Natural Language Processing Approach for Recommender Systems

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***Abstract*—Playlists have become a significant part of our music listening experience today. There are over three billion of these on Spotify alone.Along these lines, it is basic for a recommender structure to have the limit perceive the sort of customer and go about as necessities be. The goal was to improve idea exactness by including more solid data from various songs. For this reason, tunes from comparable assortment and comparable specialists were broke down to discover the connection and was named as "assortment impact". Lately, nevertheless, ask about on recommenders using communitarian isolating has gotten a more noteworthy conspicuousness in the music space. The principal music recommender system using local area arranged. It used a constrained individual association for registering closeness impact which compares to add up to like substance.**

***Index Terms*—Machine Learning, Selection, Data, NLP**

I. Introduction

As the web moved from an owner model to an open freely supporting model and empowered people to contribute energetically, it saw a remarkable climb in the proportion of substance available, which was something to be appreciative [1] [2]–[4] [5]. Be that as it may, this incited two essential issues: Aggregation: The proportion of information ended up being enormous to the point that it motivated outrageous to direct it while at this point having the ability to run a web advantage that was reachable to all pieces of the world. This issue was handled by building generally substance movement and scattering frameworks, helped by the climb of NoSQL Database structures and reducing accumulating costs. Searching: The second huge issue was the methods by which to ensure that the information is inside the extent of the customer and that the customer doesn't get stirred up in the enormous data dumps open. This ended up being an altogether more concerning issue than gathering since the data stores are colossal and each customer conveys close by him/her an exceptional perspective and therefore a one of a sort pursuit plan. We are at this point endeavoring to deal with this issue today and are far from achieving an ideal response for it. This is the spot recommender systems become conceivably the main factor. Recommender frameworks need data for working, information about a specific client. This specific information can be brought straightforwardly or by implication. Straightforwardly gathering information implies that client of a specific assistance gives criticism and survey of the thing. By implication implies that framework will dissect the clients connection with the specific assistance comprising of history and present administration.

II. Building the recommendation system

We will build our recommendation system based on the genre we get and the distance from numerical features. The logics are:

1) We filter songs with the same genre cluster.
2) If there is only one song, we return this song.
3) If there is more than one song, we choose the one with smallest distance.

III. Song Prediction

Collaborative filtering and NLP models [4], [6]–[15]can be used to suggest songs, but the same data can also determine if two songs are similar. By modeling the audio itself, Spotify can tell if two songs are similar in their very composition. It can parse out things like timbre, pitch, or a song's loudness curve. Spotify predicts your playlist by seeing what people like you enjoy, researching how the internet discusses songs you like, and listening to songs that are musically comparable to your favorites. (Davis, 2020). we use Song list in amazon prime for collecting data recommendation [11], [16]–[18].

IV. Literature Review

Playlists have become a significant part of our music listening experience today. There are over three billion of these on Spotify alone. There are playlists for every moment, every mood, every season, and so on. With millions of songs at their fingertips, users today have grown accustomed to:

- Immediate attainment of their music demands.
- An extended experience. While recommendation engines service the first aspect, playlists handle the second aspect of this changing behavior, making playlist recommendation extremely important, both for the users and music companies.

(i) Expansive taste: People whose melodic learning are particularly wide. They contributed 7 percent of absolute division.
(ii) Aficionados: There are part of individuals in this world who accepts that music is life, and they are insane for music. Undoubtedly, music is the most loosening up thing in this world.
(iii) Casual music audience members: People who nonchalantly tune in to music in their spare energy incorporate 32 percent of this division.
(iv) Unconcerned: They have distinctive mentality about music and including 40 percent of this age gathering.

According to an examination each individual requires exceptional arrangement of ideas. Scholastics is incredibly pressing and are thusly the most inconvenient crowd individuals to give ideas to. They require perilous and keen proposition instead of renowned ones. Darlings on the other hand Lovers of course esteem an amicability between captivating, dark, and typical proposition. Casuals and unconcerned, who address 72% of the general population, don't need befuddled recommendations and popular standard music that they can without a very remarkable stretch identify with would oblige their melodic requirements.

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V. Questions we want to answer with our data here:

1) Which Attributes/features will likely lead a song to be more popular in Application?
2) What are the most Popular tracks which people are listening to?
3) How to build a Song Recommendation System according to our interest?

VI. Proposed Approach

The first step is data cleaning and preprocessing for emotion and sentiment analysis [19], [20], [20]–[25] since they could affect the song play list. Data cleaning is utilized to allude to a wide range of undertakings and exercises to recognize and fix mistakes in the data. There are numerous sorts of blunders that exist in a dataset, albeit probably the easiest blunders incorporate segments that don't contain a lot of data and copied columns. Data preprocessing is a necessary advance in Machine Learning as the nature of information and the helpful data that can be gotten from it straightforwardly influences the capacity of our model to learn; thusly, it is critical that we preprocess our information prior to taking care of it into our model. The exploratory analysis will be performed on the data set to know the insights. By observing the insights, the feature selection will be made on the data set. When constructing an machine learning model, in actuality, it's practically uncommon that every one of the factors in the dataset are helpful to fabricate a model. Adding repetitive factors lessens the speculation capacity of the model and may likewise decrease the general precision of a classifier. Moreover, adding an ever increasing number of factors to a model expands the general intricacy of the model. We would like to build a model according to the observations such as decision tree and random forest, also the recommendation system.

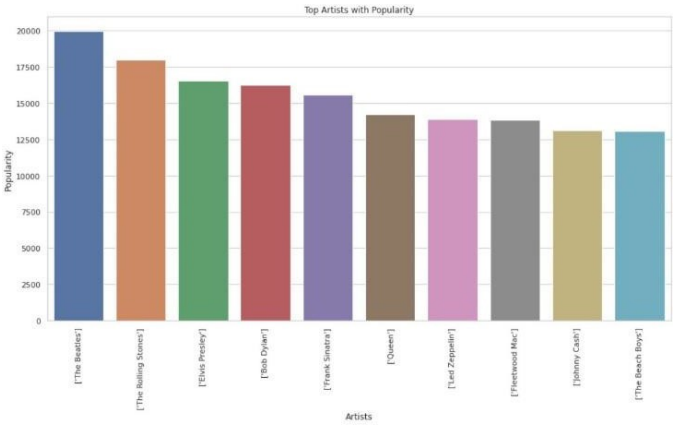

Fig. 1. **Top 10 songs by duration:**When checked for which song has the highest duration, we have sorted the top 10 songs by duration and found out that the song Brown Noise which has the highest duration of 90 minutes and followed by the song Brown Noise for Sleep stands second with the duration of around 70 minutes.

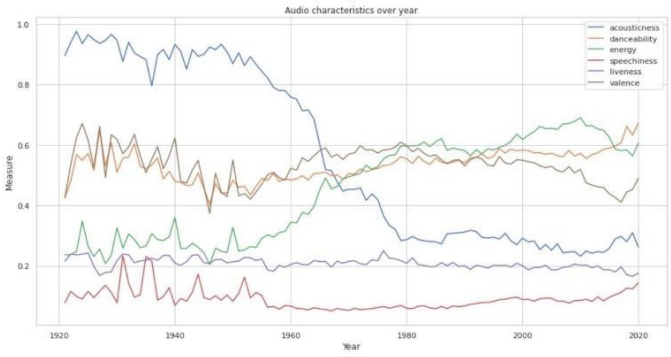

Fig. 2. **Top artists:** When the analysis is performed to know which artist is popular, we found out that Artist: The Beatles have the highest popularity followed by 'The Rolling Stones' and 'Elvis Presley'.

VII. Methodology

We are planning on using various methods and techniques to implement analytical methods which analyzes the data and cleans it. Later, we will use visualizations to show the data and obtain various analysis to improve certain outcomes.

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