

Chatbot Based Music Recommendation System

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Abstract:

Technology has a great impact on every part of lives, which also includes our day-to-day habits. In present scenario, fields like artificial intelligence and machine learning are on great boom. With the help of advancement in these fields, large number of people are interacting through the system via chat bots and voice assistants. Considering above factors, this project is aimed to implement the Machine Learning based Chat Bot Song Recommender System that includes chat bot to assist user and recommend songs using the Natural Language Processing. In this paper we will discuss methodology, algorithms and the flow of the system

Keywords: music, chatbot, recommender system

Introduction

Now-a-days, we all are living in the time where we know that nothing is certain. Same goes with our mind, at regular instances of time our mood, our choices and our priorities changes. Considering the constant changing behavior of human being we have developed our system. We have made our system considering that the humans experience frequently changes in their mood and somehow, at particular moment of time, frequently changing of mood would also result in change in mood of music of their choice.

Hence, with the help of our system you can listen music according to your mood. In addition, we have also provided the facility to user to chat with the chat bot after all texting makes conversation between chat bot and user more interactive and it will efficiently help in analyzing the current mood of the user and based on that chat bot will recommend songs.

Besides these, our system comprises of four modules. Initially for a new user we have provided a sign-up page. After completing sign-up, user can login to our system. In addition to our system, we've also provided the password recovery facility to user, in case user forgot the password. After chatting with the chat bot, current mood of the user is analyzed and list of songs is suggested to user, using the concept of NLP (Natural Language Processing).

Based on the list of songs user can choose the song to be played based on his or her choice. We have used Python as our prime language because it supports an extensive set of open-source libraries which can be used by our system.

A Chatbot-Based Music Recommendation System is an application that utilizes chatbot technology to interact with users and recommend music based on their preferences, behaviors, and feedback. The system aims to enhance the user experience by providing personalized music suggestions, ultimately helping users discover new songs and artists they may enjoy.

Here is a background on the key components and concepts involved in such a system:

Chatbot Technology:

Natural Language Processing (NLP): Chatbots leverage NLP to understand and interpret user inputs in natural language. This allows the system to extract relevant information and respond appropriately.

Dialog Management: The chatbot needs to maintain a coherent conversation with the user. Dialog management ensures that the system can handle context, understand user intent, and respond in a meaningful way.

User Interaction: The chatbot interacts with users in a conversational manner, asking about their music preferences, collecting feedback, and providing recommendations.

Music Recommendation Algorithms:

Collaborative Filtering: This approach recommends music based on the preferences of users with similar tastes. It identifies patterns in user behavior and suggests items liked by users who have similar preferences.

Content-Based Filtering: This method recommends music based on the characteristics of the songs the user has liked before. It takes into account features such as genre, tempo, artist, and more.

Hybrid Models: Combining collaborative filtering and content-based filtering often results in more accurate and diverse recommendations.

User Profiling:

The system maintains user profiles that store information about their musical preferences, listening history, and feedback. This data is crucial for generating accurate recommendations.

Feedback Loop:

Users provide feedback on the recommended songs. This feedback is essential for refining the recommendation algorithms and improving the accuracy of future suggestions.

Integration with Music Services:

The system may be integrated with music streaming services or platforms to access a vast catalog of songs. APIs (Application Programming Interfaces) are often used to connect with these services.

Personalization:

The goal of the system is to provide a personalized experience for each user. This involves understanding individual preferences, taking into account context, and adapting recommendations over time.

Machine Learning and Training:

The recommendation algorithms are often based on machine learning techniques. These algorithms are trained on large datasets of user interactions and music features to learn patterns and make accurate predictions.

Security and Privacy:

Given that the system deals with user preferences and interactions, ensuring the security and privacy of user data is crucial. Compliance with data protection regulations is essential.

Literature Survey

Title: "Conversational Agents in Recommender Systems: A Review"

Authors: Chien-Chih Yu, Hung-Yu Kao

Explanation: This comprehensive review explores the integration of conversational agents (chatbots) in recommender systems across various domains, including music. It discusses the impact of conversational interfaces on user engagement and the challenges associated with designing effective conversational recommenders.

2.Title: "Personalized Music Recommendation System Based on Hybrid Collaborative Filtering Algorithm with Improved User Profile"

Authors: Zhihong Liu, et al.

Explanation: The paper introduces a hybrid collaborative filtering algorithm for music recommendation and emphasizes the importance of an improved user profile to enhance personalization. It provides insights into combining different recommendation techniques to achieve better accuracy.

3.Title: "Context-Aware Music Recommendation Based on User Emotional Feedback"

Authors: Xinyan Fan, et al.

Explanation: Focusing on context-aware music recommendation, this study explores the integration of user emotional feedback to enhance the recommendation process. It discusses the incorporation of emotional context into recommendation algorithms for more personalized music suggestions.

4.Title: "Machine Learning in Music Recommendation: A Review"**Authors: Markus Schedl, et al.**

Explanation: This review paper provides an overview of machine learning techniques applied to music recommendation systems. It covers collaborative filtering, content-based filtering, and hybrid models, discussing their strengths and limitations in the context of music recommendation.

5.Title: "Enhancing Music Recommender Systems: An Overview of Recent Advances and Challenges"**Authors: Alain Said, et al.**

Explanation: The study reviews recent advances in music recommender systems, covering topics such as deep learning, context-aware recommendation, and the integration of external data sources. It also addresses the challenges and future directions in enhancing music recommendation.

6.Title: "ChatGPT: A Large-Scale Transformer-Based Language Model for Conversational Agents"**Authors: Alec Radford, et al.**

Explanation: While not music-specific, this paper introduces ChatGPT, a large-scale language model based on the Transformer architecture. Understanding the capabilities of such conversational agents is crucial for implementing chatbot-based systems for music recommendation.

7.Title: "User-Centric Music Emotion Recognition and Recommendation: A Review"**Authors: Yong Zhang, et al.**

Explanation: Focusing on the emotional aspect of music recommendation, this review explores the integration of user-centric emotion recognition in the recommendation process. It discusses how understanding user emotions can lead to more effective and personalized music suggestions.

Methodology

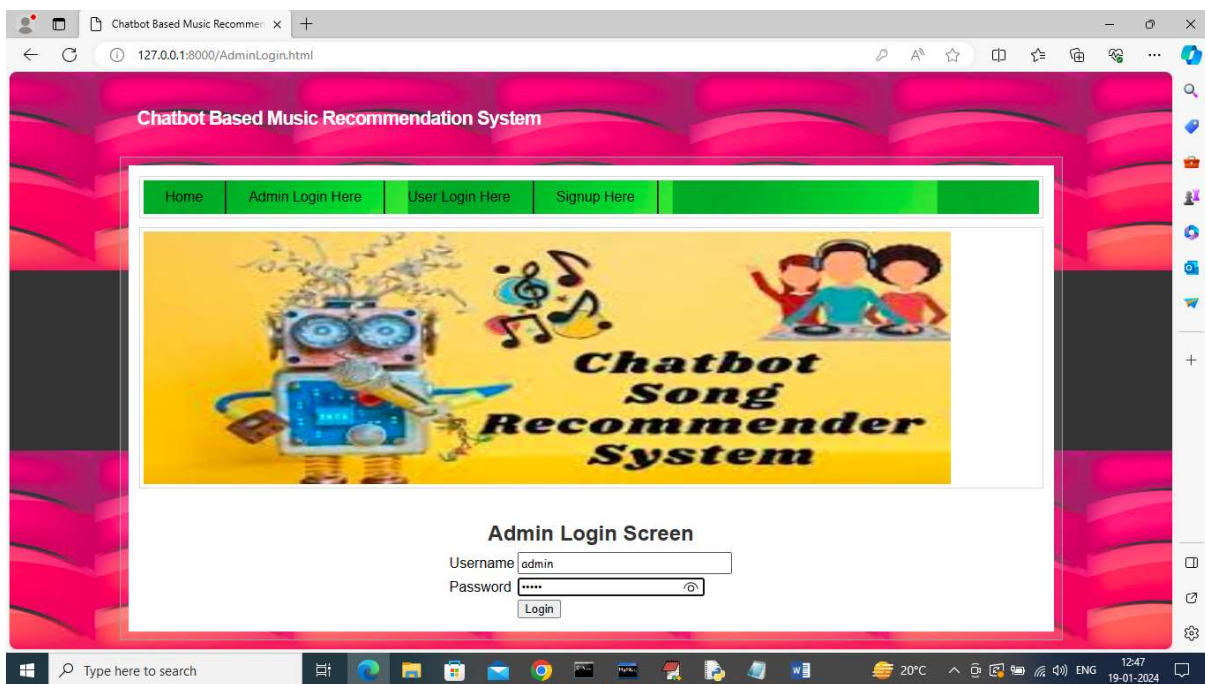
The proposed system work develops a personalized system, where the user's current emotion is analyzed with the help of the chat bot. The chat bot identifies the user's sentiment by chat conversation with the user. Based on the input provided by the user, current emotion or mood is analyzed by the chat bot and it will suggest song to the user. The objective of our application is to identify the mood expressed by the user and once the mood is identified, songs are played by the application. The application solves the basic needs of music listeners without troubling them as existing applications do.

Results

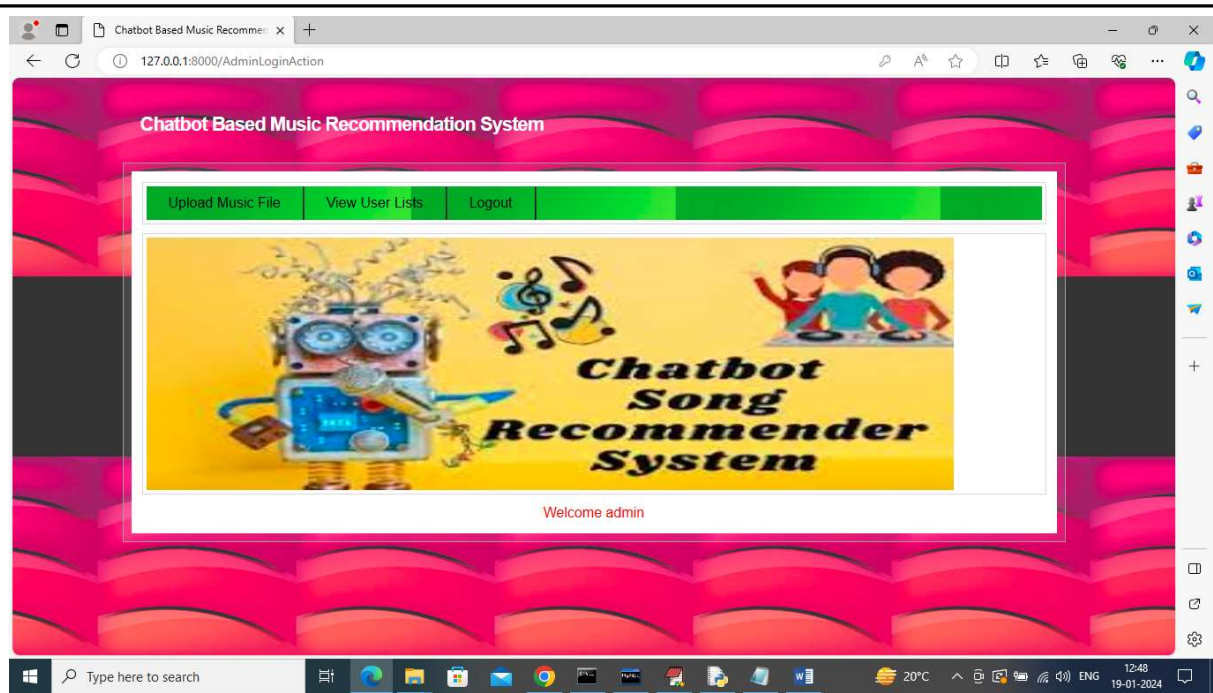
The chatbot song recommendation system would aim to provide personalized music recommendations to users based on their preferences and listening history. It would integrate the Last.fm API, which offers access to a vast music database and user listening data. The result of the chatbot system would typically involve generating song recommendations based on various factors, such as user preferences, favorite artists, genres, or even current mood.



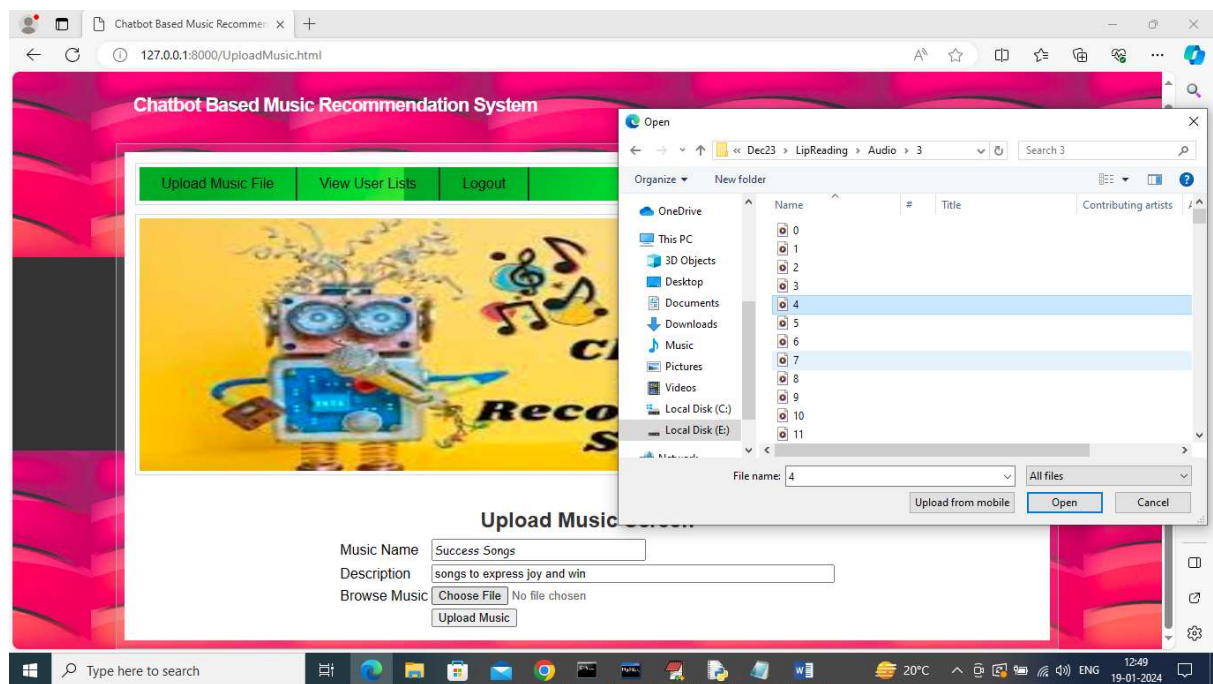
In above screen click on 'Admin Login Here' link to get below long page



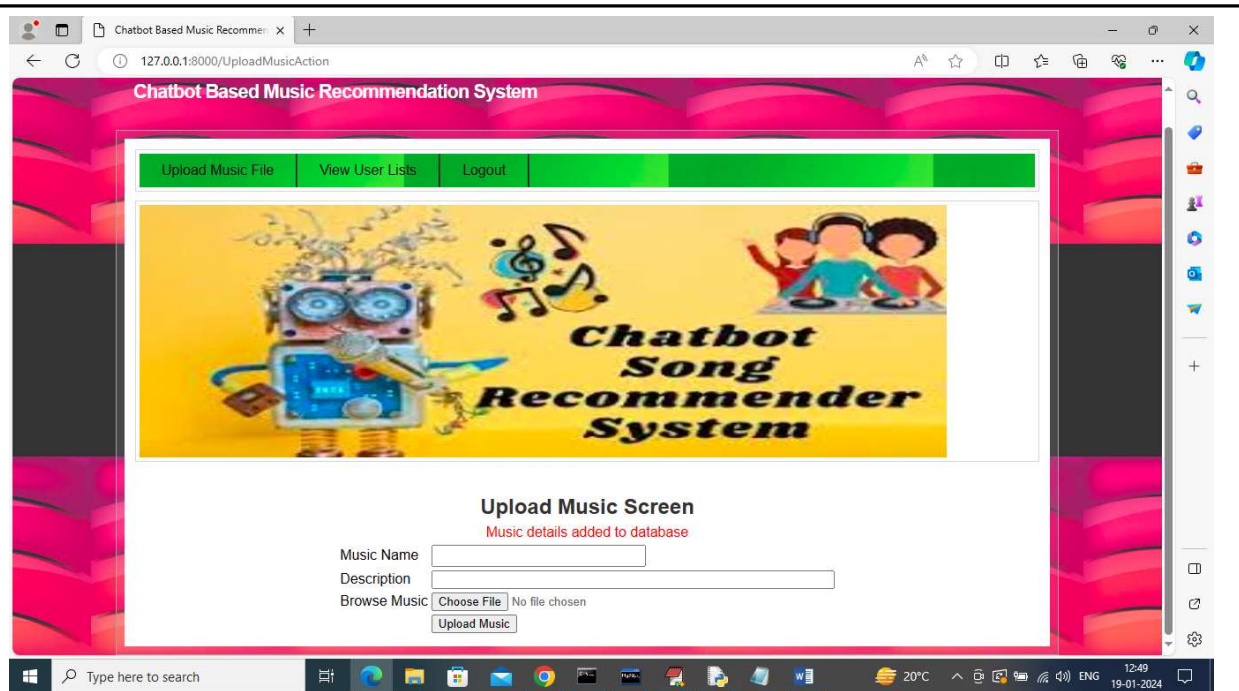
In above screen admin is login and after login will get below page



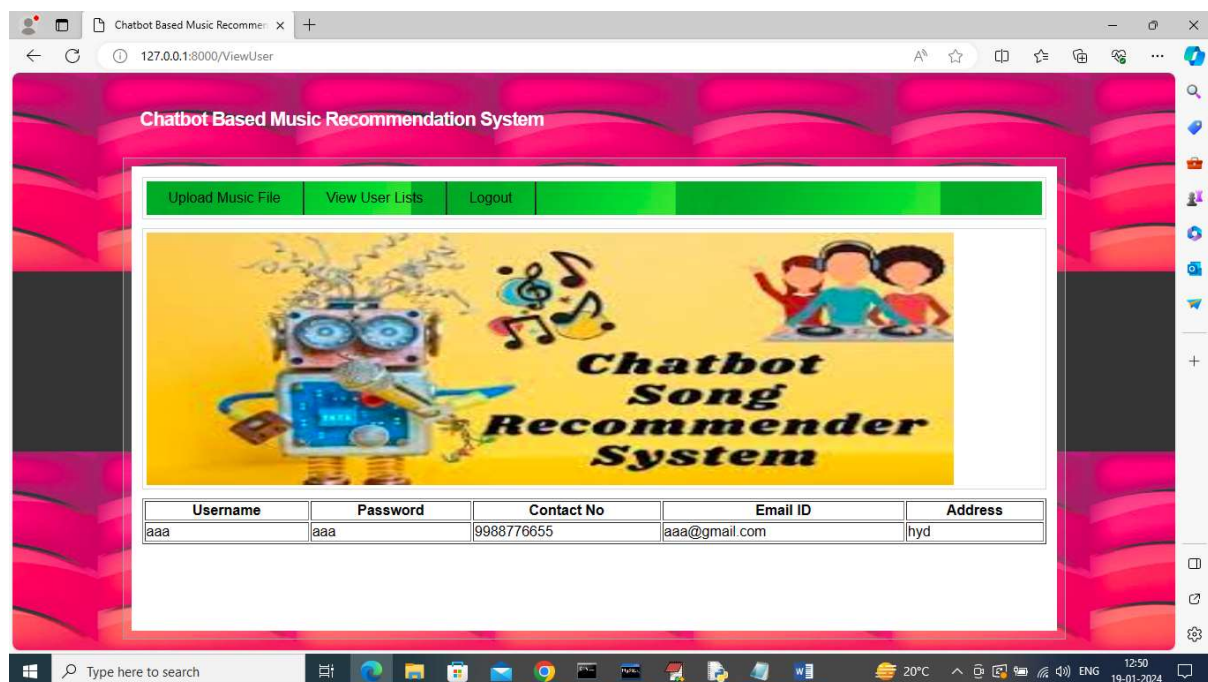
In above screen click on 'Upload Music File' link to get below page



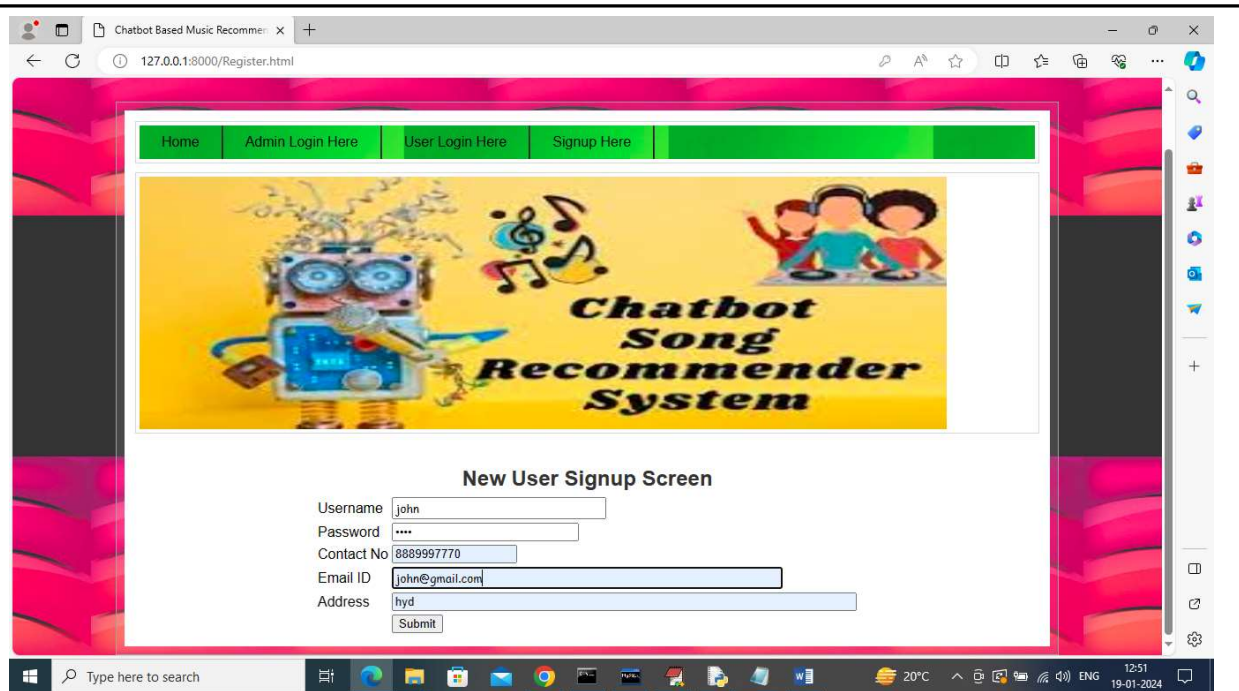
In above screen admin is uploading songs by entering description and then upload songs file and then press button to upload song



In above screen song is uploaded and similarly you can upload any number of songs and now click on 'View User List' link to get below registered user details

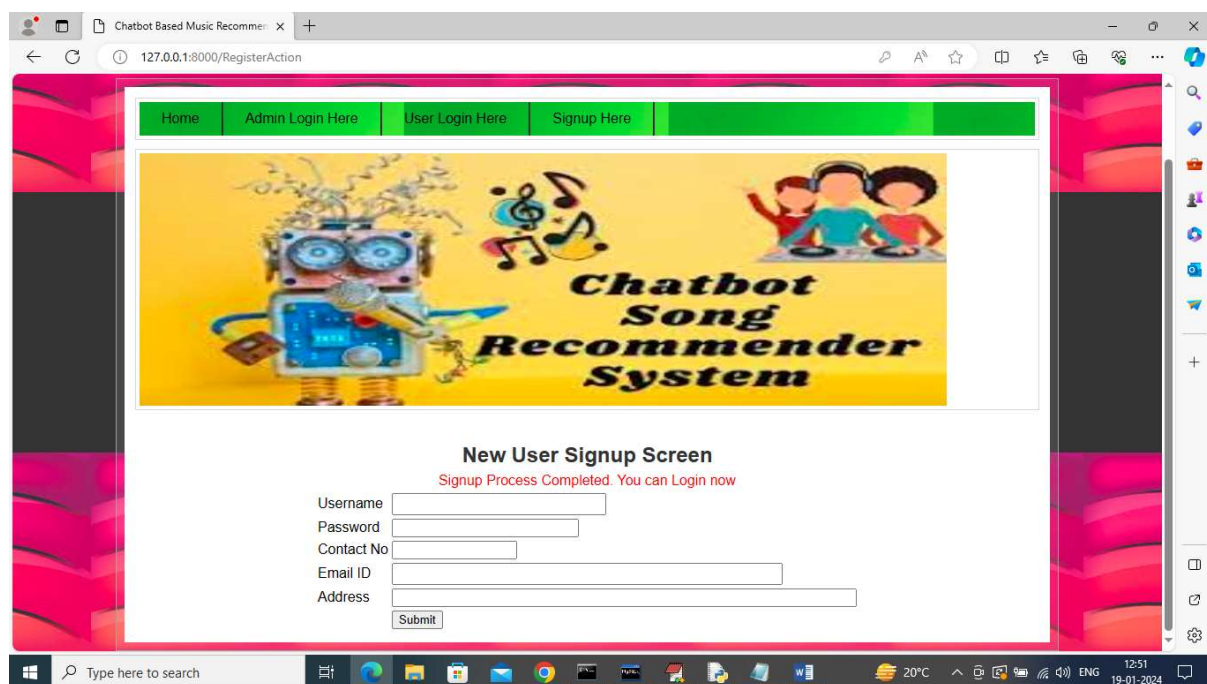


In above screen admin can view list of registered users and now logout and register new user



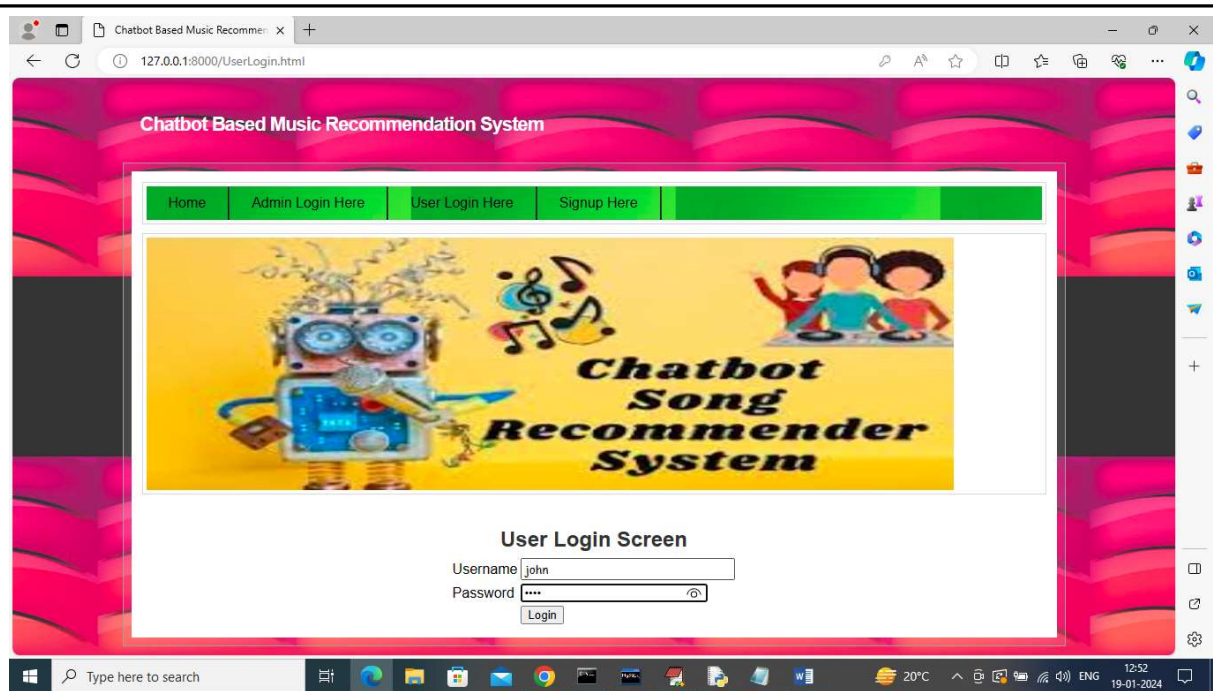
The screenshot shows a web browser window with the URL 127.0.0.1:8000/Register.html. The page features a navigation bar with links: Home, Admin Login Here, User Login Here, and Signup Here. The main content area has a header with a robot and musical notes, and the title "Chatbot Song Recommender System". Below this is a "New User Signup Screen" with the following fields: Username (john), Password (****), Contact No (8889997770), Email ID (john@gmail.com), and Address (hyd). A "Submit" button is at the bottom of the form.

In above screen user is entering sign up details and then press button to get below page

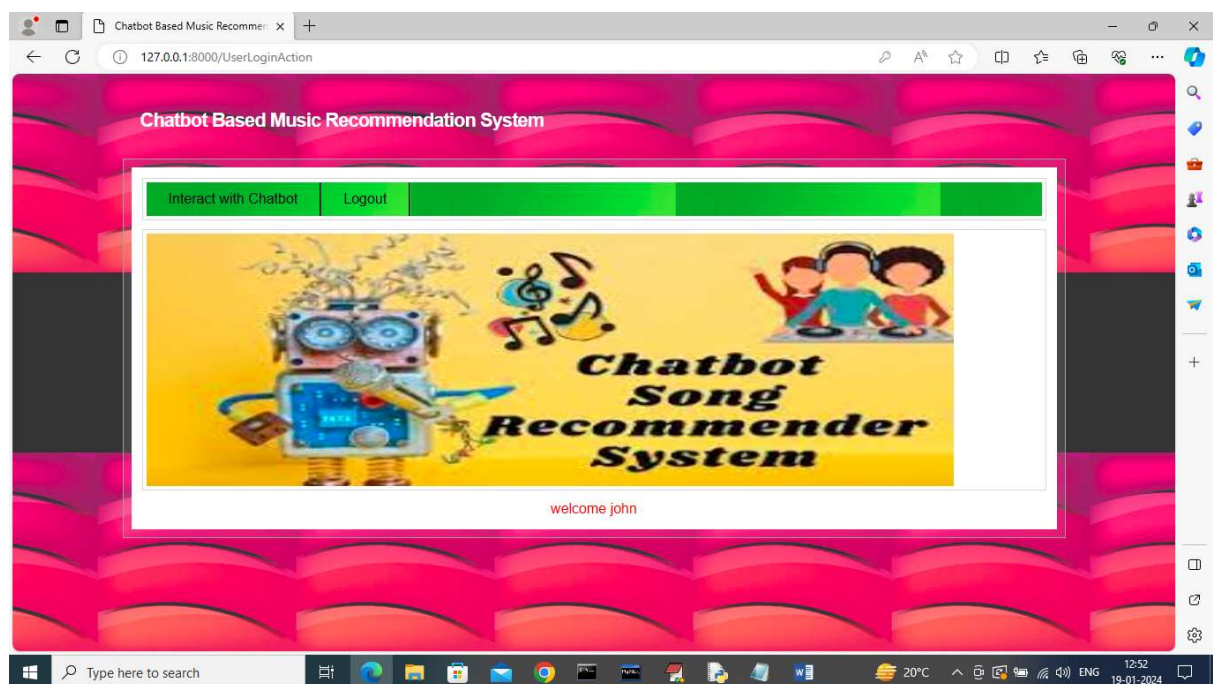


The screenshot shows the same web browser window, but the URL is now 127.0.0.1:8000/RegisterAction. The page layout is identical to the previous one, but the "New User Signup Screen" now displays a red message: "Signup Process Completed. You can Login now". The form fields are empty, and the "Submit" button is still present.

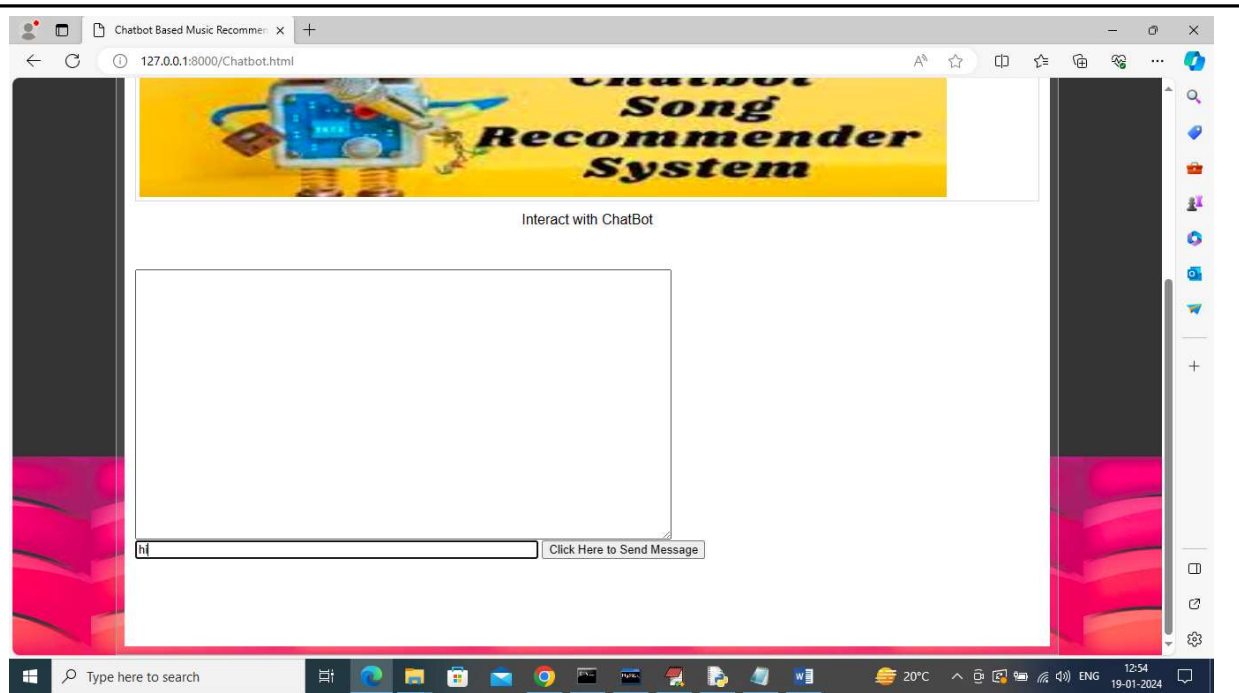
In above screen user signup completed and now click on 'User Login' link to get below page



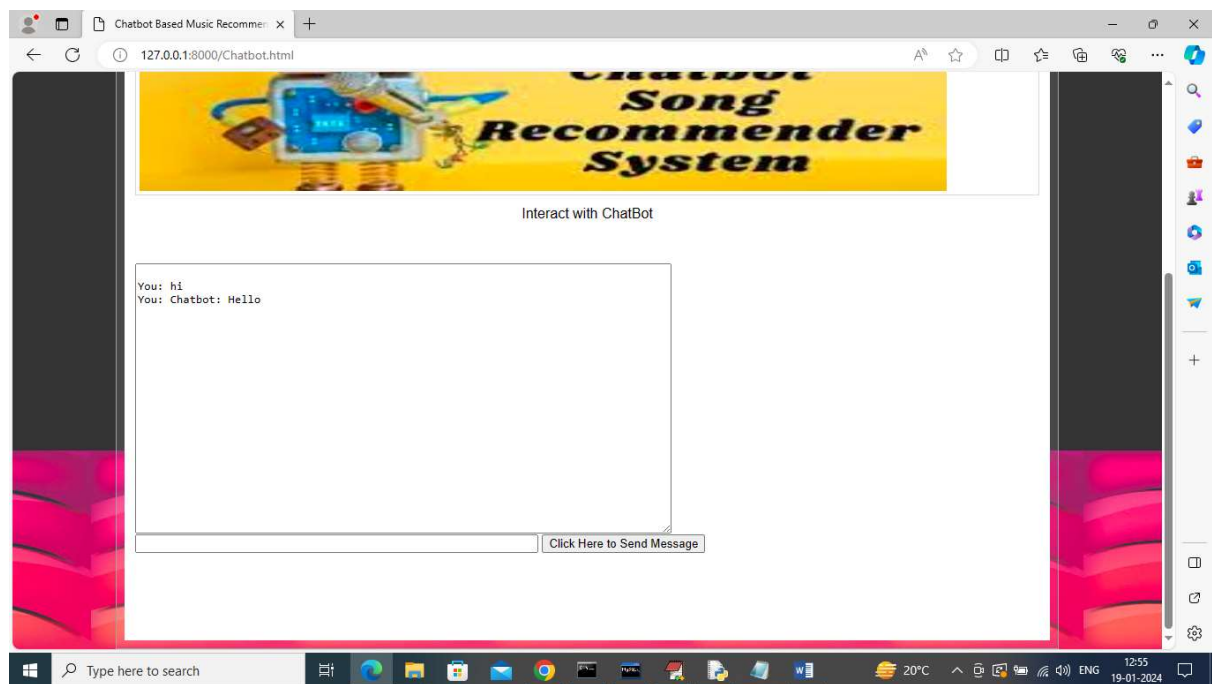
In above screen user is login and after login will get below page



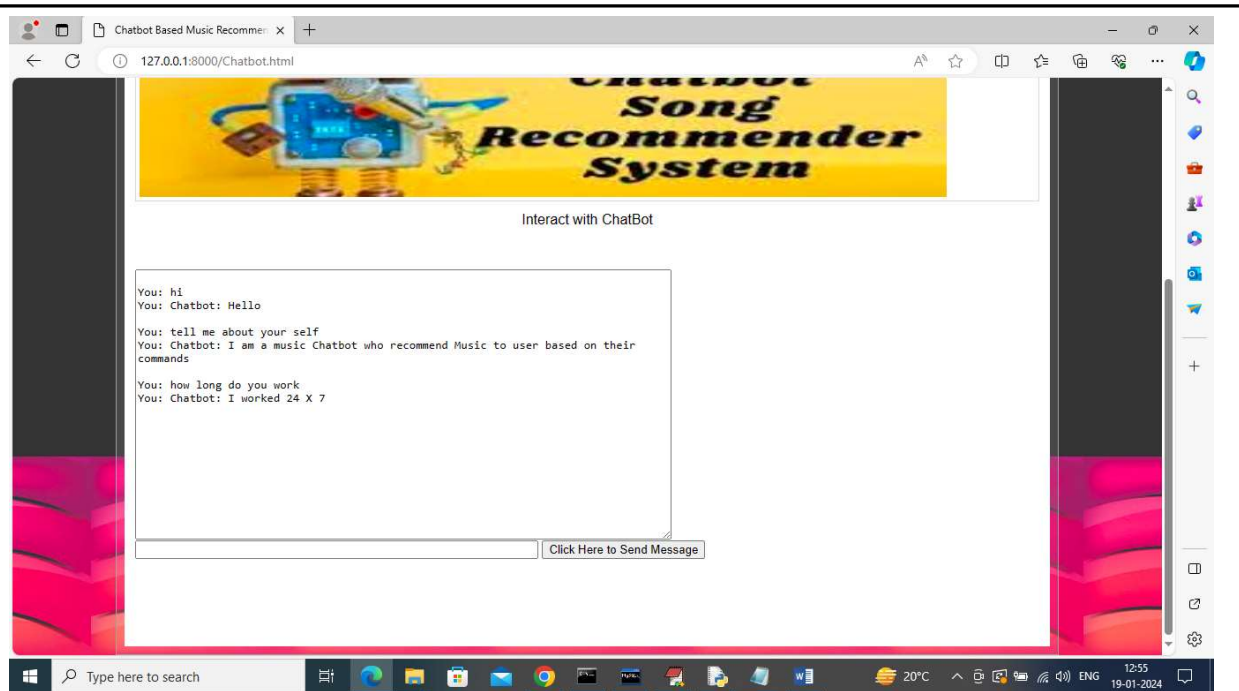
In above screen click on 'Interact with Chatbot' link to get below page



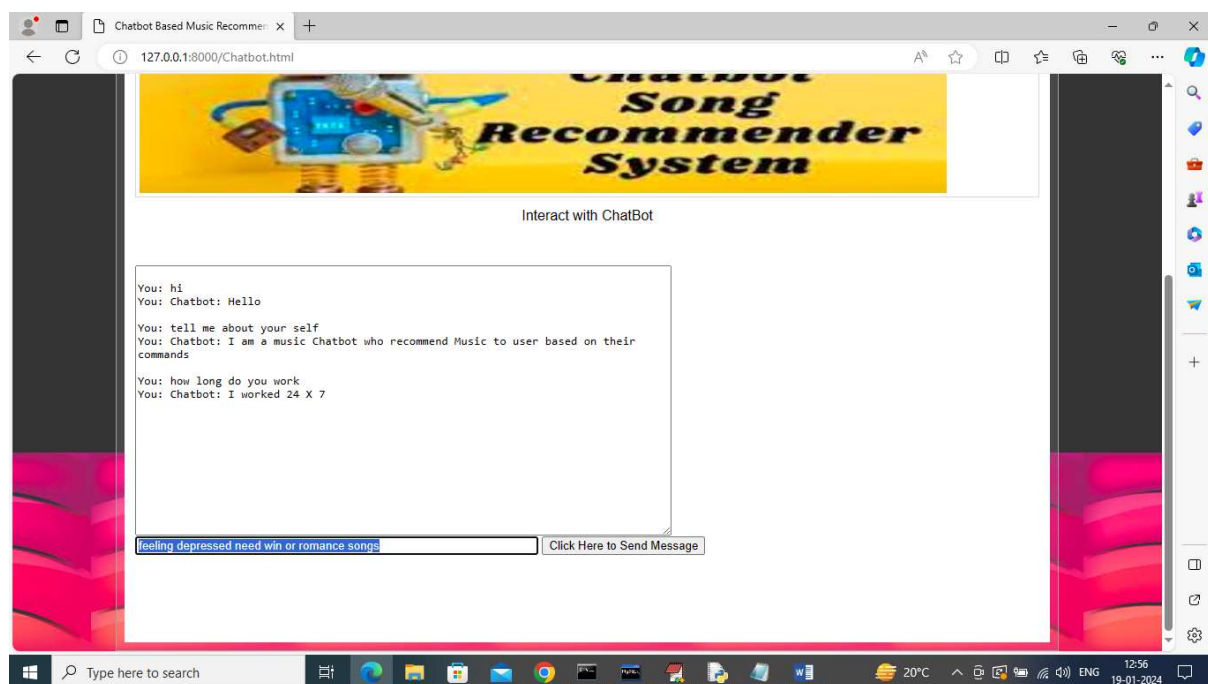
In above screen I am sending 'hi' to Chatbot and then press button to get below page



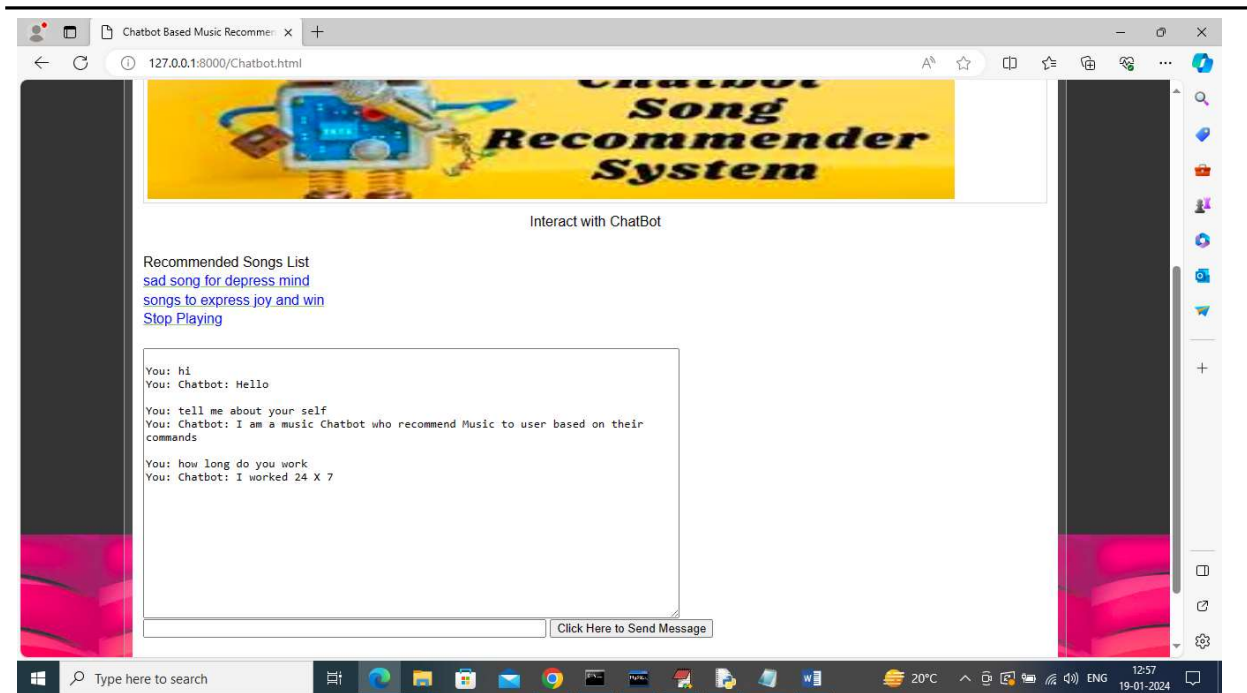
In above screen Chatbot replied with 'hello'



I asked some more questions and Chatbot replied and now I will ask about songs



In above screen in blue colour text asking about some songs and then press button to get below page



In above screen we got some recommended songs list in blue colour text and you can click those links to play songs and can click on 'Stop Playing' to stop songs

Conclusion

We have presented a survey and methodology for building the chat bot song recommender system. To perform this, we first identified various approaches for building a chat bot known to date. We then evaluated the considered algorithms which are useful in building of our system in terms of their ability to work on the recommendation process of the system. We also gathered all the requirements needed for building our system and studied the overall process involved in chat bot's working. Lastly we summarized the deployment requirements of our system. On the conclusion note our "Chat bot Song Recommender System" is used to facilitate the use by people to automate and give them better music player experience. The application solves the basic needs of music listeners without troubling them as existing applications do.

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