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Emotune: Emotion And Gender Aware Music Generation Chatbot

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Abstract: This work introduces a comprehensive Emotion-based playlist recommendation systems have gained significant attention in recent years due to their ability to personalize music listening experiences. In this survey, we present a novel approach where playlist management is centralized and administered through a web-based interface by an admin, while users interact with the system via a dedicated Android app. The admin is empowered to curate playlists, update content, and oversee the playlist ecosystem through the website dashboard. Concurrently, users access the system through the Android app, which offers features such as emotion detection, playlist recommendations, and seamless music playback. By leveraging emotion recognition algorithms and user preferences, our system aims to deliver tailored music playlists that resonate with users' moods and preferences, enhancing their overall listening experience. This abstract highlight the dual functionality of our system, catering to both the administrative needs of playlist management and the user-centric features of emotion-based music recommendation.

Keywords: Music player, Chatbot, Emotion, Gender, Audio, Text.

I. INTRODUCTION

In the contemporary era of music streaming, where an extensive array of songs is readily available at our fingertips, the pursuit of personalized and emotionally resonant music experiences has become increasingly paramount. Traditional music recommendation systems often fall short in capturing the nuanced preferences and emotional nuances of individual users, leaving them inundated with generic suggestions that fail to reflect their current mood or emotional state. Recognizing the pivotal role of emotions in shaping music preferences and mood, there arises a pressing need for innovative solutions that can deliver personalized music recommendations tailored to the user's emotional context. This survey aims to address this gap by presenting EmoTunes, an innovative music recommendation system designed to revolutionize the way people discover and interact with music in the digital age.

EmoTunes leverages advanced machine learning techniques, natural language processing algorithms, and emotion detection models to accurately interpret the emotional cues of users from text, voice commands, and facial expressions. By integrating these inputs, the system curates playlists that evoke the desired emotional response, adapting in real-time to the dynamic nature of human emotions. The objectives of this survey are multifaceted. Firstly, it seeks to develop a robust emotion detection model capable of accurately interpreting user emotions from various modalities. Subsequently, this model will be integrated with existing music recommendation algorithms to provide personalized recommendations based on the user's emotional state. Additionally, the survey aims to create a user-friendly interface accessible via web and mobile platforms to facilitate seamless interaction with the recommendation system.

The effectiveness of the system will be evaluated through user studies and feedback, allowing for refinement based on user preferences and experiences. Ultimately, the goal is to deliver a cutting-edge music recommendation solution that enhances the user's music listening experience and deepens their emotional connection with the music. Through this survey, we aim to shed light on the challenges and opportunities in the realm of personalized music recommendation systems, showcasing the potential of EmoTunes to transform the music streaming landscape and provide users with truly enriching and emotionally resonant music experiences.

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II. MOTIVATION

The motivation for this project stems from the desire to revolutionize the music listening experience by providing personalized playlists tailored to individual emotions and preferences. Traditional music recommendation systems often fall short of accurately capturing a user's current mood and emotional state, leading to generic or irrelevant suggestions. By leveraging advanced AI and machine learning techniques, this project aims to bridge that gap, offering users music that resonates with their feelings and enhances their emotional well-being. The ultimate goal is to create a unique and immersive music discovery journey that engages users on a deeper level and brings greater satisfaction to their musical experiences. Ultimately, the project aims to revolutionize the way users discover and enjoy music, offering a more meaningful and immersive listening experience that resonates with their current emotional state.

III. OBJECTIVES

Implement a user-friendly interface for seamless communication and interaction, incorporating both text and voice interfaces. Develop an intuitive admin interface for efficient management and updating of the playlist database. Utilize AI algorithms to analyze user input and accurately interpret emotions and preferences. Curate personalized playlists based on user emotions and preferences, ensuring a diverse selection of music options.

Enable convenient access to the music recommendation service via a dedicated Android app, enhancing user accessibility and mobility. Foster user engagement and satisfaction by continuously refining playlist recommendations based on user feedback. Leverage natural language understanding and chatbot technology to create a conversational interface that enhances user experience and rapport. Ensure the system's scalability and adaptability to accommodate future enhancements and improvements.

IV. SYSTEM DESIGN

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements.

A. Architectural Diagram

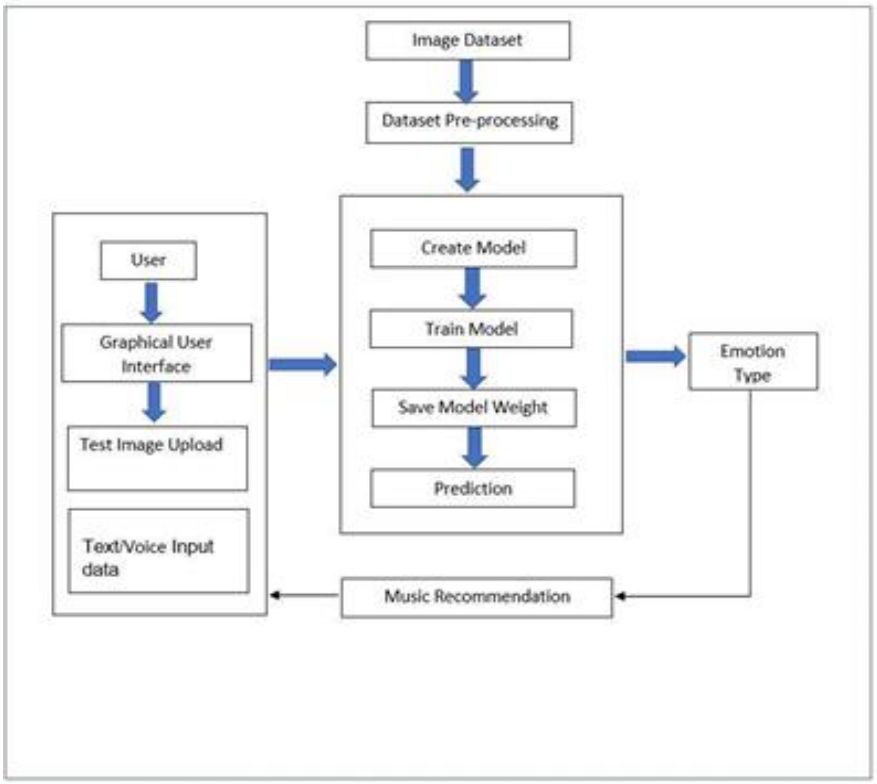

Fig. 1 Architectural Diagram

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Above Figure 1 shows the architecture of proposed system. User will communicate with the system using web application. Every uploaded test image will be processed by the deep learning model and predict its class. Deep learning module has Four main functionalities such as create model, train model, saving the model weight and classification. Dataset needed for the proposed system is obtained from the Internet and augmented to create more copies using different augmentation methods such as scaling, zooming and rotation. A CNN model is built to train the system by extracting image features. DL model predicts the type of user emotion from input test image and recommends the play list. System also receive data in text and voice format and provides the recommendation based on the emotion present in the data. By combining multiple data formats such as images, text, and voice inputs, the system offers a comprehensive and versatile approach to understanding users' emotions and preferences.

B. Flow Chart

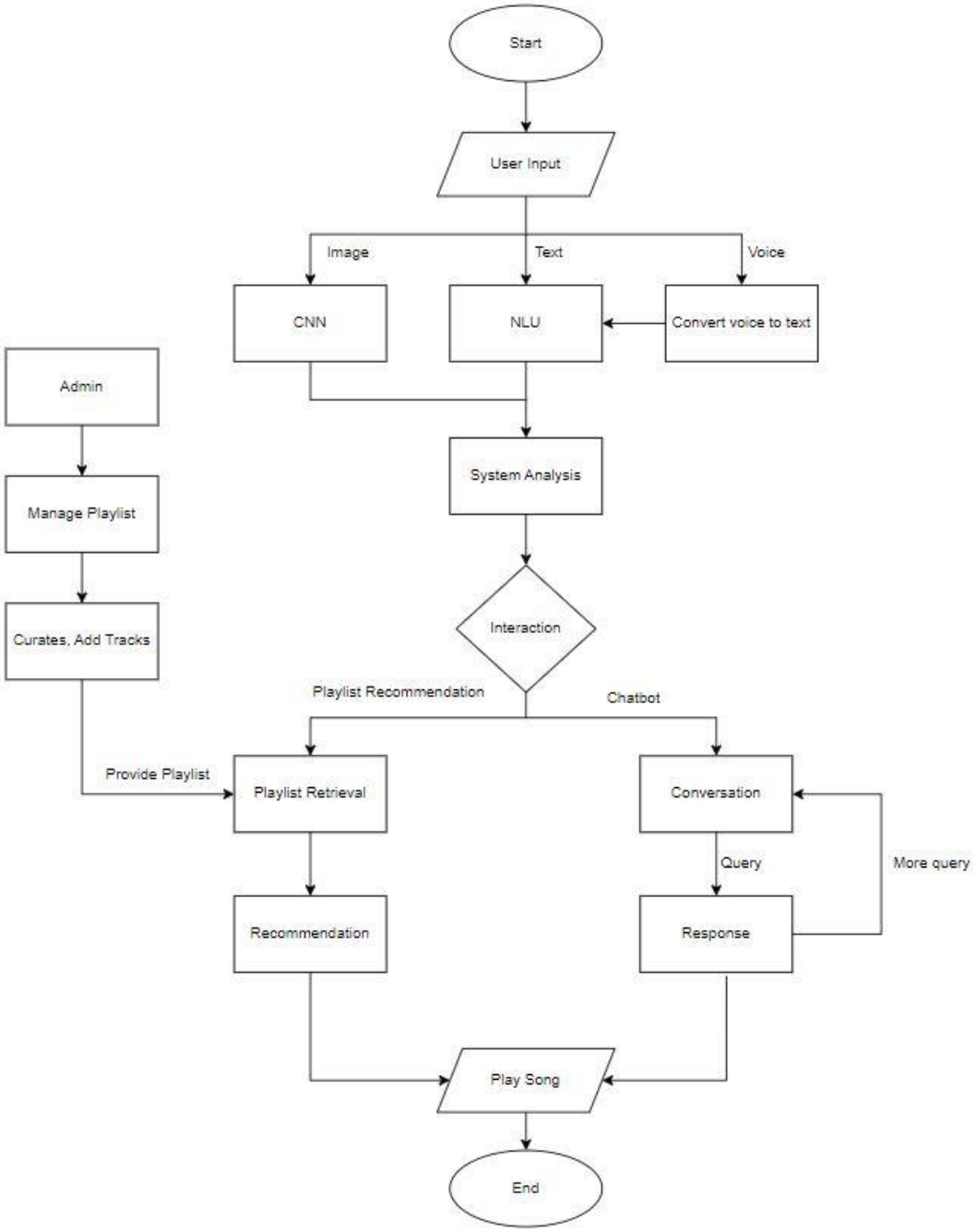

Fig. 2 Flow Chart

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Above figure 2 shows the flowchart depicts the operational sequence of a music recommendation system, starting with user input in various forms such as text, image, or voice. The system utilizes Convolutional Neural Networks (CNNs) to process image inputs and Natural Language Understanding (NLU) techniques to interpret text inputs. Voice inputs are converted to text for further analysis. An admin manages the playlist, curating and adding tracks as necessary. Upon receiving user input, the system analyzes it to determine the user's intent and interacts accordingly, either by providing playlist recommendations through a chatbot interface or responding to user queries and for more queries it will go back to conversation. The chatbot engages in conversation with the user, addressing queries and providing playlist recommendations. It recommends playlists or plays songs based on what you tell it. The flowchart demonstrates the seamless interaction between the user and the system, enabling a dynamic and responsive music recommendation process. The chatbot's conversational interface provides a natural and engaging experience, allowing users to communicate their preferences and receive personalized suggestions. By efficiently combining various data types and user inputs, the system creates a tailored and immersive music experience that continuously adapts to the user's evolving tastes and emotional state.

C. Use Case

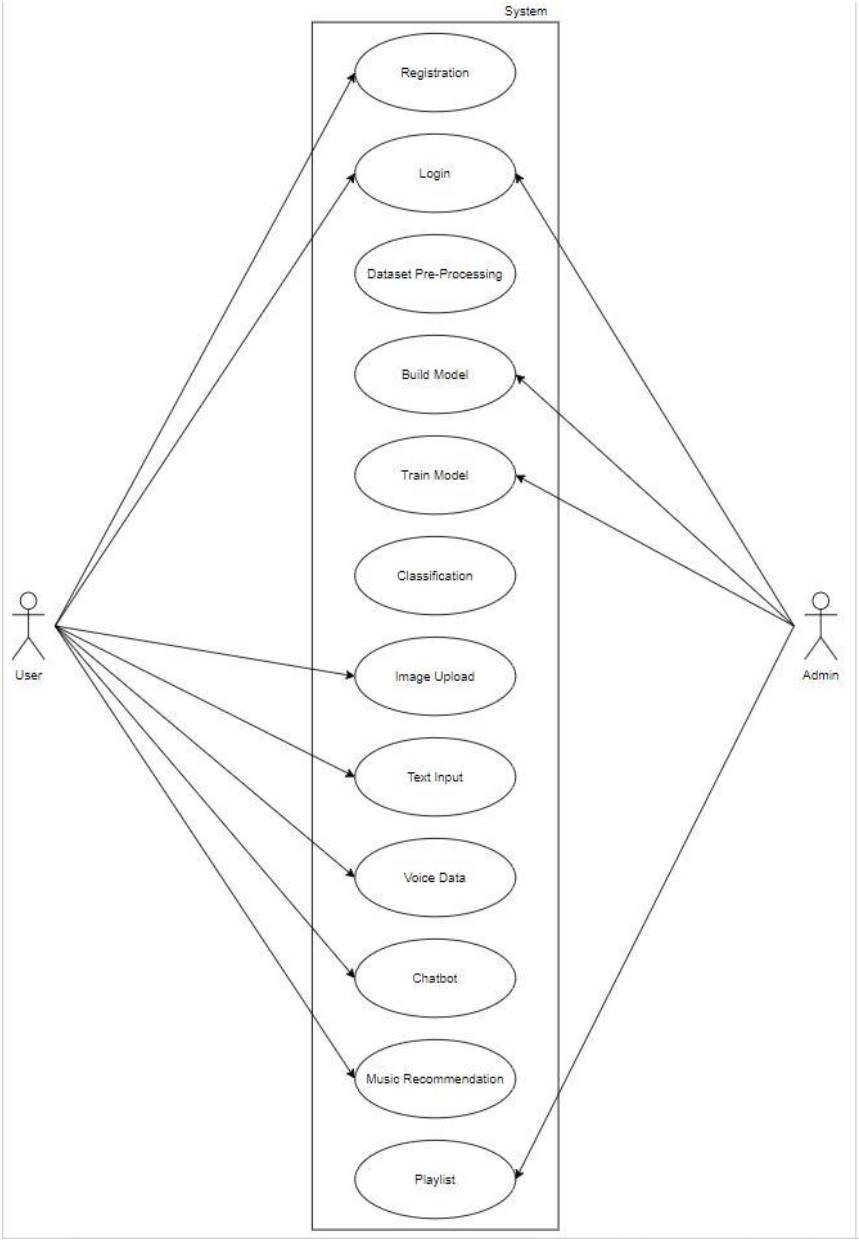

Fig. 3 Use Case

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Figure 3 shows the use case diagram for the project, there are two actors: User and Admin. The User interacts with the system by engaging in use cases such as Registration or they can login if they already registered, where they sign up for the service, and Music Recommendation, where they receive personalized playlists based on their emotions and preferences through image or text and voice in chatbot.

The Admin manages the system when they login and they build and train the model and manages through the use case "Dataset Pre-Processing," where they handle tasks such as curating and updating the music database. The system boundary outlines the software application, distinguishing the use cases within the system from the external entities that interact with it.

This diagram effectively illustrates the distinct roles and interactions within the project, showcasing how both the User and Admin engage with the system to achieve their respective goals. Overall, the use case diagram provides a clear overview of how the project operates, ensuring that the system's functionalities are well understood and efficiently managed by the relevant actors.

V. IMPLEMENTATION

The implementation of the "Emotune" project involves the integration of advanced technologies such as Convolutional Neural Networks (CNNs), Natural Language Understanding (NLU), and the Rasa Chatbot framework. Through this integration, users can interact with the system via text and voice interfaces, expressing their emotions and preferences naturally.

The system analyzes user inputs to decipher their emotional state and recommends personalized playlists tailored to uplift their mood. Additionally, an intuitive admin interface allows administrators to manage the playlist database, curate playlists, and adjust recommendations based on user feedback, ensuring a dynamic and engaging music recommendation experience.

A. Code Implemented

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import os
import cv2
from tqdm import tqdm
import random as random
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
from keras.utils import to_categorical
from keras.layers import Dense,Dropout,Flatten,Conv2D,MaxPool2D,BatchNormalization
from keras.models import Sequential
from keras.losses import categorical_crossentropy
from keras.optimizers import Adam
from keras.preprocessing.image import ImageDataGenerator
```

Fig. 4 Importing Required Packages

Figure 4 shows the provided Python code sets up a convolutional neural network (CNN) model for image classification. It imports various libraries for numerical computations, data manipulation, image processing, and building neural networks. The model architecture is defined using sequential layers, including convolutional layers for feature extraction, pooling layers for dimensionality reduction, and dense layers for classification. The model is compiled with appropriate loss functions, optimizers, and metrics, and then trained on prepared training data. Additionally, data augmentation techniques may be applied to Increase the diversity of training samples. Finally, the model's performance is evaluated on testing data to assess its effectiveness in classifying images accurately.

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```
imagegen = ImageDataGenerator(featurewise_center=False,
                              samplewise_center=False,
                              featurewise_std_normalization=False,
                              samplewise_std_normalization=False,
                              rotation_range=60,
                              zoom_range=0.1,
                              width_shift_range=0.1,
                              height_shift_range=0.1,
                              shear_range=0.1,
                              fill_mode='reflect')
```

Fig. 5 Pre-Processing Dataset Images

Figure 5 shows the provided code snippet defines an ImageDataGenerator class from the Keras library, primarily used for augmenting image data in deep learning tasks. It specifies various augmentation parameters such as rotation, zoom, and shift ranges, controlling the extent of random transformations applied to the images during training. By utilizing these augmentation techniques, the model becomes more robust and less prone to overfitting, ultimately enhancing its performance in image classification tasks. The flowchart demonstrates the seamless interaction between the user and the system, enabling a dynamic and responsive music recommendation process.

```
X_train,X_valid,y_train,y_valid = train_test_split(X,y,test_size=0.1,random_state=42)

batch_size = 64
epochs = 10
num_classes = y.shape[1]
```

Fig. 6 Splitting dataset and training

Figure 6 shows the provided code snippet demonstrates the process of splitting a dataset into training and validation sets using the `train_test_split` function from the scikit-learn library. By specifying a test size of 0.1, 10% of the data is allocated for validation, while the remaining 90% is used for training. Setting a random state ensures reproducibility of the split. However, it's important to note that this code snippet does not cover model training, hyperparameter tuning, or model evaluation, which are essential steps in the machine learning pipeline. Additionally, a common practice in machine learning is to further split the data into training, validation, and testing sets to effectively train, validate, and evaluate the model's performance on unseen data.

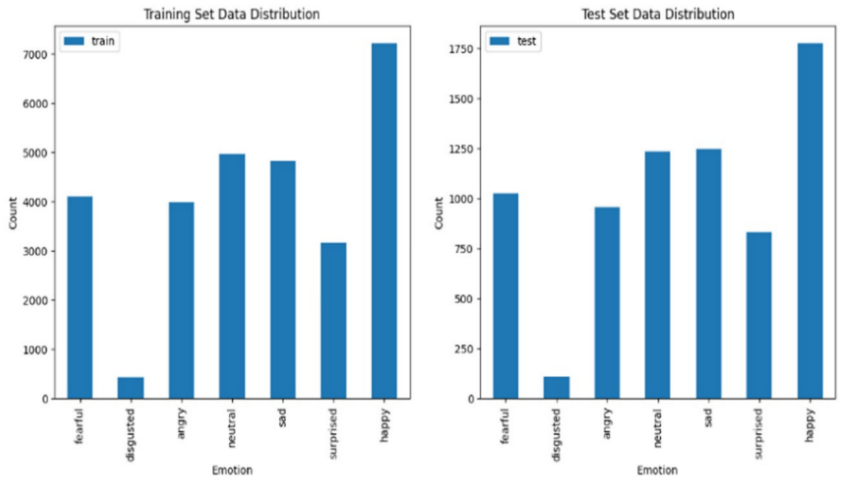

Fig 7: Train-Test Distribution

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Figure 7 shows the image appears to be a visualization of the distribution of data across two datasets: a training set and a test set. The left side of the graph shows the training set, and the right side shows the test set. The horizontal axis represents the different categories or features in the data, possibly emotions like “fearful” or “happy”. The vertical axis represents the count, or the number of data points that belong to each category. For example, there might be more training data points labeled “happy” than there are test data points labeled “happy”. The graph compares how the data is distributed across the training and test sets. Ideally, the distributions should be similar to ensure the model generalizes well on unseen data.

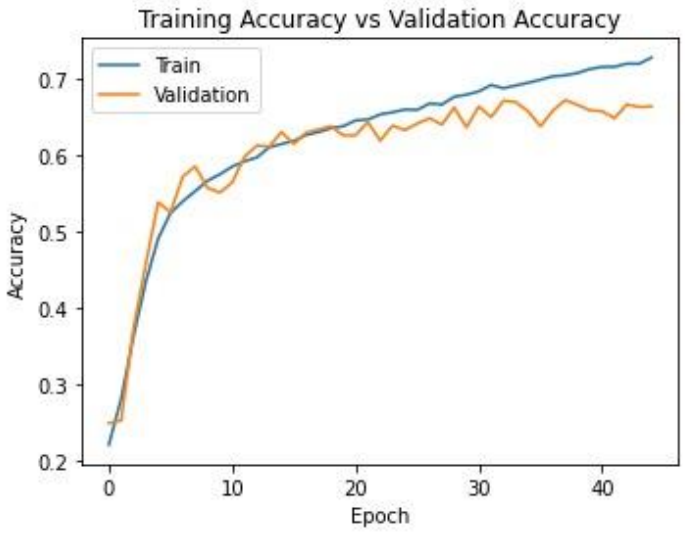

Fig. 8 Accuracy Graph

Figure 8 shows the graph illustrates the training and validation accuracy of a machine learning model over multiple epochs. The training accuracy steadily increases with each epoch, indicating that the model is effectively learning from the training data. Meanwhile, the validation accuracy, though slightly lower than the training accuracy, follows a similar increasing trend, indicating that the model is generalizing well to unseen data.

The relatively close alignment of the two curves suggests that the model is performing robustly without overfitting, achieving high accuracy on both the training and validation datasets.

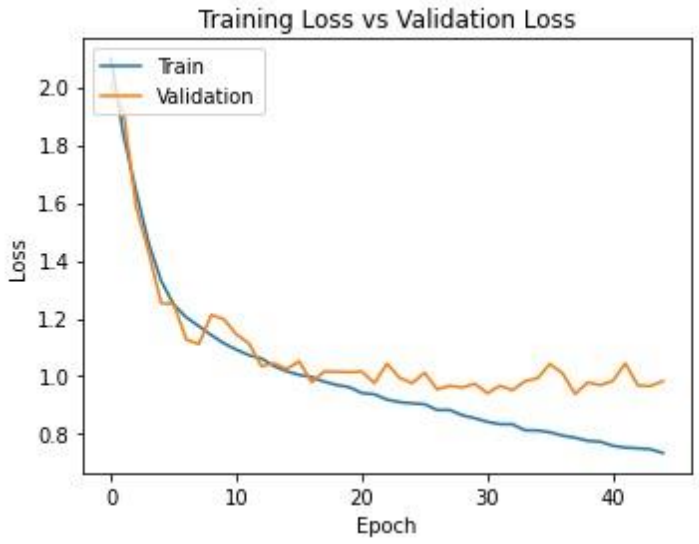

Fig 9 Training and Validation Loss

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Figure 9 shows the line graph shows how well a machine learning model is learning from the data by comparing training loss and validation loss. Training loss measures how well the model performs on the data it is learning from, while validation loss shows how well the model performs on separate, unseen data. The graph's x-axis represents the number of times the model goes through the training data (epochs), and the y-axis shows the loss values. Ideally, both losses should decrease over time, but if validation loss starts increasing, it suggests the model is overfitting—it is learning the training data too closely and not generalizing well to new data. To simplify the model, add more training data, or use data augmentation to make the model more robust.

VI. RESULTS

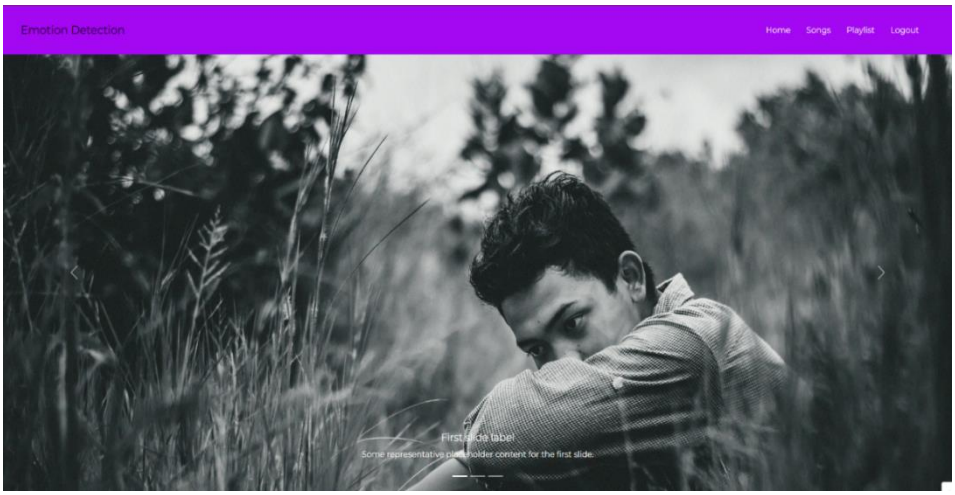

Fig. 10 Home Page

Figure 10 shows the home page of the project serves as the entry point for users and provides essential features for an engaging user experience. It includes a welcoming interface that allows users to log in or sign up to access personalized playlist recommendations based on their emotions. The page may offer options for users to input their mood or preferences through text, voice, or image inputs, which the system uses to generate tailored playlists. Additionally, the home page may display recently recommended playlists or popular songs to pique users' interest. Navigation is designed to be intuitive, allowing users to easily explore different sections of the app and access their account settings. Lastly, the home page may include a chatbot or help section to assist users with any queries or technical support they may need. The home page acts as a central hub, connecting users to various features and functionalities while offering a smooth and accessible entry point into the music recommendation service.

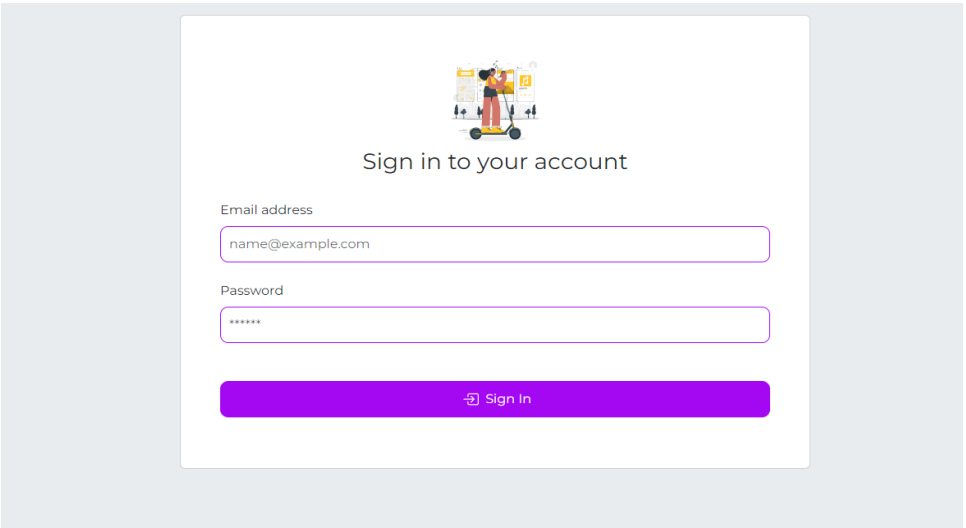

Fig. 11 Admin Page

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Figure 11 shows how admin can sigin to his account by entering email address and password. The admin page of the project serves as a central hub for managing and curating the music recommendation system. It provides an intuitive interface for administrators to create, modify, and delete playlists according to user feedback and preferences. Admins can also add new tracks to the playlist database, ensuring a diverse and up-to-date music catalog. The admin page may include options to adjust recommendation algorithms for better accuracy and performance. Additionally, it offers tools to monitor user interactions and system performance, enabling ongoing improvements and optimizations.

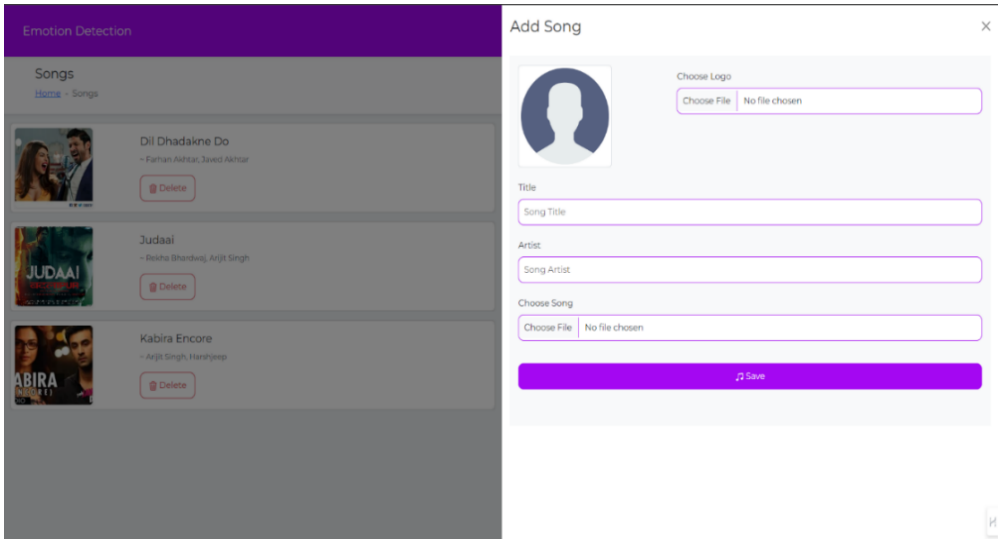

Fig .12 Add Songs

Figure 12 shows how adding songs involves managing a playlist database to ensure a diverse and up-to-date collection of music. This process includes curating songs that match different emotions and preferences, enabling personalized music recommendations for users. The admin interface allows administrators to easily add new songs to the playlist database, ensuring the availability of fresh and relevant tracks. It may also involve categorizing songs based on genres, moods, or other attributes for efficient playlist creation.

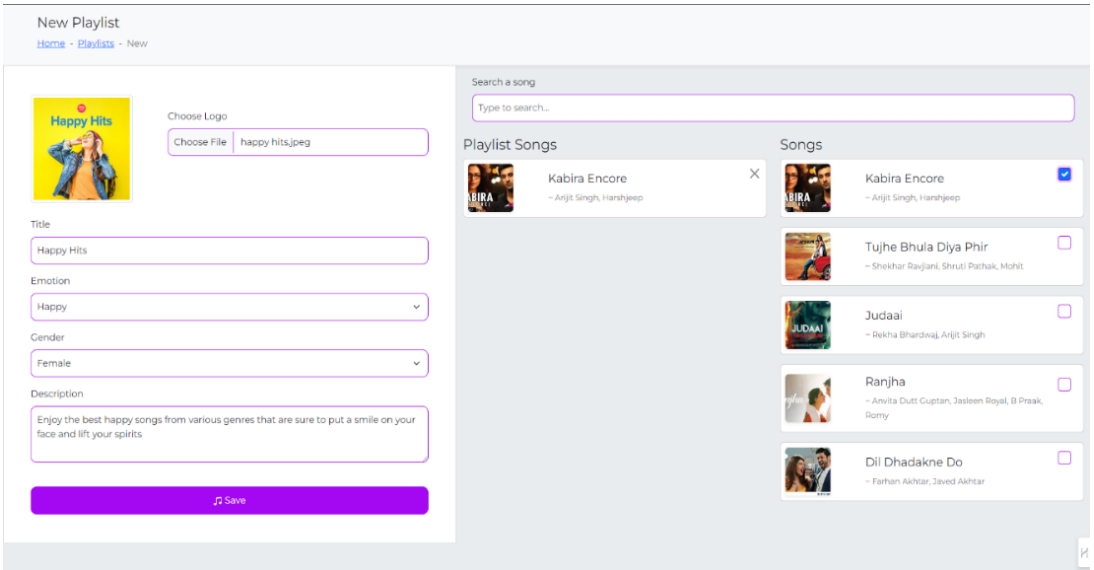

Figure 13 Create Playlist

Figure 13 shows how admin create playlist by choosing logo and they add title, type of emotion, gender and description for playlist. Users can interact with the system through an intuitive interface, where they can input their feelings using text or voice commands.

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The system leverages machine learning algorithms to analyze the user's input and generate customized playlists that align with their mood. Additionally, the project includes an admin interface for managing and curating playlists, ensuring a diverse and dynamic selection of music options. This personalized playlist creation not only improves user engagement but also contributes to a more enjoyable and emotionally resonant music experience.

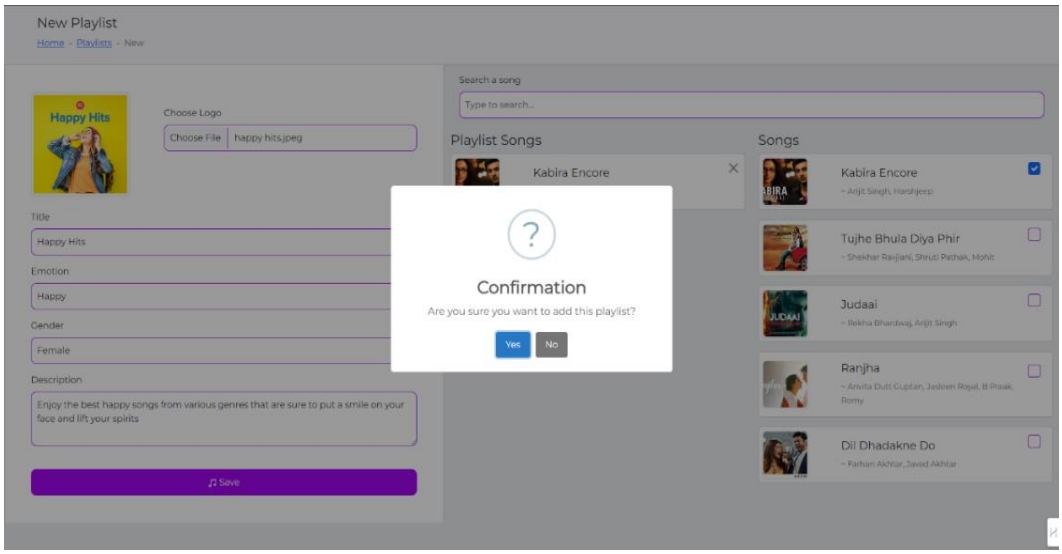

Fig. 14 Confirm Playlist Creation

Figure 14 shows the project ensures successful playlist creation by providing a user-friendly interface for creating and curating playlists according to the user's preferences. It confirms playlist creation by validating the input data for necessary details such as playlist name, genre, and track selection. Additionally, it may offer users visual feedback or notifications once the playlist is successfully created, enhancing the overall user experience and facilitating efficient playlist management.

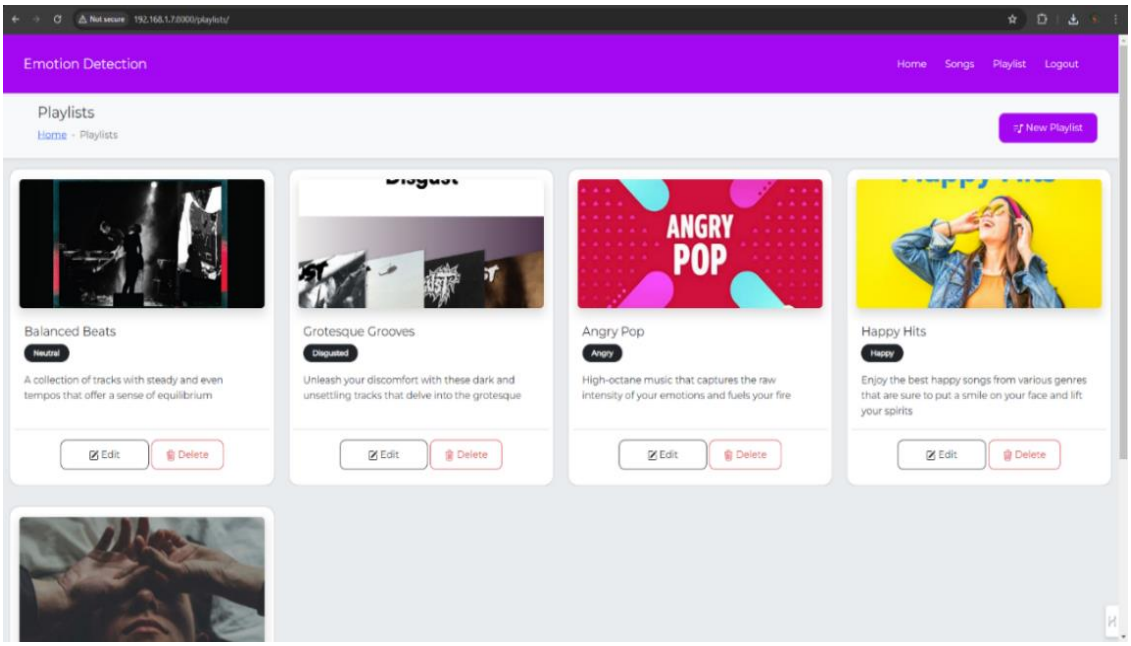

Fig. 15 Playlists

Figure 15 shows the project features personalized playlists that are tailored to the user's emotions and preferences. These playlists are curated using advanced algorithms that analyze user inputs, including text and voice commands, to generate music recommendations that match the user's current mood.

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Additionally, the admin interface allows administrators to manage the playlist database, adding new tracks and adjusting recommendations to ensure a dynamic and diverse selection of music options for users.

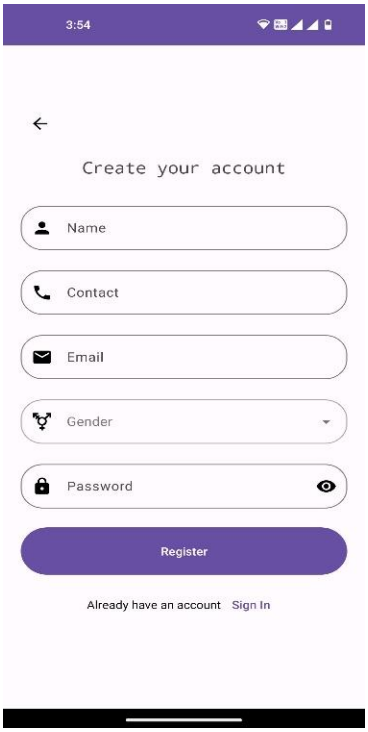

Fig. 16 User Registration Page

Figure 16 shows the user registration page allows individuals to create an account by providing necessary information such as their name, email, password, and other required details. This page often includes form fields for input, as well as validation checks to ensure that the provided information meets certain criteria for account creation.\

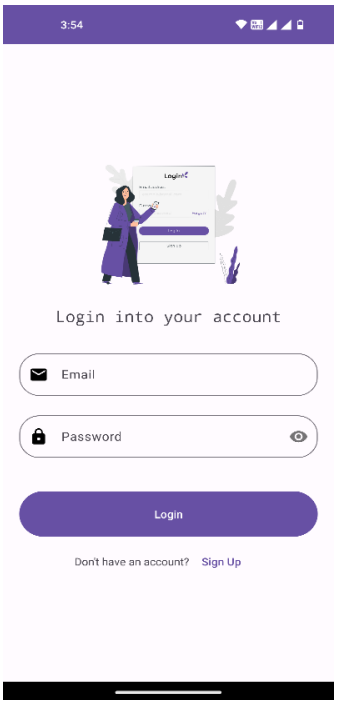

Fig. 17 User Login Page

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Figure 17 shows the user login page is the gateway for users to access their personalized music recommendations, offering a secure and user-friendly interface for entering their credentials. It ensures that only authorized users can access the system, safeguarding their personalized playlists and sensitive data.

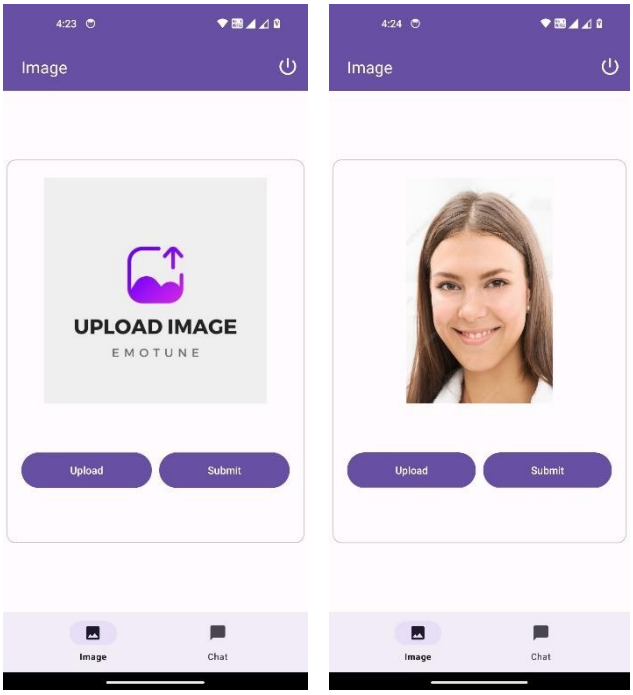

Fig. 18 Upload Image Interface

Figure 18 shows how the upload image interface allows users to easily select and upload images to the system for analysis or other purposes. It provides a simple and user-friendly way to access files from the user's device and import them into the application for processing or storage.

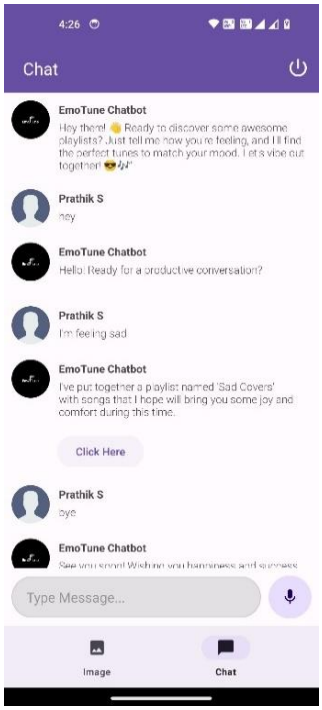

Fig. 19 Chatbot Interface

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Figure 19 shows that chatbot interface provides users with a natural and conversational way to interact with the system using text or voice inputs. This intuitive interaction allows users to express their emotions, preferences, and queries, while the chatbot responds with personalized playlist recommendations and relevant information.

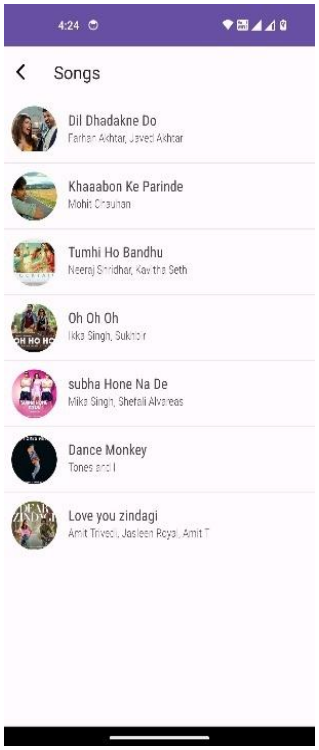

Fig. 20 Songs List

Figure 20 shows song list is a curated selection of music tracks chosen based on emotion of the user. It offers users an organized way to discover and enjoy music that aligns with their tastes and preferences.

Fig. 21 Recommended Playlist

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Figure 21 shows the recommended playlists which are personalized music collections curated based on a user's emotions and preferences. These playlists enhance the music listening experience by matching the user's current mood and taste, offering a diverse and enjoyable selection of tracks.

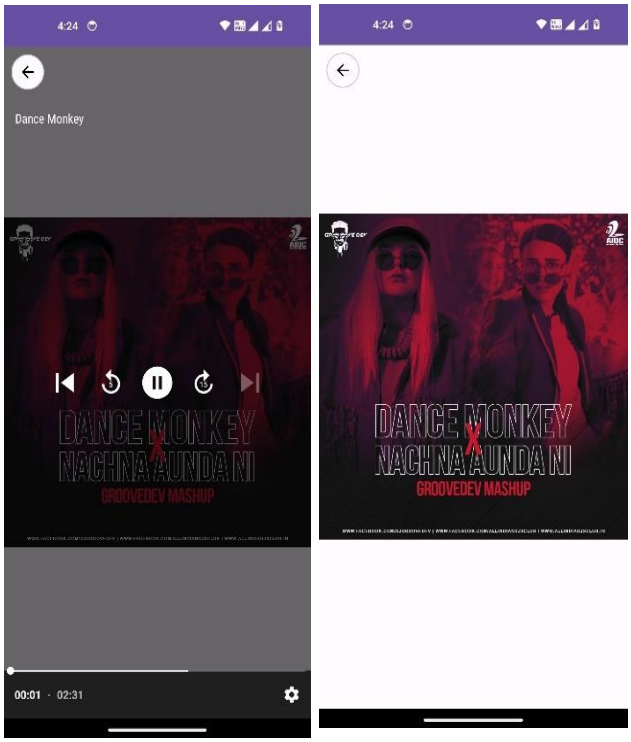

Fig. 22 Music Player

Figure 22 shows music player that allows users to play audio files, often offering features such as creating playlists, adjusting volume, and browsing music libraries. Modern music players may also provide streaming capabilities, personalized recommendations, and integration with cloud storage for a seamless listening experience.

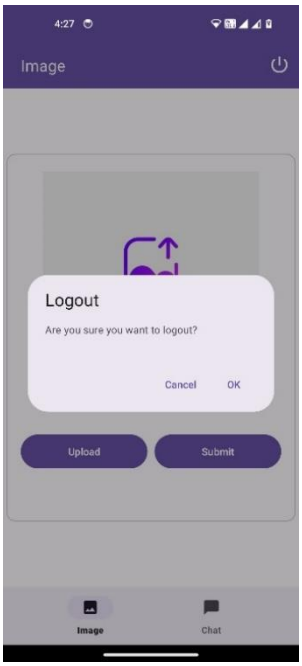

Fig. 23 Logout Confirmation

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Figure 23 shows before logging out, the system prompts the user with a confirmation message asking if they are sure they want to proceed with logging out. This step ensures that the user does not accidentally log out and lose any unsaved progress or data. The confirmation prompt enhances the user experience by providing a safeguard against accidental logouts, ensuring uninterrupted access to the system. This thoughtful design feature adds an additional layer of user control and safety, preventing any potential loss of information or disruption to the user's session.

VII. CONCLUSION

In conclusion, "Emotune" represents a significant advancement in leveraging artificial intelligence and machine learning to revolutionize the music recommendation experience. By seamlessly integrating emotion recognition technology, natural language understanding, and chatbot interaction, the project has successfully created a dynamic platform where users can discover and enjoy personalized playlists tailored to their emotional states and preferences. The utilization of Convolutional Neural Networks (CNNs) for image analysis and sophisticated recommendation algorithms ensures accurate mood detection and curated playlist suggestions. Moreover, the project's focus on user-centric design and continuous improvement, based on feedback and data-driven insights, positions Emotune as a forward-thinking solution in the music streaming industry. Its commitment to delivering an engaging and personalized music experience has the potential to set a new standard for how users interact with music recommendation systems.

Furthermore, the integration of the Rasa Chatbot framework enhances user engagement by providing a conversational interface for intuitive interaction. The intuitive admin interface empowers administrators to manage and update the playlist database effortlessly, ensuring a diverse and dynamic selection of music options. Moreover, the availability of a dedicated Android app expands accessibility, enabling users to enjoy personalized music recommendations on the go. Moving forward, the project has vast potential for future enhancements, including the implementation of advanced recommendation algorithms, integration of social features for collaborative playlist creation, and continuous refinement of mood detection techniques. By embracing user feedback and embracing innovation, "Emotune" is poised to redefine the music recommendation landscape, offering users an immersive and personalized music discovery experience tailored to their individual emotions and preferences.

REFERENCES

[1] “Chatbot Song Recommendation System”, International Journal of Engineering Research & Technology (IJERT) - 2023 by Anusha, Dr. Srinivasan V.
[2] “Chatbot with Song Recommendation based on Emotion”, 2022 by Simran Chaudhari, Hrucha Malusare, Aadil Adheesh, Mokshada Bhadavalkar, Asma Shaikh.
[3] "Mood Based Music Playlist Generator Using Convolutional Neural NetworkProf", International Journal of Engineering Research & Technology (IJERT) - 2022 by Jaychand Upadhyay, Sharan Shetty, Vaibhav Murari, Jarvis Trinidade.
[4] "Alexis : A Voicebased Chatbot using Natural Language Processing", International Journal of Engineering Research & Technology (IJERT) - 2022 by Meet Popat, Aayush Doshi, Yashraj Rai.
[5] "Emotion Recognition Using Chatbot System", Research Gate - 2022 by Shraddha Pophale, Hetal Gandhi and Anil Kumar Gupta.
[6] "A Machine Learning Based Chatbot Song Recommender System", 2021 by Amaan Shaikh, Bhushan Patil, Tejas Sonawane.
[7] “Music Recommender System Using ChatBot”, 2021 by Shivam Sakore, Pratik Jagdale, Mansi Borawake, Ankita Khandalkar.
[8] "A Novel Music Emotion Recognition Model Using Neural Network Technology", Frontiers in Psychology -28 Sep 2021 by Jing Yang.
[9] "Music recommendation system based on facial emotion recognition", March 2020 by Deny John Samuel, B. Perumal, Muthukumaran Elangovan.
[10] “Conversational and Image Recognition Chatbot”, Stanford CS224N - 2020 by Shengyang Su.
[11] “A Novel Music Emotion Recognition Model for Scratch generated Music” IEEE Xplore August 01, 2020 by Zijing Gao, Lichen Qiu, Peng Qi, Yan Sun
[12] “Music Recommendation Based on Color” IEEE Explore - October 20, 2020 by Kajornsak Kittimathaveenan, Chanathip Pongskul, Salisa Mahatanarat.
[13] “A system for educational and vocationalguidance: Chatbot E-Orientation”, August 2020 by Omar Zahour, El Habib Benlahmar, Ahmed Eddaoui, Hafsa Ouchra, Oumaima Hourrane.
[14] “ Emotion aware Smart Music Recommender System using Two Level CNN” IEEE Xplore Part Number: CFP20P17 - ART; ISBN: 978-1-7281-5821-1 by Krupa K S, Ambara G, Kartikey Rai, Sahil Choudhury.

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DOI: 10.17148/IJARCCE.2024.134152

[15] "Emousic: Emotion & Activity based Music Player using Machine Learning", Research Gate - 2019 by Pranav Sarda, Sushmita Halasawade, Anuja Padmawar and Jagannath Aghav.
[16] "SentiMozart: Music Generation based on Emotions", 10th International Conference on Agents and Artificial Intelligence (ICAART) - 2018 by Rishi Madhok, Shivali Goel and Shweta Garg.
[17] "A Survey on Chatbot Implementation in Customer Service Industry through Deep Neural Networks" IEEE Xplore October 2018 by Mohammad Nuruzzaman, Omar Khadeer Hussain.
[18] "Text Based Emotion Recognition : A Survey", 2015 by C. R. Chopade.
[19] "Approaches, Tools and Applications for Sentiment Analysis Implementation", Sep 2015 by Alessia D Andrea, Fernando Ferri, Patrizia Grifoni, and Tiziana Guzzo.
[20] "Geometric Approach for Human Emotion Recognition using Facial Expression", International Journal of Computer Applications, 2015by Bavkar, Sandeep, Rangole, Jyoti, Deshmukh.
[21] "Emotion Based Music Player", IEEE 2019 conference by Krittrin Chankuptarat, etal.
[22] "A Comparative Study of Music Recommendation Systems" 2018 IEEE by Ashish Patel , Dr. Rajesh Wadhvani.