect. & Elect. Eng., vol. 17, no. 1, pp. 3129–3136, 2017.

Author's Profiles

Dr.D.BujjiBabu, currently working as a Professor and Head in the Department of Master of Computer Applications, QIS College of Engineering and Technology, Ongole, Andhra Pradesh. He did his M.Tech(CSE) from JNTUK, Kakinada and Ph.D(CSE) from Acharya Nagarjuna University. He published more than 50 research papers in reputed peer reviewed Scopus indexed journals. He also attended and presented research papers in different national and international journals and the proceedings were indexed IEEE, Springer Link series. He visited the countries Kuching, Malaysia for attending and presenting his research articles. 3 Patent journals are published and in pipeline for grant. He wrote more than an dozen of monographs and published by the Technical Publishers. He Published Two Course content modules for the students of Acharya Nagarjuna University. He is the recognized research supervisor under JNTUK, Kakinada and guided several UG and PG Projects, currently supervising 3 research scholar under JNTUK. His area of interest is Software Engineering, Data Mining, Data Science, Big Data and Programming Languages. He is the Principal Investigator for the DST Sponsored Project and Co-PI for another DST Project.

MS. G.Srujana as PG Scholar in The Department of MCA QIS College of Engineering and Technology (Autonomous), Vengamukkapalem, Prakasam

(DT).She has completed B.Sc in Computer Science from Sri SGowthami Degree and PG College Areas of Interests Machine Learning.