Music Recommendation System

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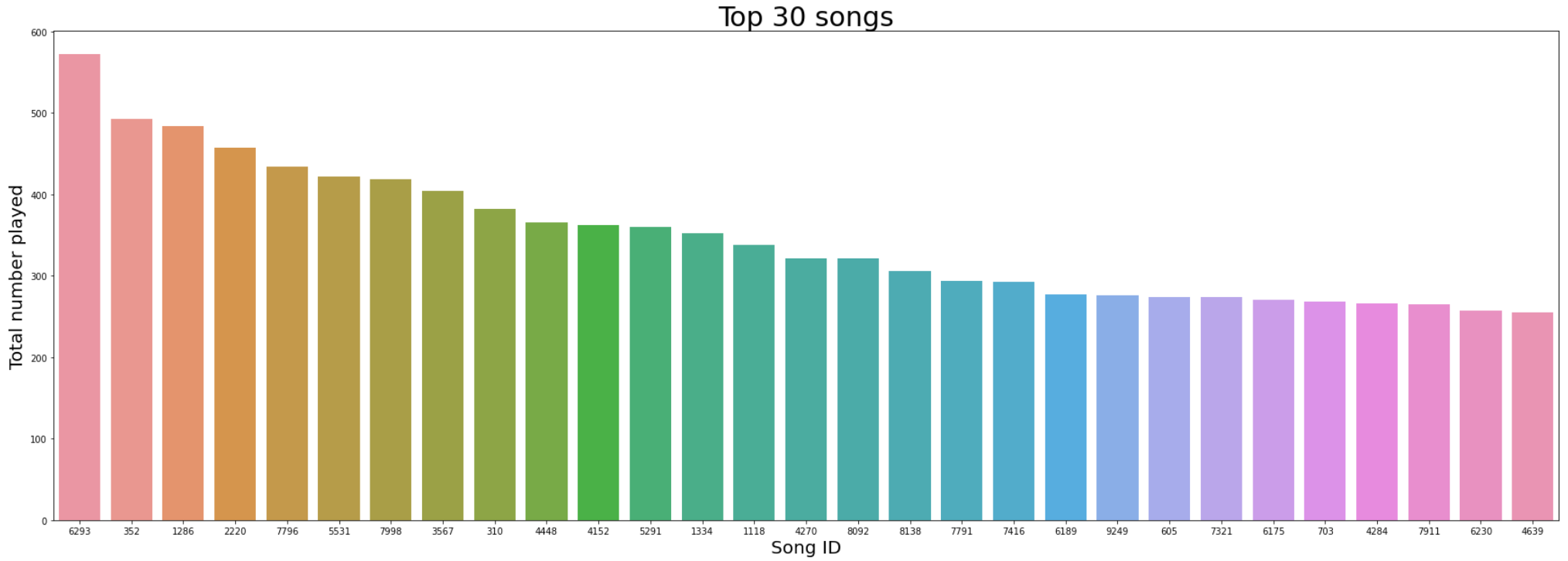
Key takeaways

- Objective and Importance
  - Build a system that recommends the best songs to customers
  - Improve users' efficiency in selecting songs and help listeners to discover artists based no preference
- Proposed Solution
  - Combine model-based and content-based recommendation system
    - Model-based: recommends with the highest accuracy
    - Content-based: recommends a list of songs based on the target song
- Key insights
  - All the different methods perform well, while model-based method has the highest accuracy (smallest error)
  - We can complement the model-based system with content-based method
    - Model-based system recommends songs based on users' data even for passive users
    - Content-based system recommends songs that are similar to a specific song that users typed

Data

- The data is filtered so that it contains records of played more than once but less than 5 times
  - This is to exclude the case where one user played a particular song repeatedly and the case where users accidentally played a song
- The most meaningful insights from the data is that the number of played is well distributed across multiple songs
  - Song “4639” was played more than 200 times as a top 30 song, while song “6293” played over 500 times



Model Performances

	RMSE	F_1 Score
User-user similarity based		
Baseline	1.036	0.998
Optimized	1.020	0.998
Item-item similarity based		
Baseline	1.021	0.998
Optimized	1.027	0.998
Model based		
Baseline	0.959	0.998
Optimized	0.964	0.998
Cluster based		
Baseline	1.032	0.992
Optimized	1.064	0.992

	Predicted count for song 1671	Predicted count for song 3232
User user similarity based		
Baseline	2.81	2.81
Optimized	2.81	2.81
Item item similarity based		
Baseline	2.81	2.81
Optimized	2.81	2.81
Model based		
Baseline	2.81	2.81
Optimized	2.81	2.81
Cluster based		
Baseline	2.22	2.56
Optimized	2.28	2.78

Recommended songs similar to
"Learn To Fly" by "Foo Fighters"

Title	Artist
The Pretender	Foo Fighters
Everlong	Foo Fighters
Big Me	Foo Fighters
Last Day of Our Love	the bird and the bee
Lifespan Of A Fly	the bird and the bee
Lump Sum	Bon Iver
From Left To Right	Boom Bip
Just Lose It	Eminem
Nothing Better (Album)	Postal Service
Campus (Album)	Vampire Weekend

Recommendations for Implementation

- Implementing the System
  - Embed the recommendation system into a well-designed user platform
  - Place a search engine in which users can type a certain song
    - It will recommend songs related to the typed song
  - Below, show songs recommended by model-based system that the user can directly add to the playlist
- Next Steps
  - Keep updating the dataset
  - Expand the scale of platform, increasing the number of users and extend the data
  - Build a specified and personalized recommendation system for each user group
    - User groups can be divided based on age, gender, and other preferences
  - Build a time-series for each user that can be used for later references