

" SMART MUSIC PLAYER INTEGRATING FACIAL EMOTION RECOGNITION AND MUSIC MOOD RECOMMENDATION"

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Abstract - Emotion-based music recommendation is a growing field that aims to enhance user experience by suggesting songs that align with their emotional state. This paper presents an intelligent system that utilizes deep learning and computer vision techniques to detect human emotions and recommend music accordingly. The system leverages MediaPipe Holistic for facial and hand landmark extraction, and a pre-trained deep learning model to classify emotions. The detected emotion is then used to curate song recommendations in the user's preferred language and platform, such as YouTube, Spotify, Apple Music, and more. The application is implemented using Streamlit for an interactive user interface, integrating a real-time camera feed for continuous emotion analysis. To ensure usability, the system provides a simple yet effective approach to emotion detection and music retrieval. The proposed solution aims to bridge the gap between mood recognition and music preferences, offering a personalized and immersive music experience

Key Words: Emotions, CNN, Detection, Music Recommendation, Songs

1. INTRODUCTION

Music has long been recognized as a powerful medium for influencing human emotions. With the advancement of artificial intelligence and machine learning, it is now possible to create personalized music recommendations that adapt to a listener's emotional state in real time. The Smart Music Player Integrating Facial Emotion Recognition and Music Mood Recommendation is an innovative system designed to enhance the listening experience by automatically detecting a user's emotion through facial expressions and recommending songs that match their mood. By utilizing computer vision through MediaPipe and a deep learning model for emotion classification, the system identifies facial expressions and maps them to a corresponding mood-based music playlist. This eliminates the need for manual song selection and provides a seamless, emotionally adaptive music experience.

1.1 PROBLEM DEFINATION

Traditional music streaming platforms rely on static recommendations based on past listening history, predefined

playlists, or genre-based sorting, which fail to capture a user's real-time emotional state. Listeners often find themselves searching for music that resonates with their current mood, which can be time-consuming and inefficient. Additionally, existing recommendation systems do not incorporate real-time facial emotion recognition to dynamically adjust music based on how a person feels at the moment. The lack of intelligent emotion-driven automation in music selection limits the overall user experience, making it difficult to achieve a truly immersive and personalized listening journey. This project addresses this gap by developing a real-time facial emotion-based music recommendation system, ensuring that users can effortlessly listen to music that aligns with their emotions.

1.2 OBJECTIVE

The primary objective of this project is to develop a system that can automatically recognize facial expressions and recommend music based on the detected emotions. The system aims to enhance user experience by eliminating the need for manual song selection and providing a more intuitive approach to music discovery. By integrating facial emotion recognition with a music mood classification system, the project seeks to bridge the gap between human emotions and digital music platforms. Another key goal is to create a seamless and user-friendly interface where individuals can not only receive music recommendations but also refine the system's suggestions based on their personal preferences.

1.3 SCOPE

The scope of this project extends to various domains, including artificial intelligence, human-computer interaction, and personalized entertainment. By integrating deep learning models, MediaPipe for facial landmark detection, and real-time emotion recognition, this system is capable of adapting music recommendations dynamically. Users can select their preferred music platform (YouTube, Spotify, Apple Music, etc.), language, and singer preferences to further refine their experience. In the future, this system could be enhanced with voice-based emotion detection, EEG-based mood tracking, or even integration with smart assistants for a fully automated experience. Additionally, this technology has the potential to be used in therapy, wellness

applications, and stress-relief environments, where music is known to have a profound impact on mental well-being.

2. LITRATURE SURVEY

H. Immanuel James (2019) [1] suggested that by using current developments in emotion-based music recommendation systems, this study presents a face-based emotion detection system that makes music recommendations based on identified emotions.

M. Vani (2022) [2] suggested that recent developments point to enormous potential for creating emotion-based music recommendation systems. She also highlights the need for ongoing system improvements in order to improve automatic song selection based on emotions observed, and they make use of wearable sensors for precise mood prediction.

A. Phaneendra [3] proposed using a deep neural networks and convolution neural networks (CNNs) in computer vision and machine learning to link facial emotions with music recommendations. CNN models are used to identify facial expressions, and Spotify integration is used to play relevant songs.

Uday Gaikwad [4] suggested music selection technology playlists based on user moods by combining sound analysis and face expression detection. It combines methods for all-encompassing suggestions, identifying sentiments such as joy, sorrow, etc. The system places a high priority on usability and cost to make creating playlists easier.

Shubham Kulkarni [5] and Sanskruti Lingawar proposed for recommendations of music based on facial emotions that have the potential to revolutionize the business. Personalized recommendations are in tune with listeners' emotions through the integration of face expression detection. Further investigation is expected to yield improved precision for a more customized listening experience.

Sriraj Katkuri [6] suggested that specific experiences were provided by the emotion-based music recommendation system, which used face image recognition and the Haar cascade algorithm to reach 70% accuracy

3. EXISTING SYSTEM

Traditional music streaming platforms provide users with manually curated mood-based playlists, requiring individuals to actively select music that matches their emotional state. While some platforms categorize songs based on genres or predefined moods, they do not offer real-time dynamic adaptation based on a user's current emotions. Users often have to search for songs or rely on recommendations that may not always align with their feelings at that moment. Additionally, existing systems do not leverage real-time facial emotion recognition to

personalize recommendations. They primarily depend on user input, past listening history, or generic algorithms, which may not effectively capture immediate emotional changes. This limitation results in a less immersive and interactive music experience, failing to provide seamless emotional connectivity between the listener and the music selection process.

4. PROPOSED SYSTEM

The proposed system introduces an intelligent music player that integrates facial emotion recognition **with** music mood recommendation to provide an adaptive and personalized listening experience. The system utilizes computer vision through Mediapipe to analyze facial landmarks and detect emotions in real time. A deep learning model classifies emotions based on facial expressions, and the detected emotion is mapped to a corresponding music mood. Once an emotion is identified, the system automatically searches for songs that match the detected mood and language preference, playing them through platforms like YouTube, Spotify, or Apple Music. Unlike conventional systems, this approach eliminates the need for manual song selection by continuously adapting to the user's emotions. The system also provides flexibility by allowing users to specify preferences such as language, singer, and platform, ensuring a balance between automation and user control. Future enhancements could involve integrating speech-based emotion recognition or using advanced recommendation algorithms to further refine the music selection process.

6. METHEDODOLOGY

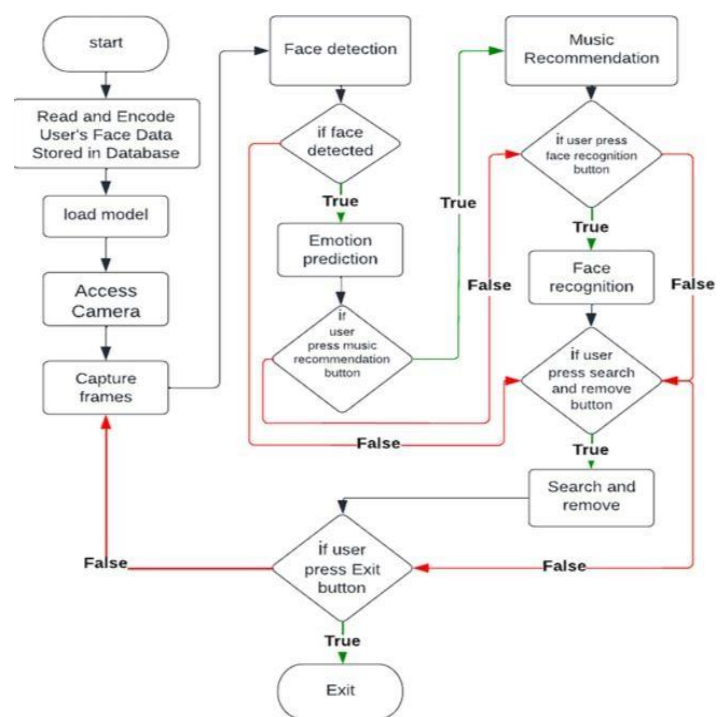


FIG 1: FLOW CHART

RESULT

Following are the screenshots of the interface and output of the proposed system.

Fig 1 : Sign up Page

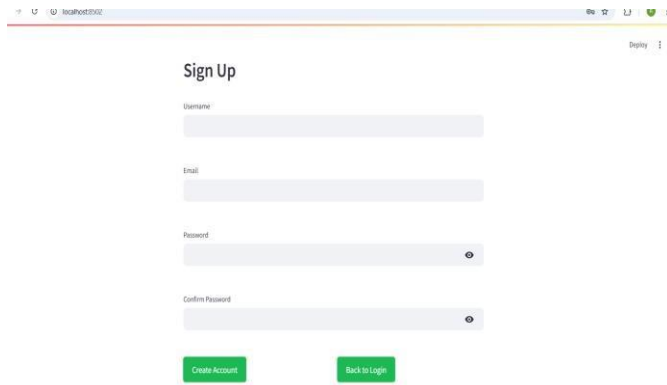


Fig 2: Login Page

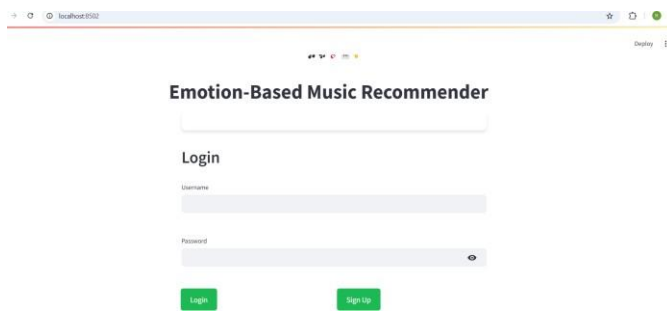


Fig 3: Enter Music, Language &Artist (According to your preference)

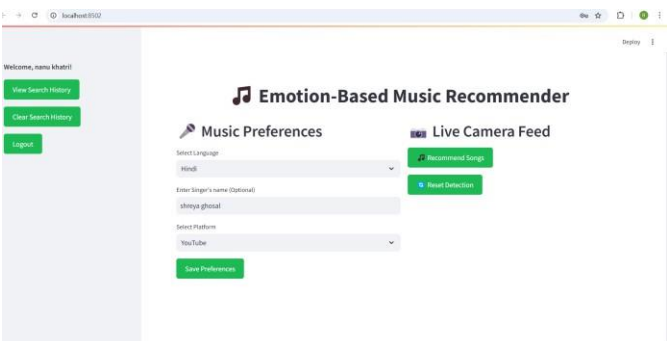


Fig 4 : Face Detection

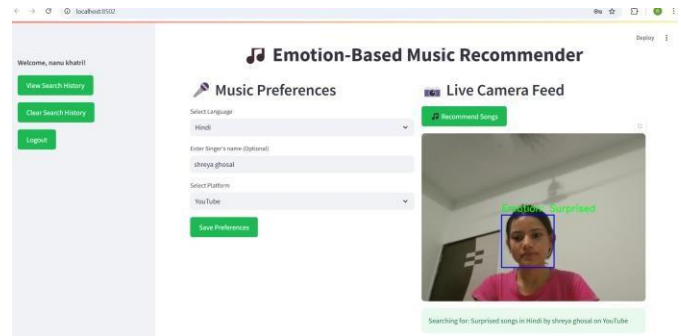


Fig 5 : Recommended Songs Based on Your Mood

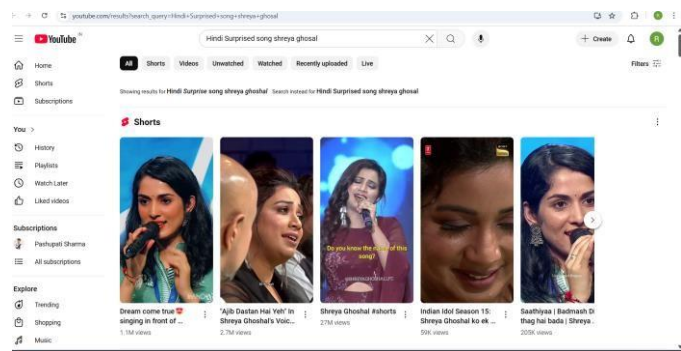
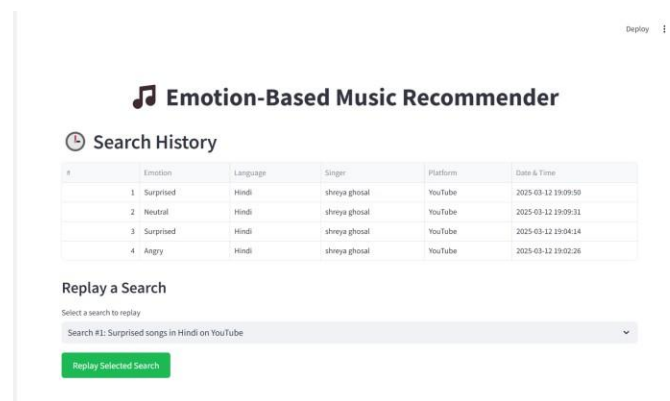


Fig 6 : History Page



7. CONCLUSION

The Smart Music Player Integrating Facial Emotion Recognition and Music Mood Recommendation successfully bridges the gap between artificial intelligence and personalized entertainment by offering an automated, emotion-driven music recommendation system. By utilizing Mediapipe for facial landmark detection and deep learning models for emotion classification, the system ensures that users receive real-time music suggestions that align with their mood, eliminating the need for manual song selection. With multi-platform integration, users can seamlessly access their favorite streaming services like

YouTube, Spotify, Apple Music, and more, enhancing convenience and accessibility. The inclusion of customization options, such as selecting preferred language and artists, further refines the user experience, making music consumption more immersive and interactive.



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