

# Music Player System for User Facial Recognition using CNN Algorithm

Mr. Ruturaj Pawar<sup>1</sup>, Mr. Pradip Shelke<sup>2</sup>, Mr. Akash Phadtare<sup>3</sup>,  
Mr. Ashish Naldurgkar<sup>4</sup>, Prof. Gitanjali Kadlag<sup>5</sup>

Students, Department of Artificial Intelligence & Data Science Engineering<sup>1,2,3,4</sup>  
Assistant Professor, Department of Artificial Intelligence & Data Science Engineering<sup>5</sup>  
Shree Ramchandra College of Engineering, Pune, Maharashtra, India

**Abstract:** A strong language for expressing your emotion is music. Many people utilize music therapy to get through difficult time in their life. Emotion and moods can be easily reflected in music. We often listen to energetic music when playing sports, and the same goes for fatigued or nervous people—a lovely, calming tune can help them relax. "Melancholic Music" is a music player which plays songs based on your mood, it uses neural network to categorize the many emotions on a person's face, such as anger, disgust, fear, etc. Neural network is a method in artificial intelligence. It is a type of machine learning process called deep learning. These neural networks reflect the behavior of the human brain, allowing computer programs to recognize patterns and solve common problems in diverse domains. The project also aims to create a playlist according to different emotions. Thus, deep learning algorithms help one automate a task that can take a long time to perform.

**Keywords:** Face Recognition, Capture Image, Detect Mood, Emotions, Fetch Song

## I. INTRODUCTION

They are very few people who do not have a deep connection to music. Even if you aren't musically inclined, you certainly think of a few songs that cheer you up and bring back pleasant memories. Studies have indicated that enabling patients to listen to music improves surgical outcomes, and surgeons have traditionally listened to their own music in the operating room to relax. During Covid-19, the resurgence of antimicrobial resistance toward certain medicines became a major problem. Resurgence of antimicrobial resistance (AMR) has prompted the medical and health care sector to look for alternative treatments for particular diseases.

This brought our attention towards the emerging sector of music therapy. Not only can music express meaning and emotion, but it may also change the listener's mood. This music therapy is still at an infant stage in India whose potential has not been completely tapped. This system of "Mood Musics" gives a boost to this sector of chemotherapy and also to the sector of telemedicine.

## II. RELATED WORK

### [2.1] Emotion Recognition Using Facial Expressions

The results of recognizing seven emotional states (neutral, joy, sadness, surprise, anger, fear, and disgust) based on facial expressions are provided in this article. As features, six participants' coefficient representing aspects of facial expressions were used. For a three-dimensional facial Page 2 model, the various features were estimated by the neural networks. The characteristics were classified using a K-NN classifier and an MLP neural network.

### [2.2] Video-Based Emotion Recognition in the wild

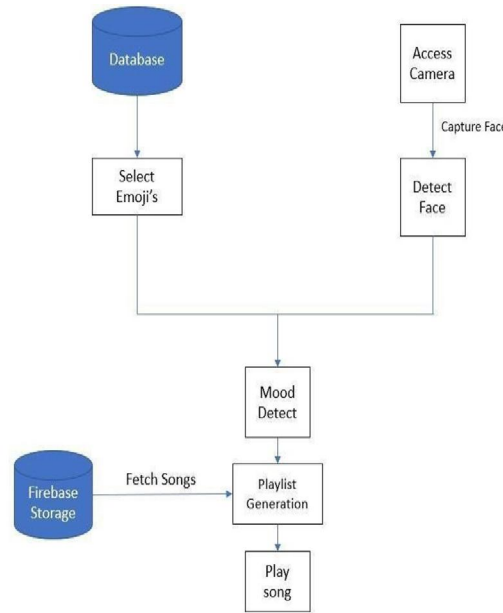
Emotion identification necessitates dealing with substantial differences in input signals, many sources of noise that distract learners, and tough annotation and ground truth acquisition settings.

This chapter discusses our approach to the challenges and covers recent breakthroughs in multi-model techniques for video-based emotion recognition in the wild modality. It presents a common computational pipeline for paralinguistics in the audio modality. It uses least-square regression-based classifiers and weighted score-level fusion to merge audio and visual information.

[2.3] Music Player Integrating Facial Emotion Recognition and Music Recommendation

This work, introduce emotion based music recommendation system, an affective cross-platform music player that recommends music based on the user’s current mood . Emotion module ,music classification module ,and recommendation module are the three components that make up the music player . The emotion module uses a photo of the user’s face as input and uses deep learning algorithms to accurately detect their mood with 90.23percent accuracy rate. The music classification module uses audio features to categorize songs into 4 different mood classes and reach a stunning result of 97.69 percent . The recommendation module recommends music to the user by mapping their feelings to the song’s mood type and taking into account the user’s preferences

**III. SYSTEM ARCHITECTURE**



System architecture ,we have database which contain emoji’s and songs also it has access camera. Face expression will be detected by to components like emoji’s and camera for that we have a database Which he has emoji’s this face expression will be detect like sad, happy, angry etc. According to the mood songs will play.

**IV. ALGORITHM**

**Conventional Neural Network:**

A conventional neural network (CNN) may be a sort of profound neural arrange outlined to handle grid- like information such as pictures or real-time data. CNNs have been amazingly successful and have accomplished extraordinary victory in numerous computer vision assignments, counting picture classification, question location,and picture division. An important feature of CNNs is their capacity to memories progressive representation from input information .

**Collaborative Filtering(CF)**

User – based collaborative filtering is based on implicit observations of normal user behavior(as opposed to the artificial behavior imposed by a rating task ) . These systems track what each user has done as well as what all users have done, such as what they have purchased and listened to music, and exploit that data. data to predict the user’s behavior in the feature ,or to predict how a user might like to behave given the chance .

Item-based collaborative filtering calculates the similarity between items calculated using people's ratings of those items. Rating distributions per item, not per user, are used in item-item models. With more users than items, each item tends to have more ratings than each user, so an item's average rating usually doesn't change quickly.

This leads to more stable rating distributions in the model, so the model doesn't have to be rebuilt as often. When users consume and then rate an item, that item's similar items are picked from the existing system model and added to the user's recommendations. First, the system executes a model-building stage by finding the similarity between all pairs of items. There are other ways to represent this similarity function, including the cosine of those rating vectors or the correlation between ratings.

Second, the system executes a recommendation stage. It uses the most similar items to user's already-rated items to generate a list of recommendations.

Usually this calculation is a weighted sum or linear regression. Item-based CF had lesser errors compared to user-based CF method.

## V. CONCLUSION

Overall, the Emotion Based Music System aims to bridge the gap between users and music recommendations systems by incorporating emotions as a crucial factor in the selection process. By providing music that aligns with the user's emotions and mood, the system enhances user satisfaction, contributes to emotional well-being, and increases the overall correctness and effectiveness of the recommendations system.

## ACKNOWLEDGEMENT

The completion of this research paper on the development of a music player system incorporating facial recognition through Convolutional Neural Network (CNN) algorithms has been a collaborative effort, and we extend our gratitude to those who have contributed to its successful completion.

We would like to express our deepest appreciation to our advisors, [Advisor's Name], for their invaluable guidance, support, and encouragement throughout the research process. Their expertise and insights have significantly enriched the quality of this work. We also extend our thanks to [Institution/Organization Name] for providing the necessary resources and infrastructure that facilitated the smooth progress of our research. Furthermore, we acknowledge the contributions of our colleagues and research team members who provided valuable stages of the project. Their dedication and cooperation have played a crucial role in shaping the outcomes of this study.

Last but not least, we are grateful to the study participants who willingly participated in the user testing and provided essential data for the validation of the facial recognition system.

This research would not have been possible without the combined efforts of all those mentioned above. There are other ways to represent this similarity function, including the cosine of those rating vectors or the correlation between ratings.

## REFERENCES

- [1]. Sneha Lukose "Music Player Based On Emotion Recognition Of Voice signals", 2017 International Conference on Intelligent Computing, Instrumentation and Control Technologies (ICICT), pp.1751-1754
- [2]. Vassu Gupta, Siddharth Kumar, M. Vishwanath "Mood Based Music Player", International Journal Of Engg. Research and General Science Volume 2, Issue 11, 2019, ISSN 2581-5792, pp.299-304, November 2019
- [3]. Aurobind V. Iyer, "Emotion Based Mood Enhancing Music Recommendation", Submitted to the Program in Media Arts and Science, pp.1573-1577, May 2019
- [4]. Krittrin Chankuptarat, "Emotion Based Music Player", Bogazici University computer Engg. Istanbul, Turkey 3442, IEEE 2019