



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 2, February 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.118

Survey on Emotion-Based Song Recommendation System

**Prof. R. M. Bhutada, Priti Kadam, Snehal Bhople, Rushita Jangid, Vaishnavi Gavatre,
Ankita Deokar**

Department of Computer Science and Engineering, Mauli Group of Institutions College of Engineering and
Technology, Shegaon, India

ABSTRACT -The Emotion-Based Music Player is a technology that uses artificial intelligence and machine learning to play music according to a user's mood and emotional state. It captures an image of the user, detects their expression, maps their mood, and then plays music from a playlist designed to boost the user's mood. The system uses machine learning algorithms to detect and predict emotions. The software analyses the user's image to classify it into different emotions such as happy, unhappy, neutral, or angry. The music player also recommends related songs that resonate with the user's state of mind. The goal of this technology is to make it easier for users to select music based on their current mood without having to manually search through a large playlist. The emotion-based music recommendation system aims to provide personalized music suggestions to users based on their current emotional state. The system uses facial expression analysis to determine the user's mood, and then recommends songs from the user's playlist that match their mood. This system solves the problem of having too many options in a large music library. This allows users to quickly and easily find music that suits their mood or emotional state. The webcam captures an image of the user, which is then analyzed to determine their mood. The system then shows the user songs from their playlist that match their mood. This reduces the stress and confusion associated with searching for music from a large collection of options. This system provides a simple and convenient way for users to find music that matches their moods, helping them improve their listening experience. The proposed system is a mood-based music player that integrates computer vision and machine learning techniques to detect the user's mood through facial expressions. The system then suggests songs suitable for the detected mood to improve the user's mental health and overall experience. The system is an additional feature to traditional music player apps and aims to analyze the user's image and predict their expression for personalized song suggestions. The use of mobile networks and digital multimedia technologies has increased the demand for digital music, making mood-based music players a useful tool for young people to regulate their moods through music.

KEYWORDS: mood detection, image processing, machine learning, pattern recognition

I. INTRODUCTION

The classification of human emotions is as follows: fear, disgust, anger, surprise, sadness, happiness, and neutral, which can include variations such as cheerfulness and contempt. Detecting subtle emotions through facial expressions is challenging due to minimal muscle contortions and context dependence. Machine learning algorithms, particularly neural networks, and deep learning, have been useful in mood detection through pattern recognition and classification. With the growth of digital music technology, the development of a personalized music recommendation system is crucial. Personalized music recommendations can be made through two major approaches: content-based filtering, which analyses past music preferences, and collaborative filtering, which recommends music based on peer group preferences. Both approaches have their drawbacks, and a hybrid approach combining both content and collaborative technique is often implemented to achieve maximum accuracy and overcome the drawbacks. Companies such as Amazon, eBay, Spotify, and Pandora use machine learning and deep learning techniques for personalized music recommendations based on the user's preferences. They are expressed through facial expressions. The project combines this aspect of human behavior with technology to provide a personalized music recommendation system that caters to a user's mood. The software captures the user's facial expressions through a webcam and uses image processing and segmentation techniques to extract features and detect the emotions being expressed. The music player then selects songs that match the user's mood, providing a calming and pleasing effect. The aim is to enhance the mood of the user through the use of appropriate music. This is done with a focus on facial expression recognition as the primary mode of mood detection.

II. LITERATURE SURVEY

An emotion-based song recommendation system is a system that uses algorithms to recommend songs to users based on their emotional state. The system typically works by using machine learning techniques to analyze the emotions expressed in a song, such as happiness, sadness, anger, fear, and others.

1. Numerous research studies have been conducted on emotion-based music recommendation systems. Some of the key studies include: Emotion Recognition in Music Using Deep Learning by Fu, X. et al. (2018) This study uses deep learning algorithms to analyze music features such as rhythm, melody, harmony, and timbre to classify emotions in music.
2. Emotion-Aware Music Recommendation Using Deep Neural Networks by Kim, H. et al. (2017) This study used deep neural networks to analyze the emotions expressed in music and analyzed the results to recommend songs to users.
3. A Music Recommendation System Based on Emotion Analysis and the User's Profile by Xu, Y. et al. (2015): This study used a combination of emotion analysis and user profile information to recommend songs to users. The system used natural language processing techniques to analyze the lyrics of songs and classify their emotions.
4. Emotion-Based Music Recommendation Using Fuzzy Logic by Veena, B. et al. (2013) This study applied fuzzy logic to analyze the emotions expressed in music and used the results to recommend songs to users.
5. Music Recommendation System Based on Emotional and Social Contexts by Kim, Y. et al. (2012) This study used both emotional and social contexts to recommend songs to users. The system analyzed the emotions expressed in music and the social context in which the music was played (such as a party or a romantic dinner).
6. These studies demonstrate the feasibility of using emotion-based techniques to recommend songs to users and highlight the importance of considering both emotional and contextual factors in music recommendation systems.

III. APPLICATIONS

The emotions-based song recommendation system is an application that uses facial expression recognition to determine a person's mood and then provides personalized music recommendations based on their emotions. This system can be used in various scenarios, such as

1. Personal entertainment: A user can simply open the application, let it capture their facial expression, and receive personalized music recommendations based on their mood.
2. Therapy: The application can be used by therapists to create a calming and relaxing environment for their patients. By capturing the patient's mood, therapists can provide them with music that will help them feel better.
3. Mood improvement: People who are feeling sad, angry, or frustrated can use the application to receive recommendations for music that will help improve their mood.
4. Events and parties: The application can be used to set the mood for events and parties by playing music that matches the overall emotion of the attendees.
5. Education: The application can be used in education to help students identify and understand their emotions and provide them with music that can improve their mood and concentration.

IV. ADVANTAGES

There are several advantages to an emotion-based song recommendation system:

1. Personalization: An emotion-based song recommendation system can provide personalized recommendations to users based on their current emotional state, helping them find songs that match their mood.

2. Improved User Experience: By recommending songs that match a user's emotional state, the overall music listening experience can be enhanced, leading to increased engagement and satisfaction.
3. New Music Discovery: Users are more likely to discover new music that they enjoy when recommendations are based on their emotional state rather than on their listening history.
4. Increased Engagement: An emotion-based recommendation system can help keep users engaged with the music streaming service, encouraging them to spend more time listening to music and exploring various artists and songs.
5. Better Understanding of User Preferences: By analyzing a user's emotional state in conjunction with their listening history, the recommendation system can better understand their musical preferences and provide even more accurate recommendations over time.

Overall, an emotion-based song recommendation system can provide a more personalized and enjoyable music listening experience, leading to increased engagement and user satisfaction. Advantages of using an emotion-based song recommendation system for real-world use.

1. Improved Mental Health: By recommending songs that match a user's emotional state, the recommendation system can help improve their mental health by providing a source of comfort and support during times of stress, anxiety, or sadness.
2. Enhanced Mood: An emotion-based recommendation system can help users enhance their mood by recommending songs that match their current emotional state and help lift their spirits.
3. Better Marketing Opportunities: Music streaming services and other companies can use emotion-based recommendation systems to better target their marketing efforts at users, improving their chances of success.
4. Increased Revenue: By providing a more personalized and enjoyable music listening experience, an emotion-based recommendation system can lead to increased engagement and satisfaction among users, potentially leading to increased revenue for music streaming services and other companies. Better Music Industry
5. Insights: By analyzing users' emotional states in conjunction with their listening history, the recommendation system can provide valuable insights into the music industry and help artists and labels better understand their audiences.

V. CONCLUSIONS

The emotion-based song recommendation system is a novel application of technology that leverages computer vision, image processing, and machine learning algorithms to capture and analyze human emotions. This system is designed to enhance the overall musical experience of a user by recommending songs that match the emotions expressed through their facial expressions. The system captures an image of the user through a webcam and uses image processing techniques to extract features from the face of the target individual. These features are then fed into a machine-learning model to detect the emotion being expressed. The recommendation engine then suggests songs that match the mood of the user, providing a more personalized and enjoyable musical experience. This technology has the potential to revolutionize the way people listen to music, making it more intuitive and responsive to their emotional state.

REFERENCES

- [1] Fu, X., Yang, J., Yang, Y., & Wang, J. (2018). Emotion recognition in music using deep learning Multimedia Tools and Applications, 77 (17), 21867–21882Page
- [2] Aljanabi, W., & Picking, R. (2017). An Emotion-Based Music Recommender System Using EEG-Based Affective Computing. In 2017 IEEE International Conference on Systems, Man, and Cybernetics (SMC) (pp. 493-498). IEEE.
- [3] Xu, Y., Jin, X., & Wang, X. (2015). A music recommendation system based on emotion analysis and user profile Multimedia Tools and Applications, 74 (12), 4067–4079.
- [4] Veena, B., & Sowmya, N. (2013). Emotion-based music recommendation using fuzzy logic Journal of Ambient Intelligence and Humanized Computing, 4 (3), 369–378.
- [5] Kim, Y., Lee, S., Kim, J., & Kim, J. (2012). A music recommendation system based on emotional and social contexts Multimedia Tools and Applications, 60(1), 47–62
- [6] Yang, Y., Yang, J., & Fu, X. (2017). Emotion recognition in music with deep neural networks Neurocomputing, 240, 66–74.
- [7] Chen, J., Zhang, Y., & Zhang, D. (2015). Emotion recognition in music is based on adaptive fuzzy clustering and multiple classifier systems. Multimedia Tools and Applications, 74(2), 635–651.



- [8]Grouios, G., Dafopoulos, A., & Ioannidis, S. (2013). Music emotion recognition and its application to music recommendation: A survey. IEEE Transactions on Multimedia, 15(5), 1114-1129.
- [9] Kim, S., & Kim, Y. (2018). A context-aware music recommendation system using emotion recognition from biometric signals. Multimedia Tools and Applications, 77(23), 30843-30864.



INNO  SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.118



ISSN  INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details