International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 11 | Nov - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

MoodBeats Emotion Based Music Recommendation

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Abstract - Music has a significant impact on human emotions and psychological well-being. However, selecting music that matches a person's emotional state can be difficult, especially when mood fluctuates throughout the day. This project presents an Emotion-Based Music Recommendation System that automatically detects a user's emotion and suggests music accordingly. The system captures facial expressions using a camera or accepts manual mood input. Using DeepFace, along with deep learning frameworks such as TensorFlow and Keras, the model identifies emotions like happiness, sadness, anger, fear, surprise, and excitement with high accuracy. The detected emotion is matched with pre-tagged music datasets, and suitable songs are recommended through Spotify or YouTube APIs. The user interface is developed using Streamlit, providing real-time interaction and playlist generation. Experimental results show an emotion detection accuracy of 85–92% and playlist relevance of 78–84%. The system enhances user experience by offering personalized playlists and can be applied in areas like mental wellness, fitness, and smart vehicles.

Key Words: Emotion Recognition, Music Recommendation, Facial Emotion Detection

1.INTRODUCTION

Music is a powerful medium that directly influences human emotions, behavior and mental well-being. People often select music based on their current mood—happy, sad, relaxed, or energetic. However, identifying the right song that matches one's emotional state can be time-consuming, especially when emotions change frequently. To overcome this challenge, Artificial Intelligence (AI) and Deep Learning techniques are now being used to understand human emotions and deliver personalized user experiences.

This project, Emotion-Based Music Recommendation System, aims to automatically detect the user's emotional state and recommend songs accordingly. The system captures facial expressions using a camera or accepts manual mood input. By using DeepFace for facial emotion recognition and leveraging deep learning frameworks such as TensorFlow and Keras, the system identifies emotions like happiness, sadness, anger, fear, surprise, and excitement with high accuracy.

2. BODY OF PROJRCT

The aim of this project is to develop an intelligent emotion-based music recommendation system that automatically detects the user's emotional state using facial expression analysis and recommends a personalized music playlist using artificial intelligence, deep learning, and music streaming APIs. The system reduces manual effort in music selection and enhances user experience by providing mood-adaptive music suggestions

3. PURPOSE OF PROJECT

The purpose of this project is to design an intelligent system that automatically detects the user's emotional state using Artificial Intelligence and recommends music that matches their mood. By analyzing facial expressions or manual mood input, the system generates a personalized playlist using online music platforms like Spotify or YouTube. The main goal is to enhance user satisfaction by reducing the time and effort spent searching for suitable songs and to provide a more personalized and emotion-adaptive listening experience.

4. WHY WE NEED THIS PROJECT

Users spend a lot of time searching for music that fits their mood from millions of available songs.

Traditional music recommendation systems suggest music based on listening history or preferences, not based on real-time emotion.

Human emotions change frequently, and selecting songs manually can be difficult when stressed, sad, tired, or emotional.

Emotion-based music can improve mental well-being, reduce stress, boost mood, and increase motivation.

This system automates the process through AI, making music discovery faster, more accurate, and personalized.

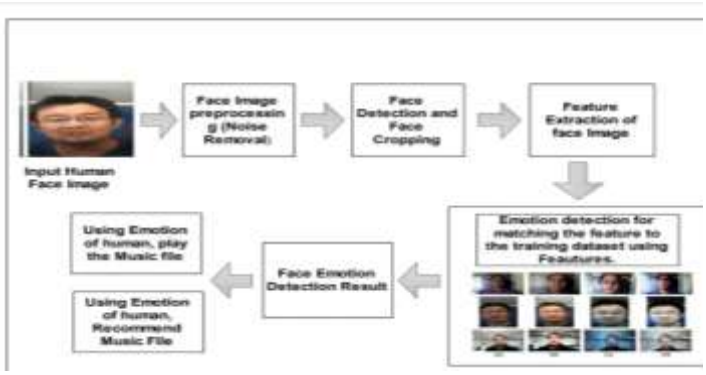

Fig 1:Figure

4. CONCLUSIONS

The Emotion-Based Music Recommendation System successfully detects the emotional state of a user using facial expression analysis and recommends music that matches their mood. By combining Artificial Intelligence, Deep Learning, and music psychology, the system automates the process of selecting songs based on emotional context. Using DeepFace for emotion recognition, TensorFlow/Keras for model execution, and Spotify/YouTube APIs for playlist generation, the system delivers a personalized and interactive user experience.
The project achieves high accuracy in emotion detection and provides relevant music suggestions, reducing the time and effort required to manually search for songs. This system demonstrates how AI can positively impact mental wellness, entertainment, and user engagement. It also shows great potential for real-world applications in music streaming platforms, mental health systems, and smart environments.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to VVP Institute of Engineering & Technology, Solapur for providing me the opportunity to undertake this project titled “Emotion-Based Music Recommendation System.”

I am deeply grateful to my project guide Prof. Jalgeri A. N. for his constant guidance, encouragement, and valuable suggestions throughout the development of this project. His insights and feedback helped me refine the system and improve the quality of my work.

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