Abstract

Title: Emotion-Based Music Recommendation System Using Facial Expression Recognition

Team Members:

Tanishtha Sharma, Yashasvi Gupta, Vivek Shekhawat

Mentor:

Praveen Kumar Yadav

Department:

Information Technology

Abstract:

The rapid advancements in artificial intelligence and machine learning have paved the way for highly personalized user experiences. Our project aims to develop an innovative music recommendation system that leverages facial expression recognition to suggest music tailored to the user's current emotional state.

Building on insights from existing mood-based recommendation systems, this project will integrate real-time facial emotion detection with a sophisticated recommendation engine to enhance the music listening experience. The proposed system will analyze facial expressions using computer vision techniques to identify emotions such as happiness, sadness, anger, and calmness. Subsequently, it will recommend music that aligns with the detected mood, thereby offering a more engaging and personalized auditory experience.

Methodology:

1. **Data Collection and Preprocessing**: Collect and preprocess a comprehensive dataset of facial expressions labeled with corresponding emotions.
2. **Facial Expression Recognition**: Develop and train a Convolutional Neural Network (CNN) model to accurately classify facial expressions into specific emotional categories.
3. **Music Recommendation Algorithm**: Create a recommendation engine that associates emotions with suitable music tracks. This will be achieved by analyzing music features and user preferences.
4. **System Integration**: Integrate the facial recognition model and the recommendation engine into a user-friendly application.
5. **Testing and Validation**: Conduct extensive testing to validate the accuracy and reliability of emotion detection and music recommendation.

Expected Outcomes:

- **Accurate Emotion Detection**: Achieve high accuracy in real-time facial emotion recognition.
- **Personalized Music Recommendations**: Develop an algorithm that effectively recommends music based on the user's current emotional state.
- **Enhanced User Experience**: Provide users with a seamless and intuitive interface for a personalized music listening experience.

Conclusion:

This project seeks to create a novel interface for music recommendation by combining the fields of computer vision and machine learning. By analyzing and responding to users' emotional states, the system aims to enhance the personalization and enjoyment of music streaming services. We believe this project will contribute significantly to the development of emotionally intelligent digital interfaces and personalized media consumption.