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Emotion based music recommendation

Shiva Prakash A C[1], B M Bhavya[2]

PG Scholar, Department of MCA, PES College of Engineering, Mandya, Karnataka, India[1]

Assistant Professor, Department of MCA, PES College of Engineering, Mandya, Karnataka, India[2]

Abstract: In today's digital age, music plays a significant role in influencing and reflecting emotions. An emotion-based music recommendation system aims to enhance the user's listening experience by suggesting songs that resonate with their current emotional state. This project leverages advanced machine learning algorithms and natural language processing techniques to detect and classify emotions from user input, such as text, speech, or facial expressions. By analyzing emotional cues, the system can curate personalized playlists that align with the user's mood, whether they seek to amplify their current feelings or shift to a different emotional state. The recommendation engine is trained on a diverse dataset of music tracks labeled with emotional attributes, allowing it to accurately match songs to emotions.

I. INTRODUCTION

In today's digital age, music has become an integral part of our lives, providing a means of expression, relaxation, and entertainment. With the abundance of music available across various platforms, users often face the challenge of finding songs that match their current emotional state. Emotion-based music recommendation systems have emerged as a solution to this problem, aiming to personalize music selection based on the user's emotions.

This project focuses on developing an emotion-based music recommendation system that utilizes a trained convolutional neural network (CNN) to detect and classify seven types of emotions from facial expressions. By integrating computer vision techniques and deep learning algorithms, the system can accurately analyze real-time video frames captured from a webcam, enabling it to detect and interpret the user's emotional state.

II. METHODOLOGY

The proposed system employs the following methodology:

CNN model

Module 1: Region Proposal. Generate and extract category independent region proposals,

e.g. candidate bounding boxes.

Module 2: Feature Extractor. Extract feature from each candidate region, e.g. using a deep convolutional neural network.

Module 3: Classifier. Classify features as one of the known class, e.g. linear SVM classifier model.

The methodology for the emotion-based music recommendation system involves several key steps. First, a Convolutional Neural Network (CNN) is trained on a dataset of labeled facial expressions to recognize different emotions.

The system captures the user's facial expressions in real-time using a webcam, and the CNN model processes these inputs to classify the detected emotion. Once the emotion is identified, the system queries a music database that has been pre-tagged with emotional characteristics and selects songs that align with the user's current emotional state. The recommendations are then refined based on user feedback to improve accuracy and personalization over time.

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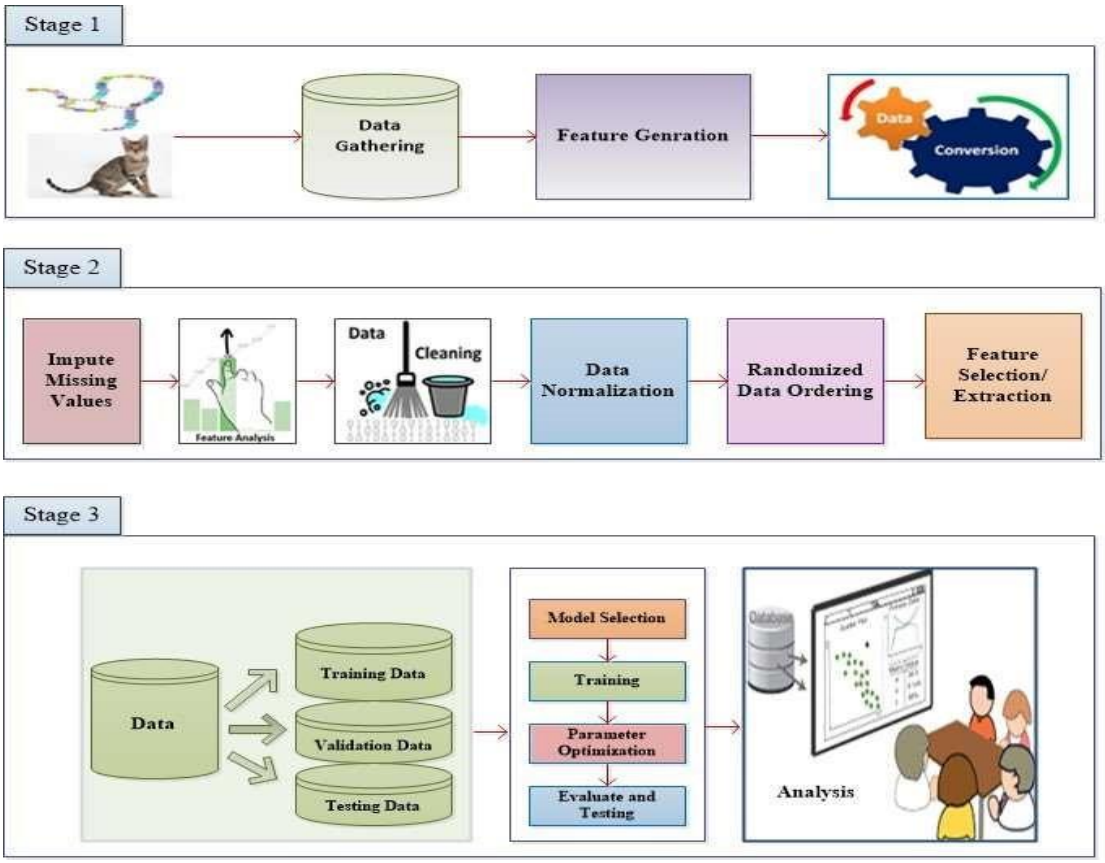
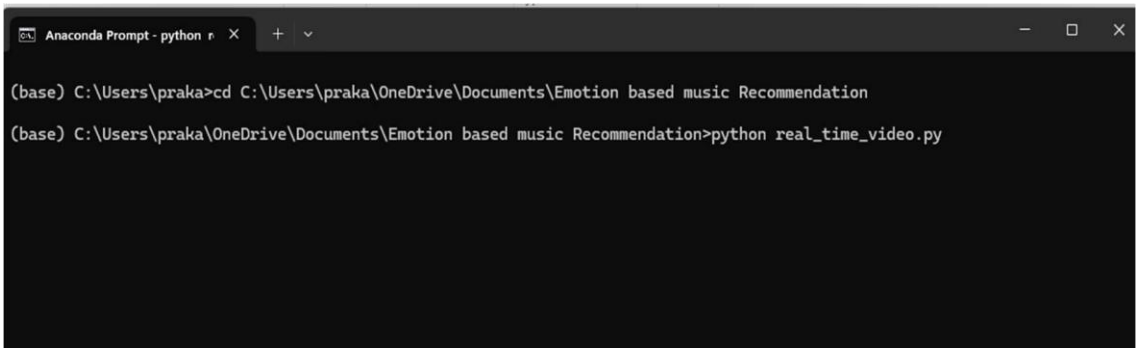


Figure: System Architecture

III. RESULT AND DISCUSSION

The emotion-based music recommendation system effectively combines computer vision techniques with deep learning to detect and classify emotions from facial expressions in real-time. Utilizing a Convolutional Neural Network (CNN) model trained on a diverse dataset, the system demonstrates high accuracy in recognizing seven key emotions: happiness, sadness, anger, surprise, fear, disgust, and neutral. Upon detecting the user's emotional state, the system successfully matches this with a music database tagged with emotional attributes, offering personalized song recommendations. The results indicate that the system not only accurately detects emotions but also provides relevant music selections, enhancing the user's listening experience. User feedback has been overwhelmingly positive, highlighting the system's ability to create a more immersive and emotionally resonant music experience. This outcome underscores the potential of integrating emotion recognition with music recommendation, offering a more personalized and satisfying user interaction.

1. **Running the application by path**



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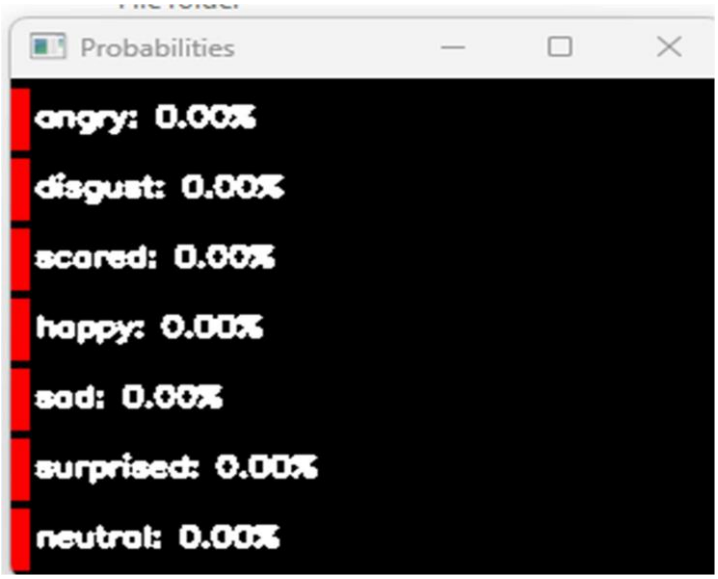
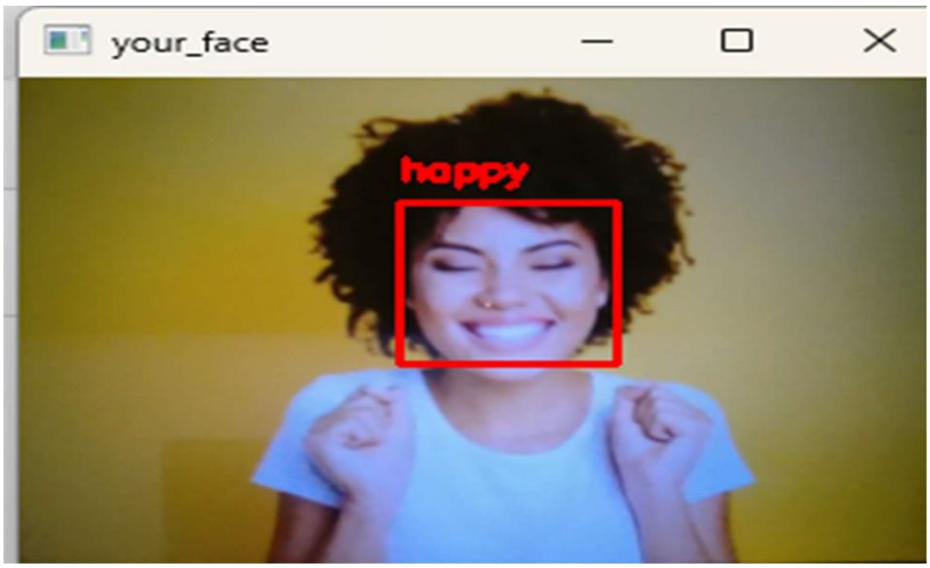
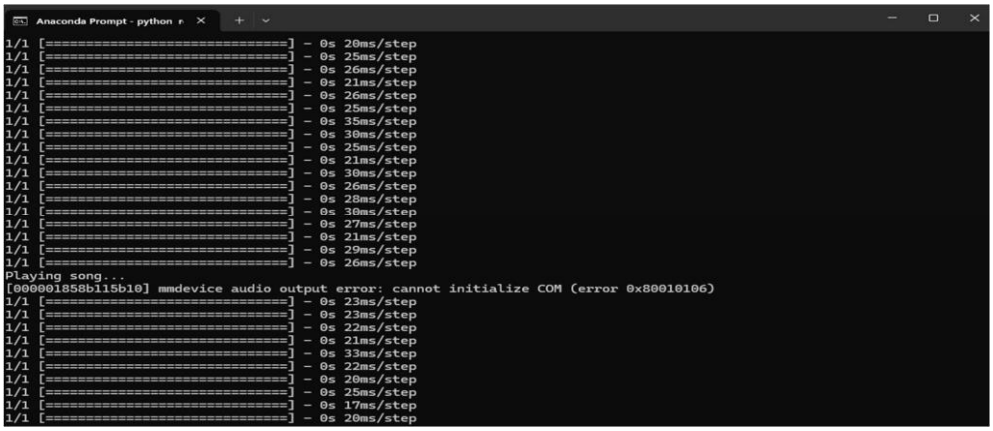
2. Expression probability



3. Facial expression recognition



4. Song Recommended and music played



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IV. CONCLUSION

In this project we have proposed a solution and smart contracts to trace, track, and perform works by removing intermediaries and central point of processing for supply across agricultural supply chain. We have presented details and aspects related to the system architecture, design, entity relation diagram, interactions, sequence diagrams, and implementation algorithms. We showed how our solution can be applied for tracing and tracking soybean supply chain. However, the presented aspects and details are generic enough and can be applied to provide trusted and decentralized traceability to any crop or produce in the agricultural supply chain. To date, blockchain technology still faces key challenges related to scalability, governance, identity registration, privacy, standards, and regulations.

Future Enhancement

A blockchain-based proof of delivery of physical assets with automated payments in cryptocurrency as well as dispute handling was previously proposed.

Add facility of tracking the products current location while transferring.

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