Building a Music Recommendation System using Spotify Dataset

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1.Introduction:

In today's world, many online platforms incorporate recommendation systems to attract users to engage with the services. As we all know, Spotify is a leading music social media company with over 400 million users which relies on a variety of systems to suggest songs to users, based on their search history and playlists.

The concept of "Recommendation System (RS)" may be familiar from Hulu's or Netflix's "Recommended for you" list, in which the system suggests content based on a person's viewing history or the viewing histories of their friends. The objective of recommendation algorithms is to suggest or anticipate products that a user may like, based on their data. In the case of Spotify's song prediction, the system examines the musical similarities between each playlist to suggest a song from one playlist if the similarities are particularly strong with another playlist.

2. Motivation:

Why is a recommendation system used for song prediction?

Although we can use a cluster-based method to predict songs, it has limitations in incorporating additional information, such as a categorization predictor.

A unique type of recommendation system is the cluster-based algorithm, but it is less flexible than the other two types. The clustering result can be integrated into models using both content-based filtering and collaborative filtering to create a hybrid recommendation system. This approach is more versatile and effective for song prediction because it considers multiple factors when suggesting songs.

3. Problem Statement:

The goal of a recommendation system is to suggest or forecast products that a user is likely to enjoy, based on the data of all users in the database.

In order to illustrate the process of recommending a song, we will use a conceptual pipeline and we will discuss the details of how to accomplish this and the various types of recommendation systems available.

4. Goals and Objectives

1. Develop a user-friendly music recommendation system that allows users to search for songs based on their mood and preferences.

2. Implement machine learning techniques to analyse music content and categorize songs based on their acoustic features and genres.

3. Use cosine similarity to recommend songs that are similar to the user's previously played tracks or playlists, improving the accuracy and relevance of the recommendations.

4. Evaluate the performance of the recommendation system using appropriate metrics such as precision, recall, and F1 score, and fine-tune the model to improve its accuracy and efficiency.

5. Preliminary plan

Task	Start Date	End Date	Duration
Research and gather requirements	2023-03-01	2023-03-10	10 days
Create a Functional Design and interface for the platform	2023-03-11	2023-04-15	1 month
Develop and implement the strategy	2023-04-16	2023-04-30	2 weeks
Refinement and improvement	2023-05-01	2023-05-05	5 days

6. References

1. "Music Recommendation Systems: A Comparative Study" by SpringerLink: https://link.springer.com/article/10.1007/s10796-020-10040-4
2. "Using Spotify Data to Predict Popular Music" by Towards Data Science: https://towardsdatascience.com/using-spotify-data-to-predict-popular-music-f7df952f16f5
3. "Building a Music Recommendation System with Machine Learning" by Towards Data Science: https://towardsdatascience.com/building-a-music-recommendation-system-with-machine-learning-8118d1cfc9f9
4. "A Survey on Music Recommendation Systems" by International Journal of Computer Applications: https://www.ijcaonline.org/archives/volume179/number23/29928-2021654998