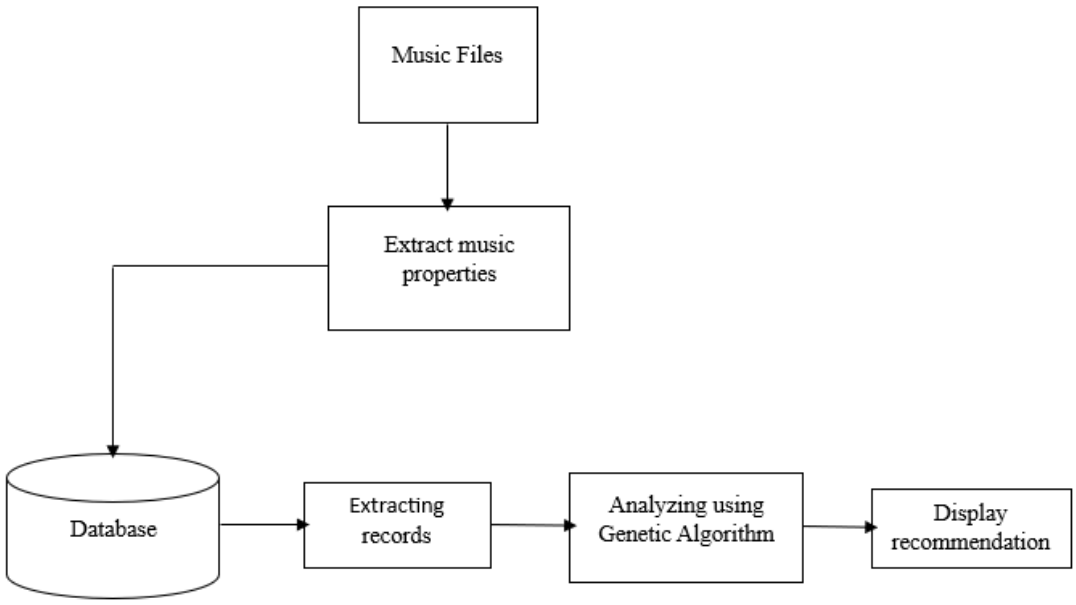
Music Recommendation System

Abstract:
Many people consider music as an integral part of their lives and use it in their daily activities. Therefore, suggesting a music track based on users' previous searches and tastes can be a pleasant experience for them. Our system uses Genetic algorithms, which include techniques such as content-based filtering and collaborative filtering to analyze user behavior and generate personalized recommendations.A user-friendly interface, real-time recommendations and data visualization are some of the features of our system. Our music recommendation system will consist of a karaoke feature that will provide users with the fun of singing songs to their favorite beats.

Problem Statement:
Current music streaming platforms often lack a user-friendly and personalized interface that facilitates music discovery and engagement. Additionally, the absence of dynamic website features and advanced web technologies hinders the platform's ability to deliver a seamless and enjoyable user experience. Therefore, there is a need for a music recommendation system integrated into a dynamic website that leverages advanced web technologies to deliver personalized music recommendations, enhance user engagement, and create a memorable user experience

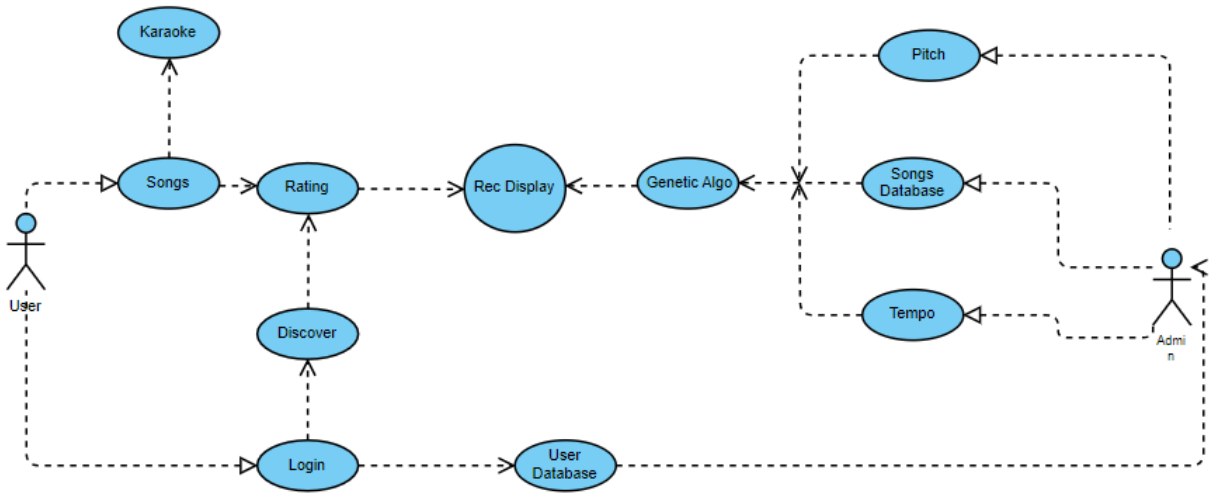
Proposed System Architecture:



Explanation:

In relation to the music files provided to us, our methodology involves extracting diverse characteristics from the music and storing them in a database. These characteristics include information such as genre, tempo,key, and other relevant details. After successfully storing the data,we proceed to retrieve the records from the database for further analysis, utilizing a genetic algorithm for this purpose.The implementation of this algorithm helps us generate song recommendations based on the analyzed data.Through this systematic approach, we aim to improve our understanding of the music files and offer personalized suggestions to our users.The extraction and storage of comprehensive music data in a database,combined with the usage of a genetic algorithm, enable us to provide more accurate and tailored song recommendations to enhance the user experience

Use Case Diagram:



Explanation:

1. Data Collection and Preprocessing :

We created a custom dataset by downloading songs and manually uploading them into our database, which includes information about pitch and tempo for each song.

2. Feature Engineering :

We extracted relevant features from the music data, including audio features, , and user-provided ratings.

3. Algorithm Selection :

Our recommendation system uses a genetic algorithm to optimize song recommendations based on user ratings. This approach allows us to find the most suitable songs for each user.

4. Model Evaluation :

We assessed the performance of our recommendation system by measuring the effectiveness of song recommendations and analyzing any challenges or limitations encountered during the evaluation process.

Conclusion:

We proposed a real-time genetic recommendation method in order to overcome the existing recommendation techniques that are not reflecting the current user's intent. With the genetic algorithm newer solutions can be generated providing optimal solutions each time when the algorithm is made to run, thus providing mutations. The system holds promise for providing highly personalized, diverse and engaging music suggestions. With increasing concerns about data privacy and security, our project focuses on developing genetic algorithm that can make recommendations without compromising user data. Combining genetic algorithm with recommendation techniques leads to even more accurate and personalized recommendations. Providing users with more control and customization over their recommendation is an area with significant potential. Understanding and optimizing for long term user engagement and satisfaction is crucial. The system is a valuable tool for music streaming platforms and services looking to enhance user satisfaction and loyalty. This method can be compared with the existing ones which lack the quality of providing accurate results.

Future Scope:

In future work we basically concentrate on the various issues related to the GA, what all strategies need to be implemented in order to overcome these issues so as to make GA even more powerful and efficient.