LITERATURE SURVEY

# Mood based music recommendation system

Ankita Mahadik · Shambhavi Milgir · Janvi Patel· Prof. Vijaya Bharathi Jagan

1. Abstract :

A user's emotion or mood can be detected by his/her facial expressions. These expressions can be derived from the live feed via the system's camera. A lot of research is being conducted in the field of Computer Vision and Machine Learning (ML), where machines are trained to identify various human emotions or moods. Machine Learning provides various techniques through which human emotions can be detected. One such technique is to use MobileNet model with Keras, which generates a small size trained model and makes Android-ML integration easier.

Music is a great connector. It unites us across markets, ages, backgrounds, languages, preferences, political leanings and income levels. Music players and other streaming apps have a high demand as these apps can be used anytime, anywhere and can be combined with daily activities, travelling, sports, etc. With the rapid development of mobile networks and digital multimedia technologies, digital music has become the mainstream consumer content sought by many young people. People often use music as a means of mood regulation, specifically to change a bad mood, increase energy level or reduce tension. Also, listening to the right kind of music at the right time may improve mental health. Thus, human emotions have a strong relationship with music. In our proposed system, a mood-based music player is created which performs real time mood detection and suggests songs as per detected mood. This becomes an additional feature to the traditional music player apps that come pre-installed in our mobile phones. An important benefit of incorporating mood detection is customer satisfaction. The objective of this system is to analyse the user’s image, predict the expression of the user and suggest songs suitable to the detected mood.

Conclusion :

Even though human emotions are complex and subtle, it is possible for a machine learning model to be trained to accurately detect a set of emotions which can be differentiated from each other with certain facial expressions. The expression on a person’s face can be used to detect their mood, and once a certain mood has been detected, music suitable for the person’s detected mood can be suggested. Our model, having the accuracy of approximately 75%, is able to detect seven moods accurately: anger, disgust, fear, happy, sad, surprise and neutral; and our android application is able to play the music that would be suitable for the detected mood. For accurate detection of fear and disgust moods, additional parameters such as heart rate or body temperature must also be considered rather than solely depending on facial expressions. In addition to that, finding suitable music to be played on detection of fear or disgust mood is also a challenge. As a result, it can be considered as a future scope for our project. Our trained model is an overfit model, which can sometimes lead to fluctuations in accurate detection. For example, the “disgust” mood is mostly classified as “angry” mood since the facial features (eyebrows, cheeks) are similar for both. Thus, for more accurate results it needs to be trained for more images, and for a greater number of epochs. Recommendation of movies and TV series on the basis of mood detection can also be considered as a future scope for our project.

# Emotion Based Music Recommendation System

Dhruv Piyush Parikh1, Shatakshi Shree2, Abhay Arora3

2) Abstract :

Our world today is driven by machines of various complexities. From a basic one like a computer to a highly complex humanoid robot, everything is a product of human intelligence. A lot of industries are being benefited from such new technologies. Facial Expression Recognition is one of these technologies. It has a wide range of applications and is an area that is constantly evolving. The analogy behind it is, when we gaze at someone, the eyes send signals to the brain. The face patterns of that specific person are carried by these messages. These patterns are then compared to those stored in the brain's memory. Inspired by such innovations, our research collects human expressions and analyses their emotions using our vast dataset, offering some necessary strategies to change their facial expressions. Due to the competitive environment, the youth of our generation has been inclined to a lot of mental health problems such as anxiety and depression. Our generation's youth has been predisposed to a variety of mental health issues. Our idea attempts to provide a relaxing atmosphere to a person based on his or her facial expressions. Keywords: Facial Expression, Face Recognition, Python, PyWhatkit, OpenCV.

Conclusion :

In conclusion, facial recognition not only recognizes the state of emotion but also the identity. It is an unavoidable conclusion that will pervade much of our lives in most of the planet. The following are few areas of future research: A. Facial expression analysis can be employed extensively in interrogations. As one cannot mimic all of the distinctive qualities all at once, the same subtle cues that a person takes while interacting with others may be utilized with criminals to know their state of mind as technology advances. B. Our face is both the most important and the most expressive aspect of us. This can be used in instances where people are unable to communicate, such as at a rehabilitation center or when they are mentally ill. C. If carried out with a better accuracy, the expression analysis can also be integrated in phones, doorbells, or locks in our homes, automobiles, virtual reality, and so on.

# Facial emotion recognition and music recommendation system using CNN‑based deep learning techniques Brijesh Bakariya1 · Arshdeep Singh1 · Harmanpreet Singh1 · Pankaj Raju1 · Rohit Rajpoot1 · Krishna Kumar Mohbey2

3) Abstract :

Facial Expression Recognition (FER) is utilized in various fields, such as education, gaming, robotics, healthcare, and others. Facial expression techniques, for instance, an interactive robot with Artificial Intelligence, recognize human faces, detect the emotions of the person it is conversing with, and then use these emotions to choose appropriate answers. One use case for face emotion detection is playing music based on the user’s mood. To do this, we can analyze the user’s facial expression to deduce their feelings. As a result, new emotion models require more investigation as existing one’s struggle to correctly measure music’s connection with facial emotion. In this paper, we implement this kind of job using Convolution Neural Network (CNN) based deep learning approach. Deep learning can more effectively analyze unstructured data, movies, and other forms of media than machine learning. In our research, we have created a real-time system that can recognize human faces, assess human emotions, and even recommend music to users. The OAHEGA and FER-2013 datasets were utilized for experimental study. We created and trained two emotion recognition models using various combinations of these datasets. The proposed model’s accuracy is 73.02%. Using our CNN model, we can predict six emotions: anger, fear, joy, neutral, sadness, and surprise. The proposed system can be utilized in different places where real-time facial recognition plays an important role.

Keywords --- Face recognition · Machine learning · Deep learning · Artificial intelligence · Music recommendation

Conclusion : In this work, we construct a system capable of identifying a person's face and emotions and recommending music depending on the individual's predominant emotions. Our approach predicts six emotions: anger, fear, happiness, neutrality, sorrow, and surprise. Faces are discovered and recognized using Python tools and packages for computer vision. For emotion recognition, CNN-based deep learn ing principles and methodologies are used with machine learning frameworks such as TensorFlow. FER-2013 and OAHEGA are the datasets used for training and evaluating models. Several models are trained and evaluated on various dataset combinations, and the model with the highest accuracy is selected for usage in our system. Process ing power, unbalanced datasets, overfitting or underfitting, etc., are the primary challenges to implementation. Our trained emotion detection model can work in real time with less computer power, and the complete system is instantaneous. Our system has a variety of practical applications, such as basic face recognition in mobile devices to unlock them or for various security functions, in various camera apps, and in social networking application filters. AI bots are another important application of the proposed system. A bot can recognize a person's face and emotions with our system. These factors enable a bot to engage with humans and perform various jobs. The emotion detection capability of our system is precious in the gaming, healthcare, and online learning industries. Understanding musical concepts and theories is necessary for developing a Facial Detection based music recommendation system; nevertheless, there is not nearly enough quantitative research conducted on these subjects. Some highly developed musical concepts can, at least to some extent, express musical feelings. Consequently, research into face detection-based music recommendation systems is a potential development route for essential high level musical conceptions. This is because facial recognition systems are becoming increasingly advanced.

# A Novel Emotion based Music Recommendation System using CNN

# Tejaswini Priyanka V· Y Reshma Reddy· G Ramesh· S Gomathy · Dharani Vajja

4) Abstract :

Music has a unique emotional connection with humans. It is a means of connecting individuals from all over the world. On the other hand, it is a highly difficult task to generalize music and claim that everyone would prefer and enjoy the same type. Emotion-based music selection is important because it can assist humans in reducing stress. Its major purpose is to accurately predict the user's emotions, and play songs depending on the user's preferences. Using Human Computer Interaction (HCI), the proposed bot recognizes human emotions from facial emotions. Another significant challenge is the extraction of facial features from the user's face. The proposed CNN Algorithm is utilized in the proposed model to properly capture and recognize the user's face from the live webcam stream and to detect emotions based on facial factors such as lips and eyes. Also, an additional option will be provided for people to make a good choice manually.

Keywords— Face Recognition, Image Processing, Emotion Detection, Music, and Mood detection

Conclusion :

This study has successfully developed automatic facial expression recognition system for the purpose of creating an emotion-based music player. Facial emotion analysis has been extensively researched and applied, beginning with psychological research. Manual face analysis previously employed by psychologists has now been replaced by suitable computer software. Various image processing algorithms have been developed to meet the demands of the facial emotion recognition system. This project not only covers the theoretical foundation, but also provides a framework for designing and implementing an Emotion-based music player. The proposed system processes videos, extracts facial expressions, recognizes basic emotions, and displays a list of songs based on the emotions. Simple methods were used to develop the proposed music emotion recognition system. It extracts a person’s facial expressions, such as happiness, anger, surprise, and neutrality to offer music suitable for the individual’s emotion. Although the system cannot handle major head rotations and obstacles, it allows head movements. The future work will be dedicated to improve the recognition rate of the system.

# EMOTION BASED MUSIC RECOMMENDATION SYSTEM H. Immanuel James1, J. James Anto Arnold2, J. Maria Masilla Ruban3, M. Tamilarasan4, R. Saranya5

1. Abstract :

The human face plays an important role in knowing an individual's mood. The required input are extracted from the human face directly using a camera. One of the applications of this input can be for extracting the information to deduce the mood of an individual. This data can then be used to get a list of songs that comply with the “mood” derived from the input provided earlier. This eliminates the time-consuming and tedious task of manually Segregating or grouping songs into different lists and helps in generating an appropriate playlist based on an individual's emotional features. Facial Expression Based Music Player aims at scanning and interpreting the data and accordingly creating a playlist based the parameters provided. Thus our proposed system focus on detecting human emotions for developing emotion based music player, which are the approaches used by available music players to detect emotions, which approach our music player follows to detect human emotions and how it is better to use our system for emotion detection. A brief idea about our systems working, playlist generation and emotion classification is given.

Keywords --- Emotion Recognition, Linear classifier, Facial Landmark Extraction, SVM Classification.

Conclusion :

In this project, we presented a model to recommend a music based om the emotion based detected from the facial expression. This project proposed designed & developed an emotion based music recommendation system using face recognition System. Music are the one that has the power to heal any stress or any kind of emotions. Recent development promises a wide scope in developing emotion based music recommendation system. Thus the proposed system presents Face based emotion recognition system to detect the emotions and play music from the emotion detected.