

M.PANDINILA 720822103118 **S.MEERADHARSHINI 720822103101**

This mini-project creates a music recommendation

1. Project Overview

system using audio features from a Spotify dataset. We'll use K-Means Clustering to group similar songs based on audio features and recommend similar songs from the same cluster.

Тор Top Cool Down True Crime Sonae 7 Weekly Music Charts Prerequisites Pop Mix Install the libraries: pandas **Podcasts** Indie Mix May numpy Podcast Charts matplotlib • seaborn Comedy sklearn Release Radar Install them using:

pip install pandas numpy matplotlib seaborn scikit-learn

Discover

Weekly

Pumped

Wet Leg

2,844,574

monthly listances

Forming out of heavy somes on their

notice his of Wight - a sparsely

constructed inferred will this provide your

Top 60

Top-50 - Global

API Endpoint

Analyzing Audio

Analyzing spectograms

The Final Countdown

of songs

mode of a song

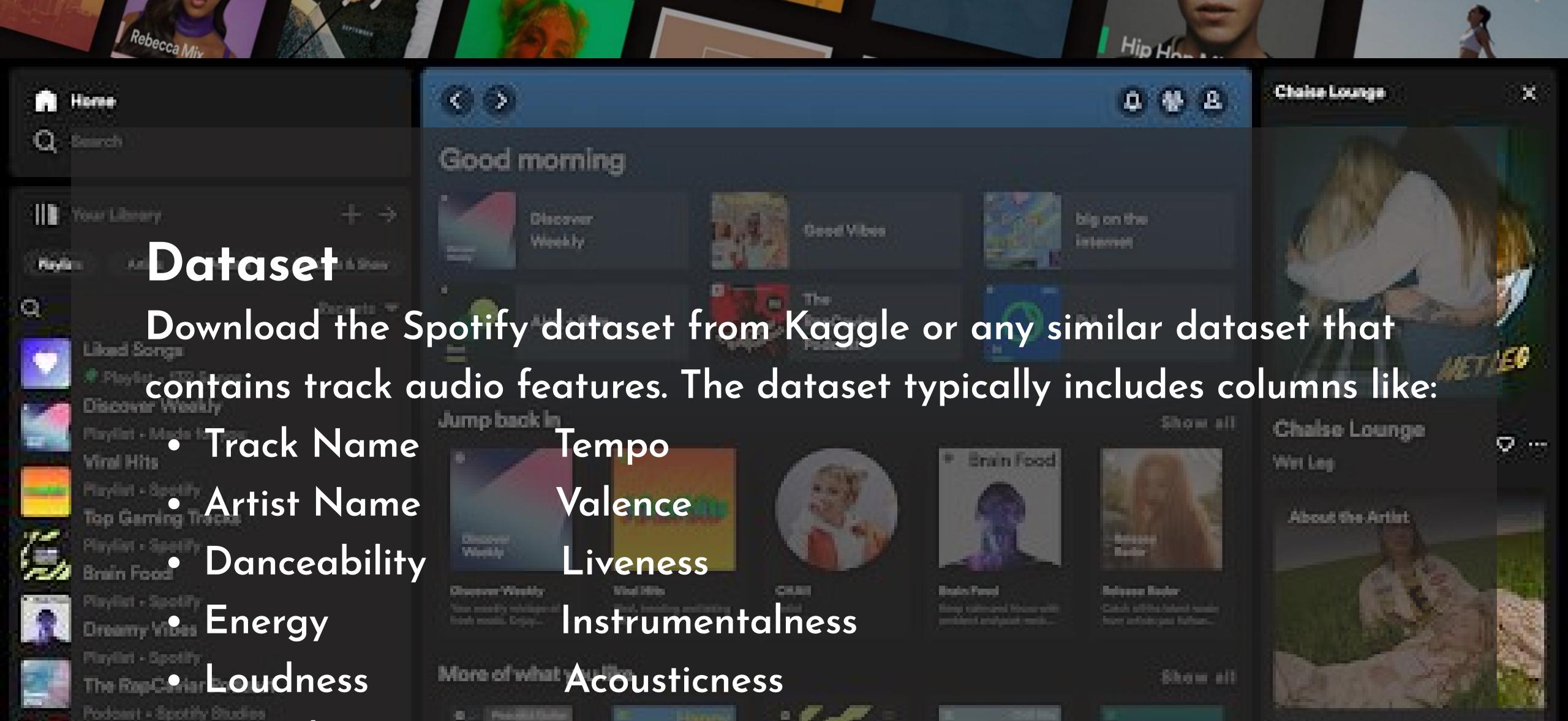
tempo of a song

key of a song

Character

2

User





User Click

Data

Analyzing your behavior

Your skipping behavior

What you have shared

How often you listened

Your favorite artists/songs

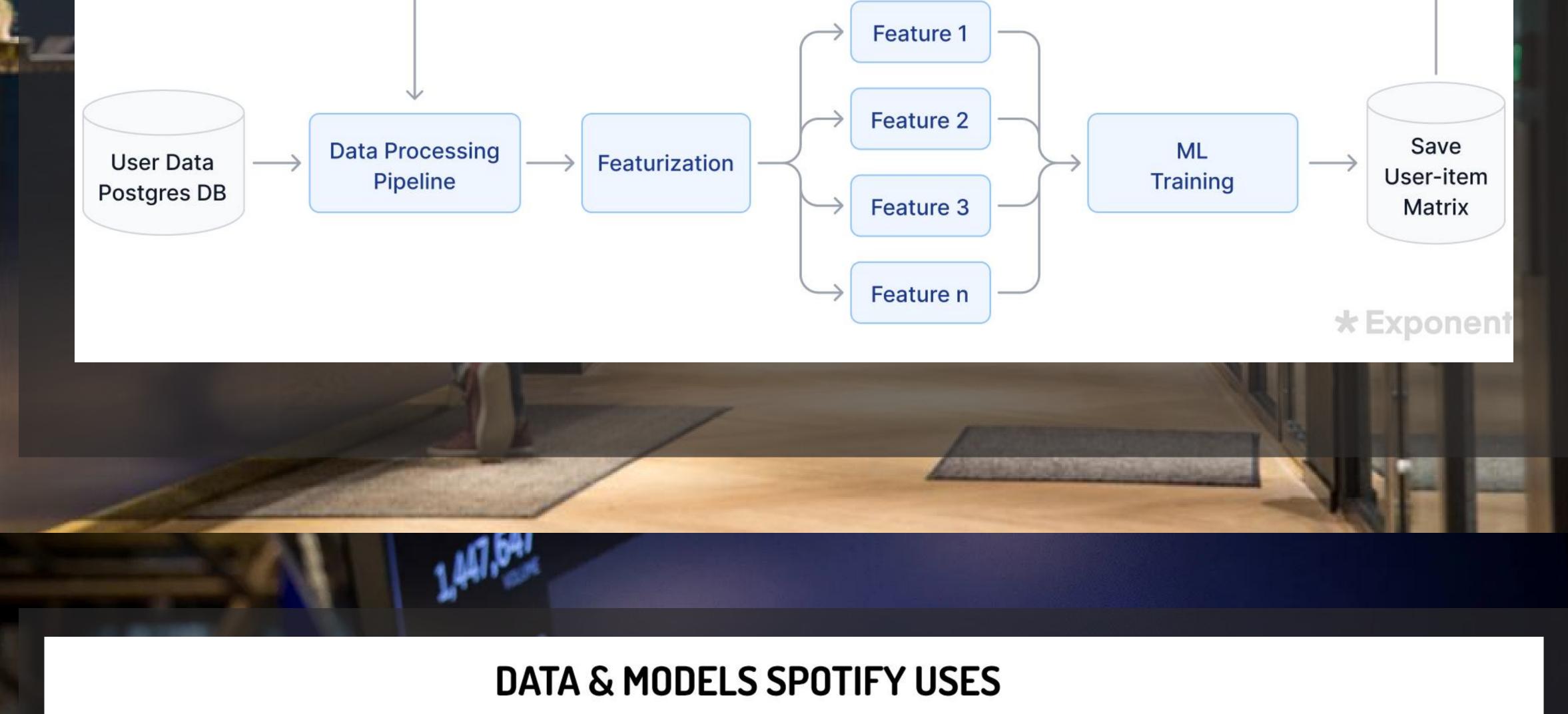
Your playlists

flowchart

Speechiness

Playtist - Spotify

Deep Focus



Analyzing others (artists/ users)

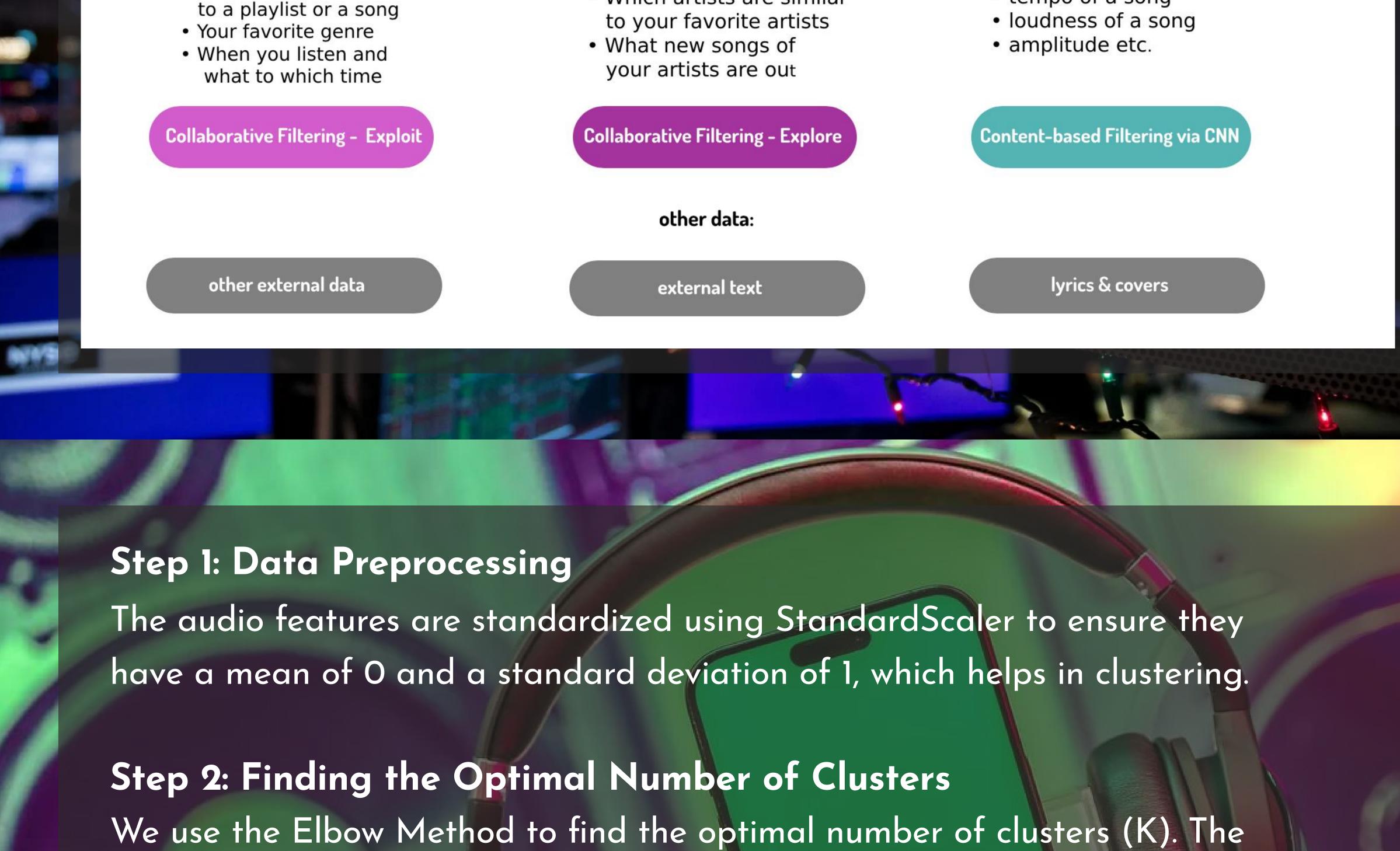
What do people similar to

you also like and listen

Which artists are similar

Playlists of others

What is trending



Step 3: K-Means Clustering Once the optimal number of clusters is determined, we apply the K-Means

○ Search Step 4: Visualizing the Clusters

algorithm to the audio features and assign each song to one of the clusters.

WCSS (Within-Cluster Sum of Squares) is calculated for different K values.

The point where the curve bends ("elbow") suggests the optimal K.

We use seaborn's pairplot to visualize the clusters by selecting a few features, as it's hard to visualize all features in a 2D/3D plot. Give your playlist a name.

Step 5: Recommendation System

The recommendation system recommends songs from the same cluster as the input song. It selects n random songs from the same cluster, assuming songs in the same cluster have similar audio features.

We test the recommendation function by providing it with a track name, such as "Shape of You", and it outputs 5 similar song recommendations from the same cluster.

Step 6: Testing the Recommendation System

Step 7: Evaluation We evaluate the quality of clusters using the Silhouette Score, which ranges from -1 to 1. A score closer to 1 indicates that the clusters are well-defined and separates. 18 and Life Devices Available

Let's find some songs for your

Project Output Example:

After running the code: You should see the Elbow Curve to determine the optimal number of clusters.

14567 Perfect

28765 Dive

23456 Galway Girl

- The pairplot will show clusters visually based on a few selected features. • The recommendation system will print a list of recommended songs similar to the
 - one you input.
- The Silhouette Score will provide a measure of how well the clustering performed. Sample Output for Recommendations:

Songs recommended based on 'Shape of You': track_name artist_name cluster 12345 Castle on the Hill Ed Sheeran

Ed Sheeran Ed Sheeran 18934 Thinking Out Loud Ed Sheeran Ed Sheeran