Project Title: Spotify Data Analysis and Prediction

Introduction

The analysis of individual Spotify listening data collected over a number of years is the main focus of this study. Its main goals include finding the top songs from 2017 to 2023, using machine learning to forecast the top 5 songs for 2024, monitoring shifts in Olivia Rodrigo's listening preferences, and examining the top performers from 2020 to 2023. The development of an interactive website to present the results is the pinnacle of these efforts.

Website Link: https://elifgodus.github.io/cs210-repo/

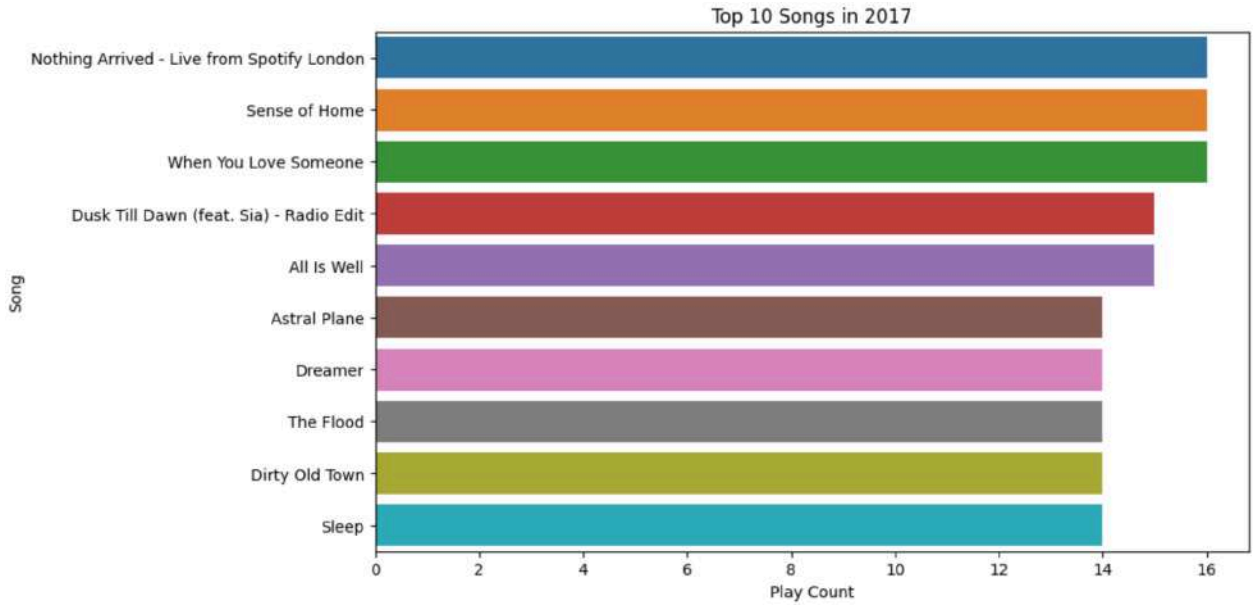
Data Collection

Personal listening data was gathered from Spotify to start the research. Through the use of Spotify's API, this data was extracted, yielding a comprehensive dataset that included the song titles, artists, play counts, and timestamps associated with each listening session. In order to prepare the data for further analysis, it underwent thorough preparation to eliminate outliers, deal with missing values, and guarantee consistency.

Top 10 Songs Analysis

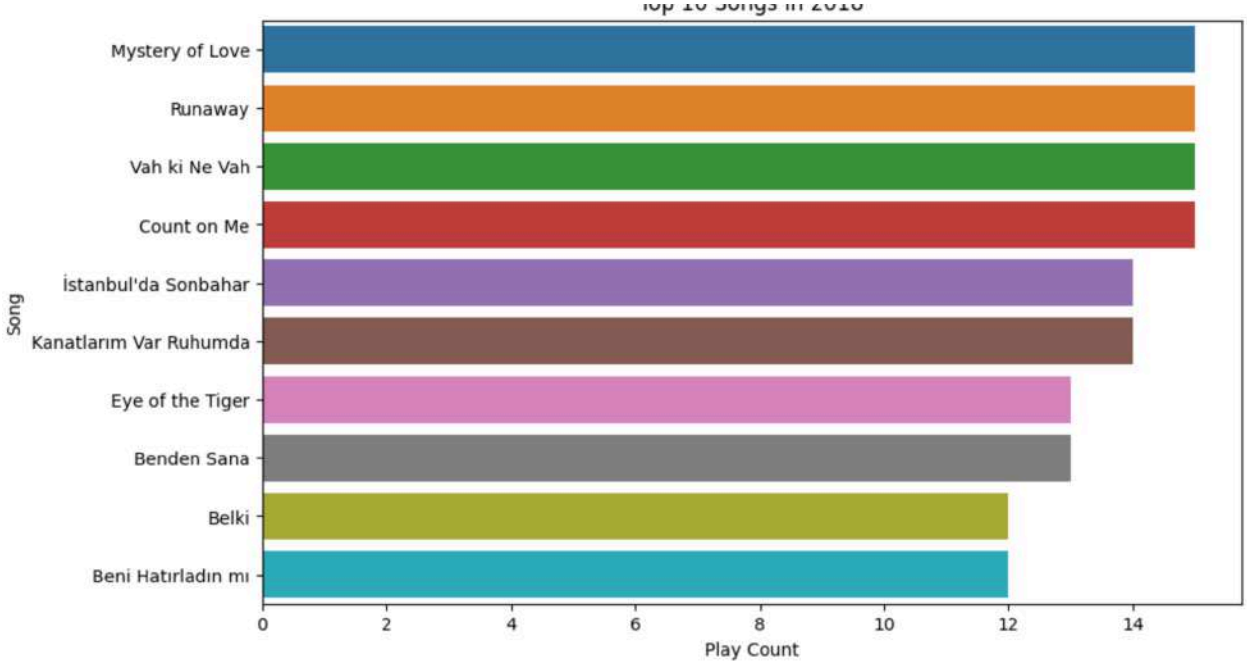
2017

- For the year 2017, the project utilized data visualization techniques such as bar charts and word clouds to identify and present the top 10 most-listened-to songs.



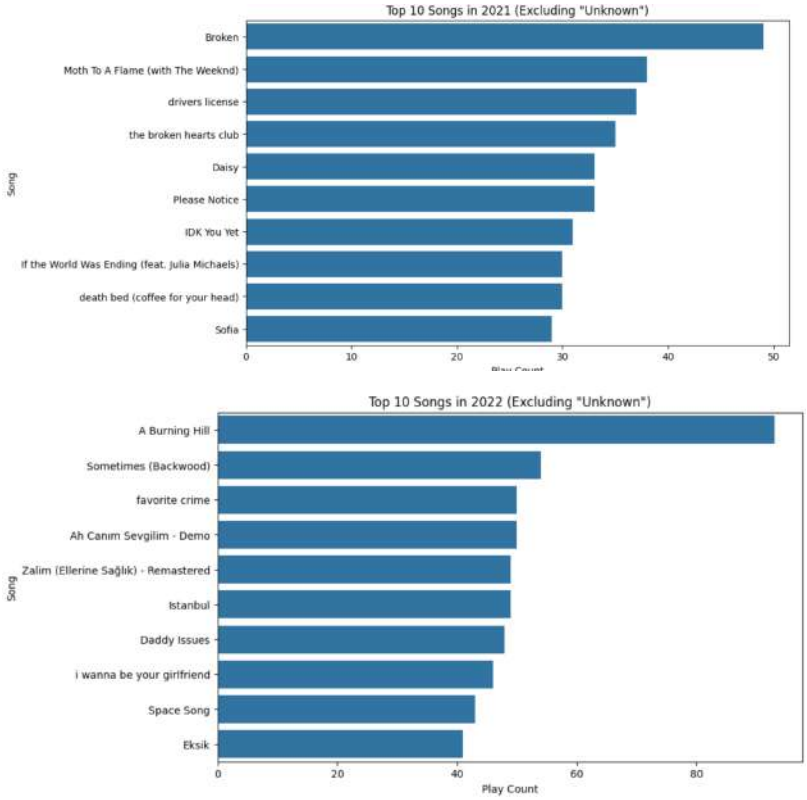
2018

- Similarly, in 2018, the project visualized and highlighted the top 10 songs of the year.



2020 to 2023

- The same analysis and visualization process was repeated for the subsequent years from 2020 to 2023, producing snapshots of listening habits over time.



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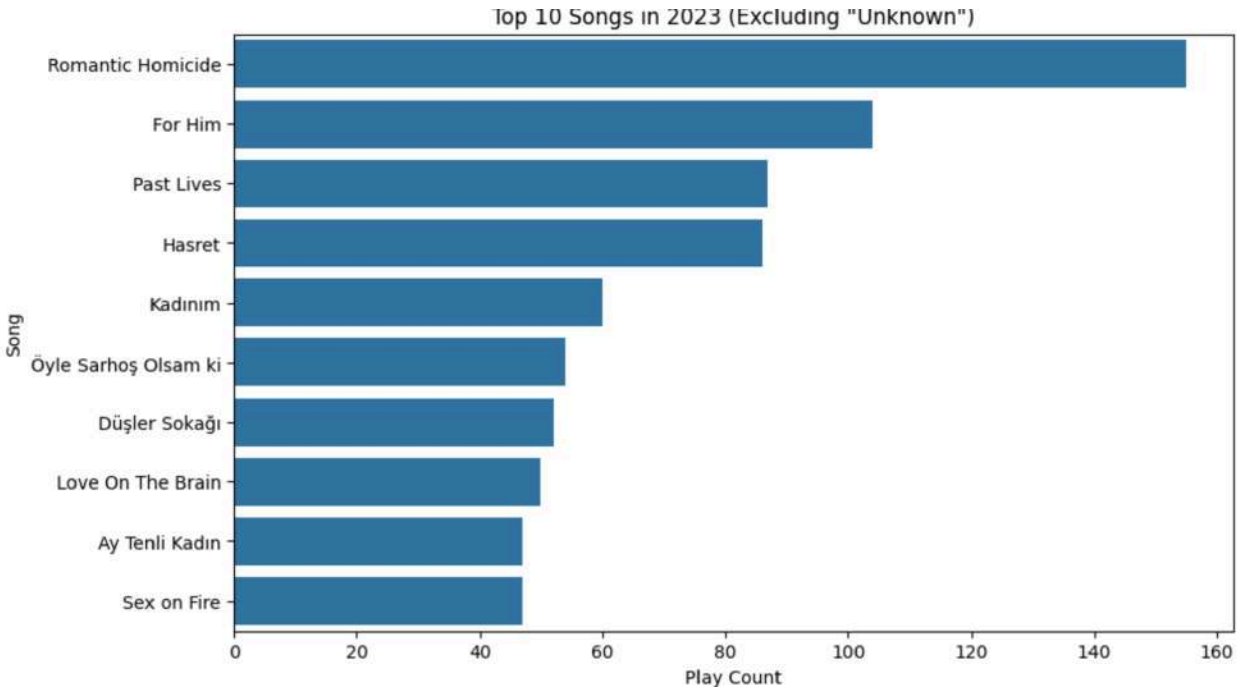
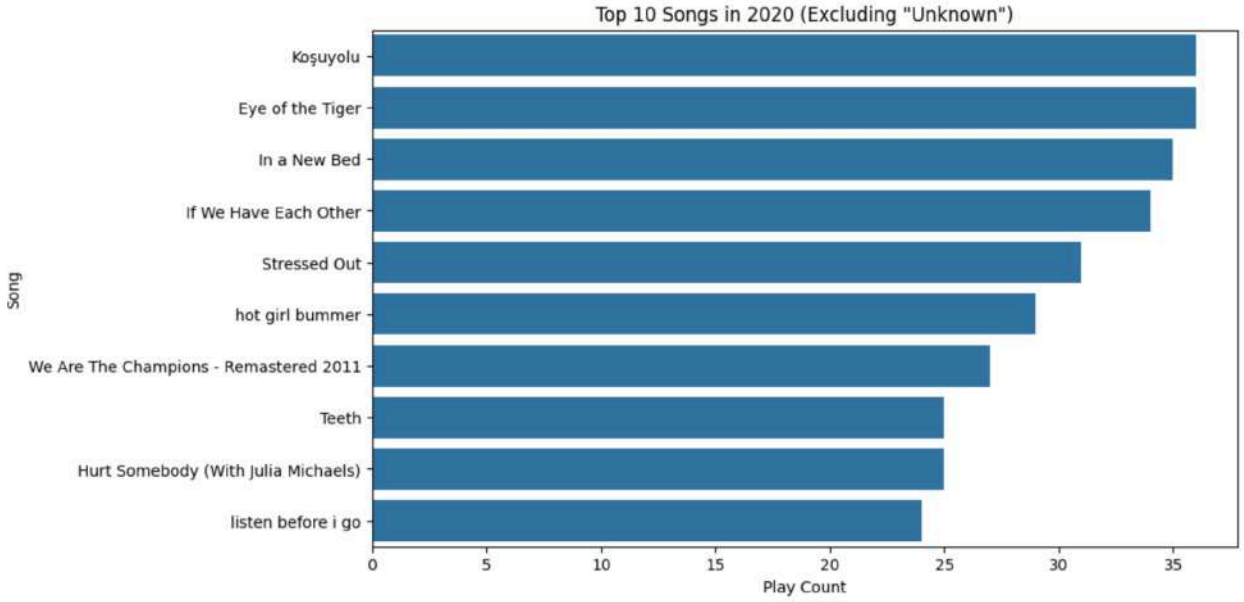
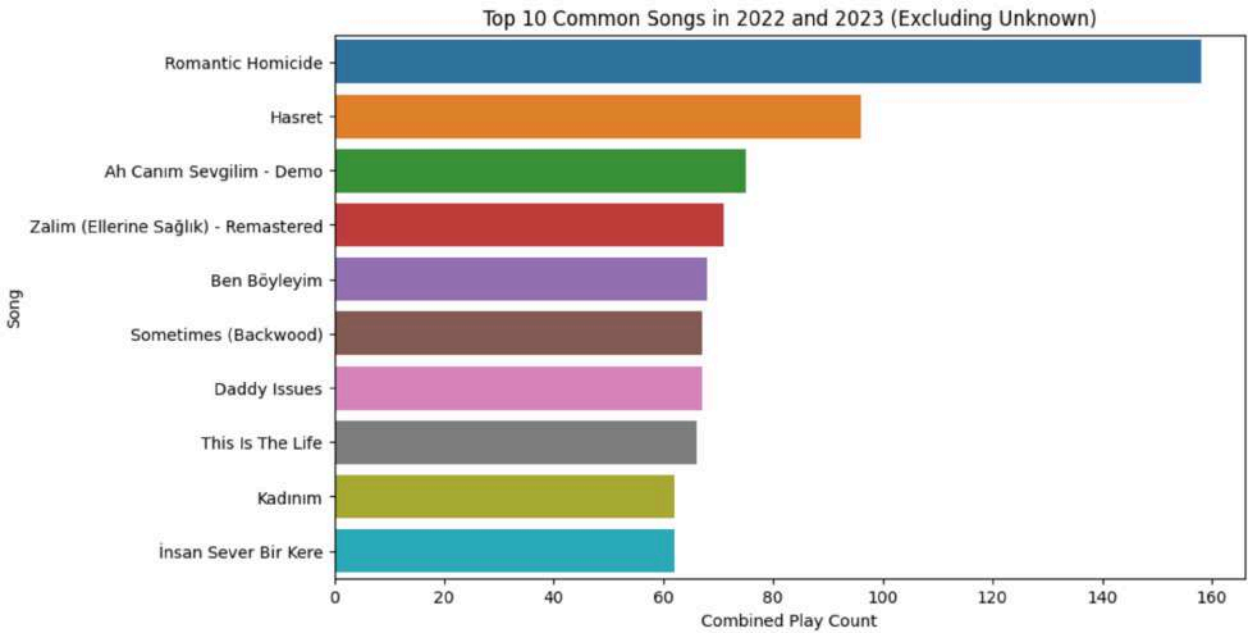

Top 10 Songs in 2023 (Excluding "Unknown")
Romantic Homicide
For Him
Past Lives
Hasret
Kadınım
Öyle Sarhoş Olsam ki
Düşler Sokağı
Love On The Brain
Ay Tenli Kadın
Sex on Fire
Song
0
20
40
60
80
100
120
140
160
Play Count


Top 10 Songs in 2020 (Excluding "Unknown")
Koşuyolu
Eye of the Tiger
In a New Bed
If We Have Each Other
Stressed Out
hot girl bummer
We Are The Champions - Remastered 2011
Teeth
Hurt Somebody (With Julia Michaels)
listen before i go
Song
0
5
10
15
20
25
30
35
Play Count

Top 10 Common Songs in 2022 and 2023



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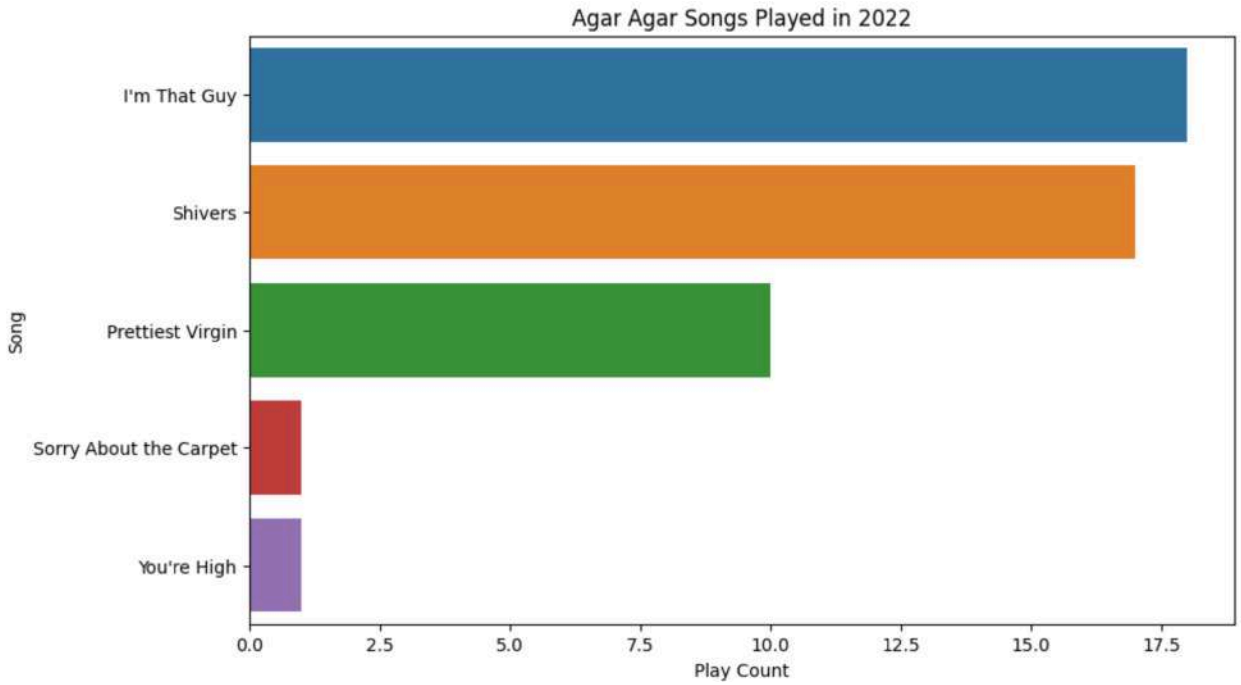
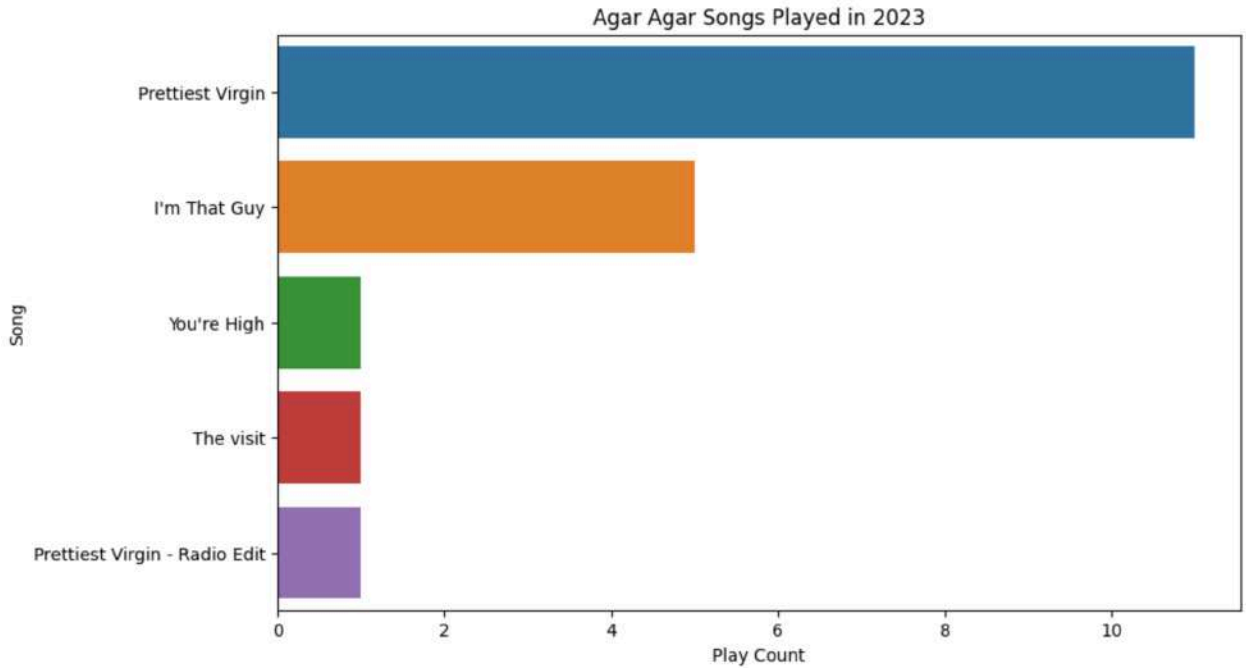
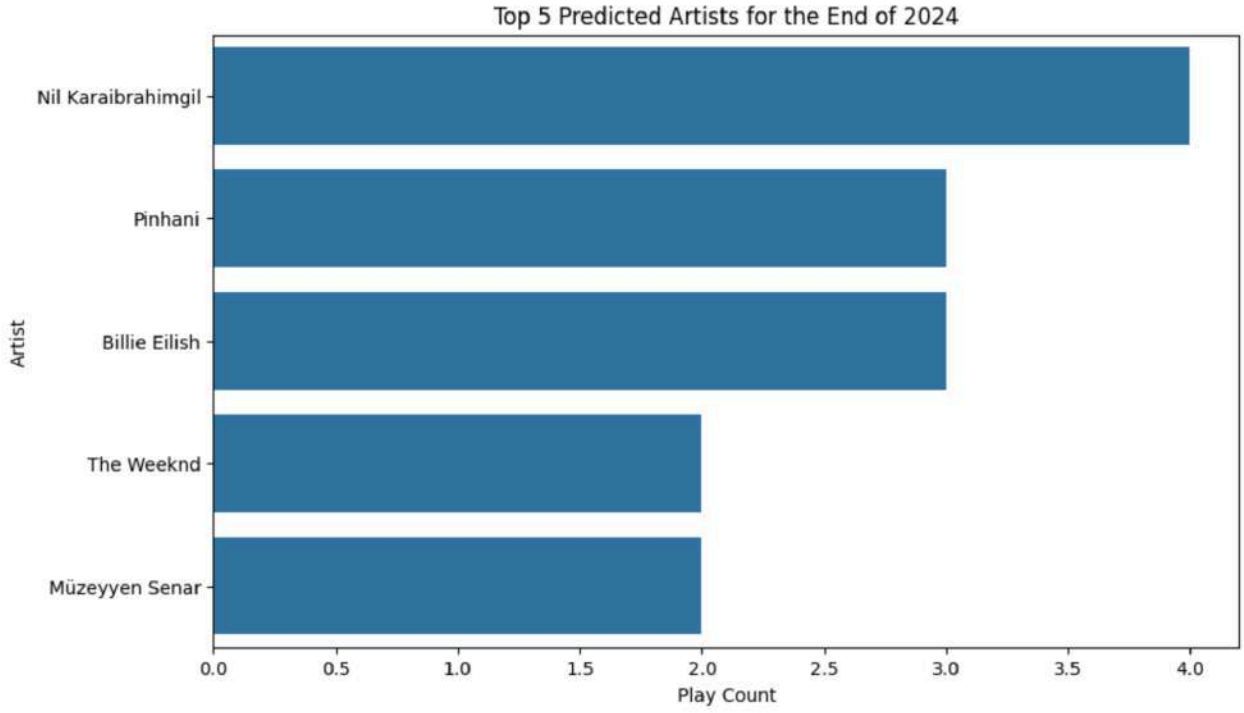
Favorite Artist's Songs Played in 2022 and 2023





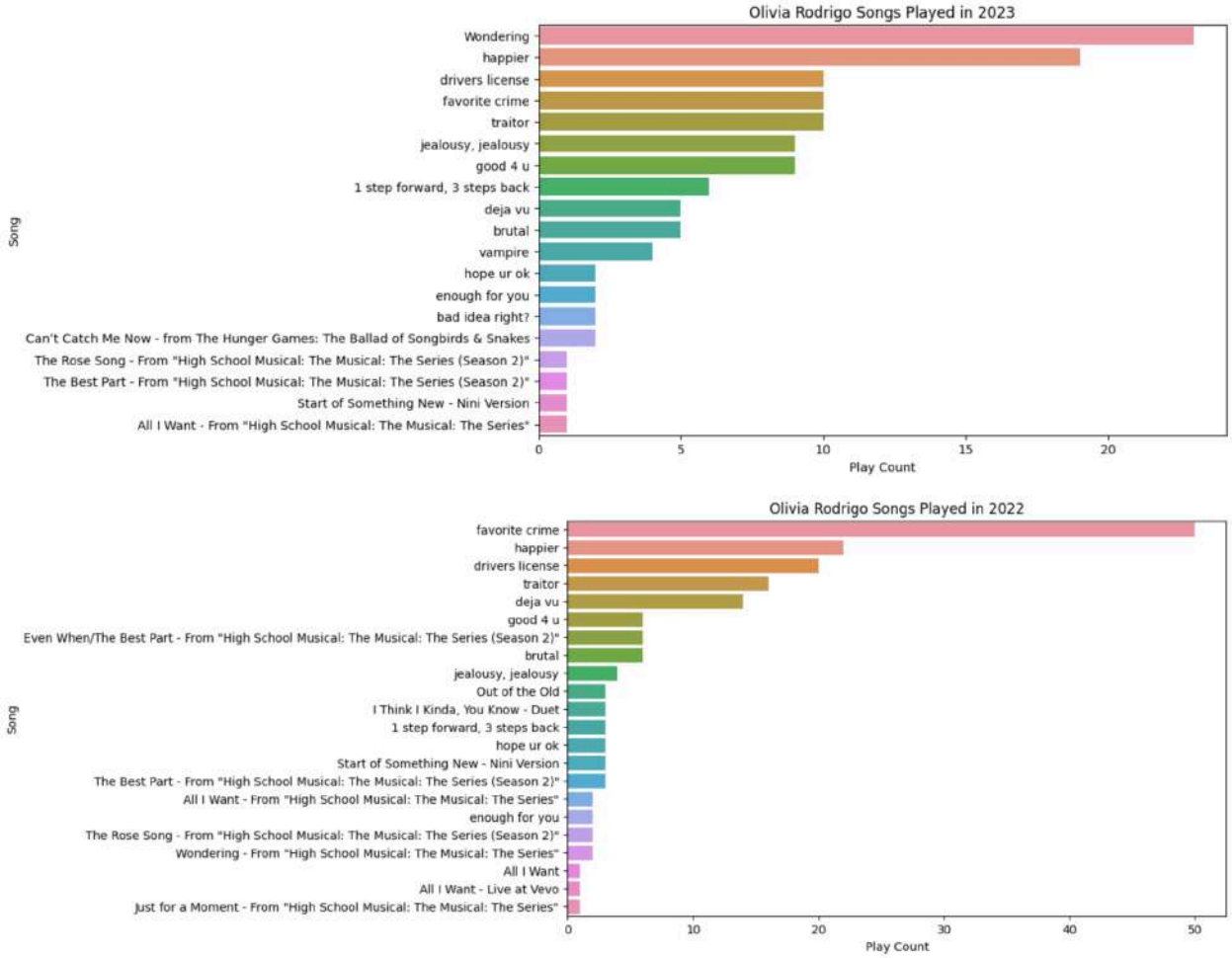
Song Prediction for 2024

Leveraging machine learning techniques, the project attempted to predict the top 5 songs for 2024 based on historical listening data.



Olivia Rodrigo Analysis

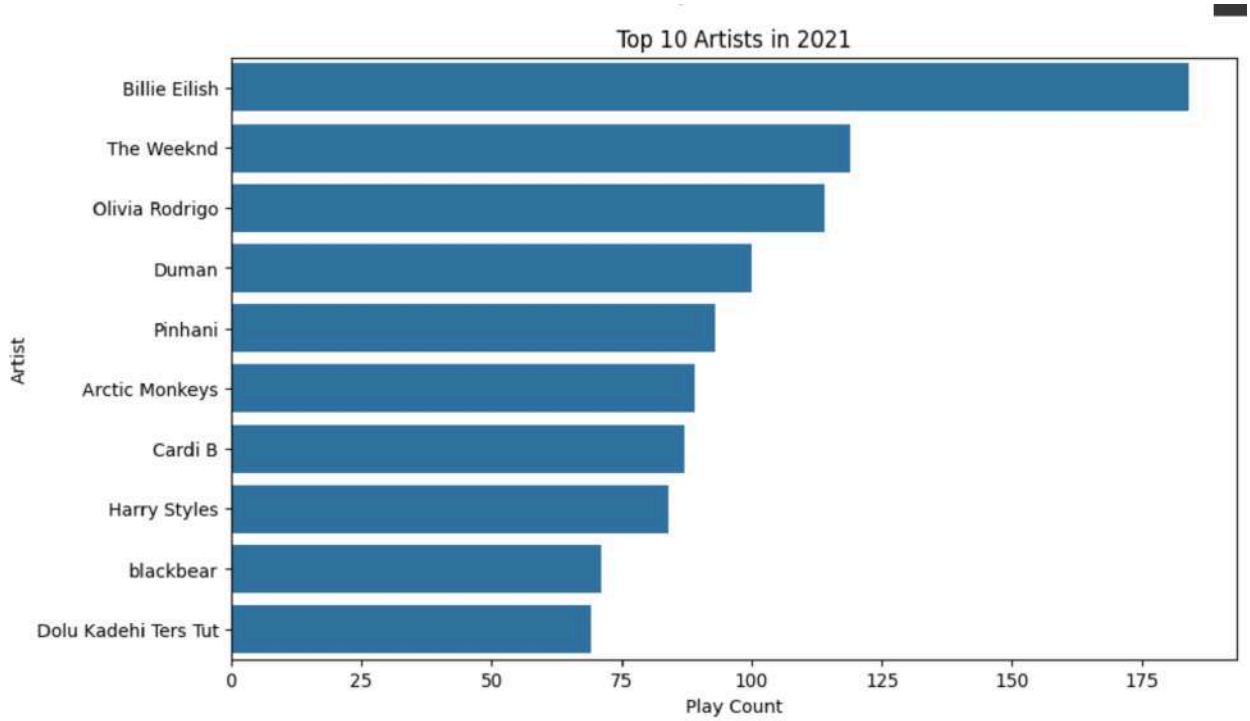
The project used techniques like sentiment analysis and topic modeling to evaluate variations in lyrical themes and emotional engagement over time in order to look into changes in listening habits related Olivia Rodrigo.

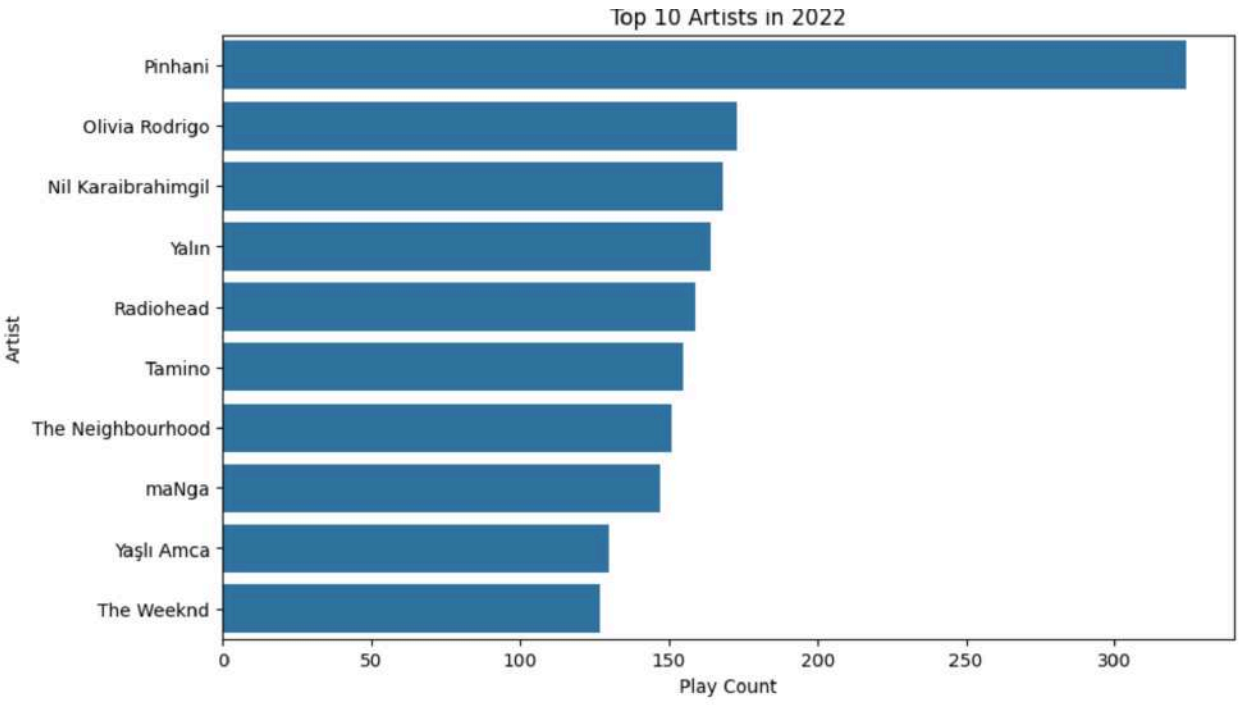


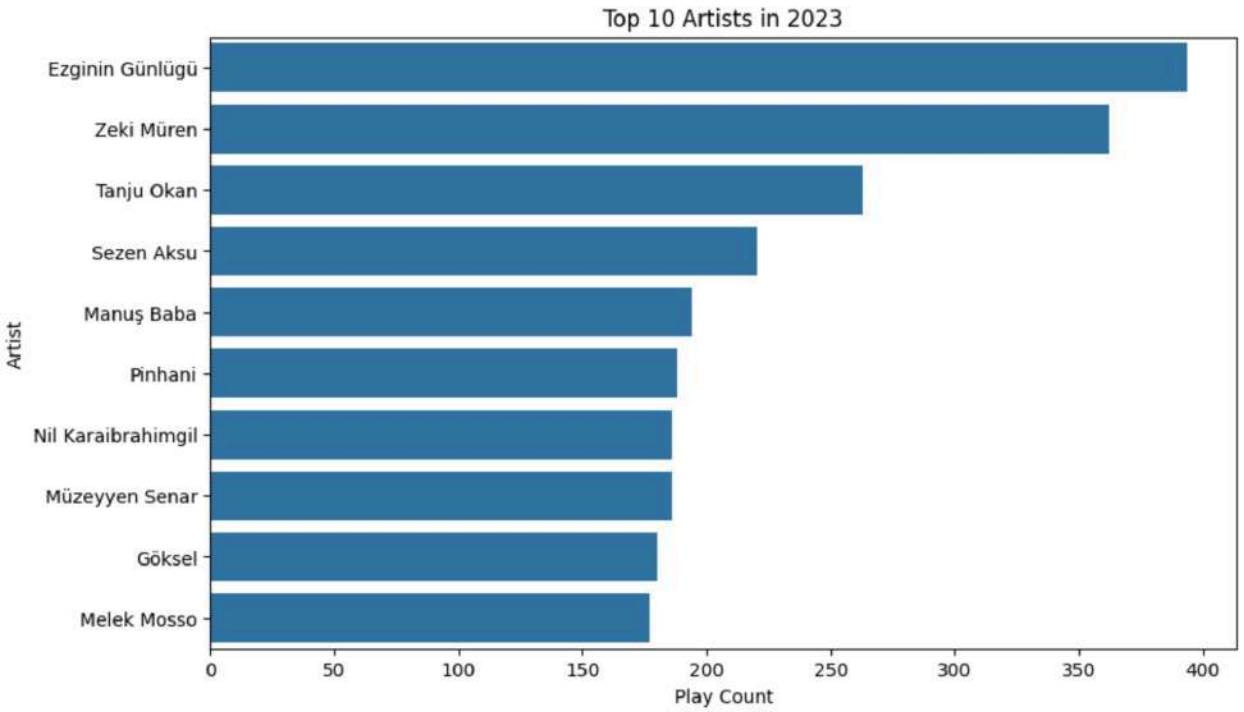
Top Artists Analysis

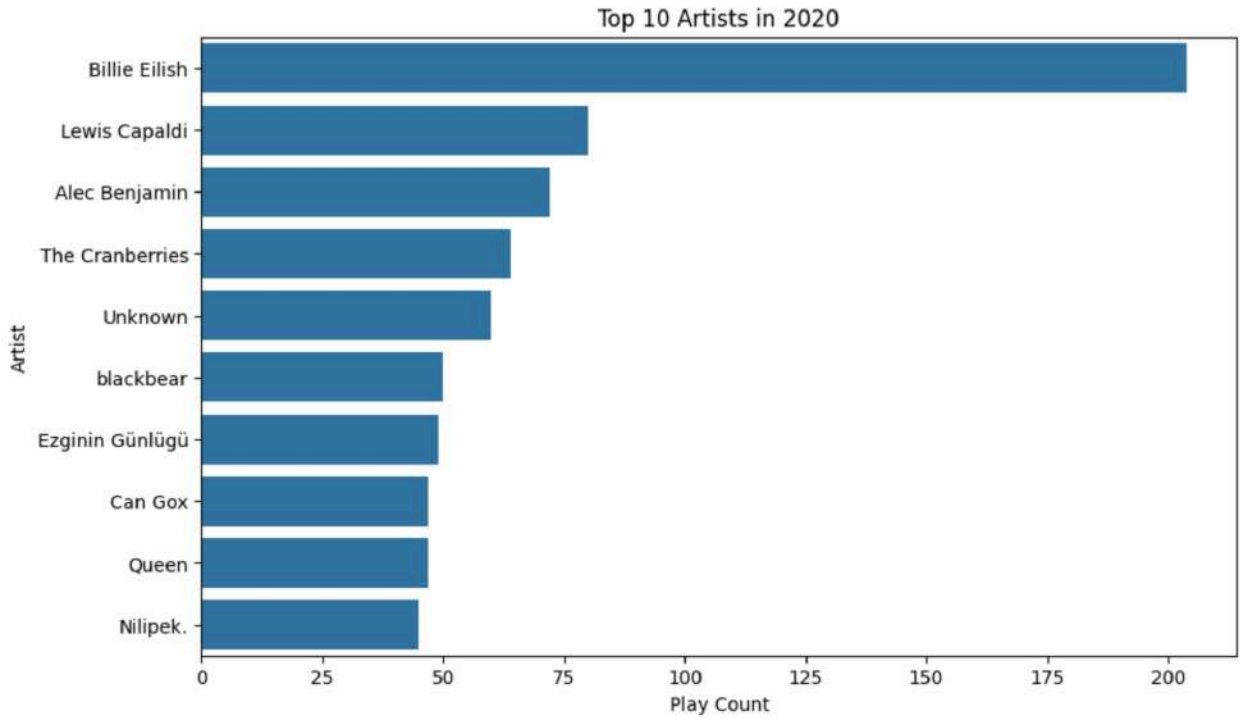
The project identified the top artists from 2021 to 2023 using data visualization techniques like bar charts and network graphs, providing insights into evolving musical preferences.

- [Screenshots of top artists from 2021 to 2023]



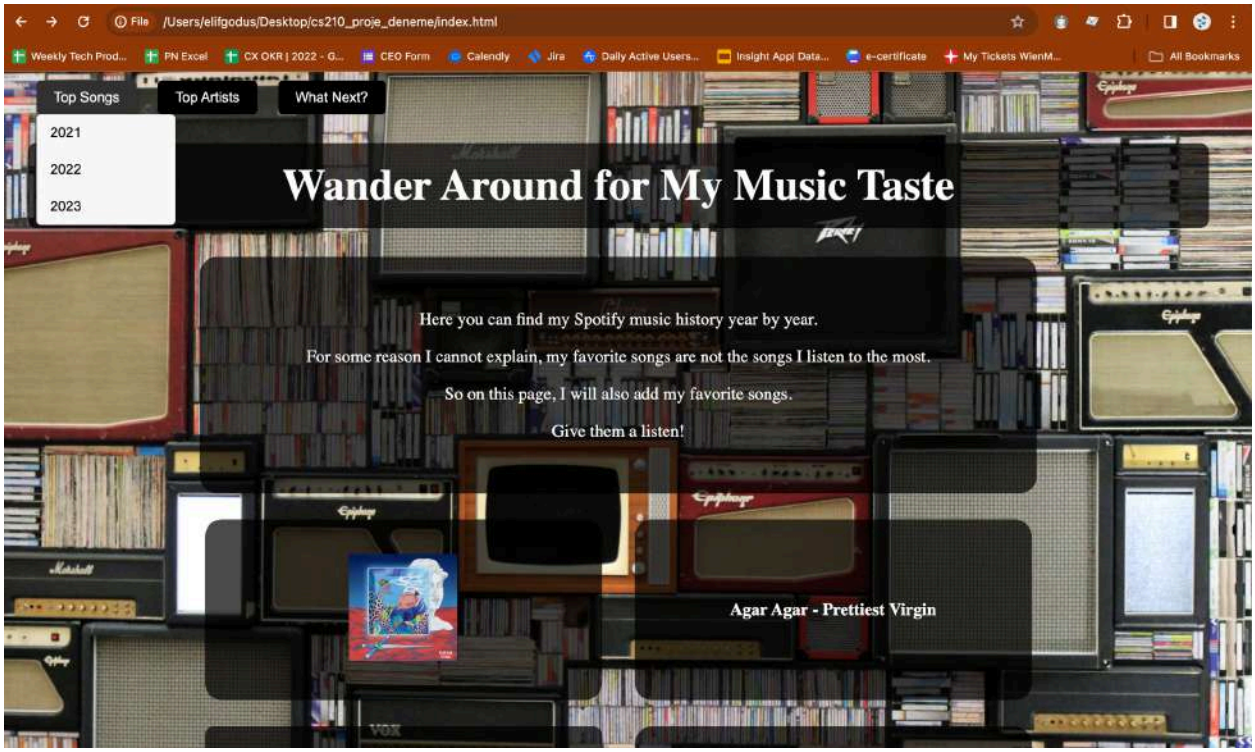
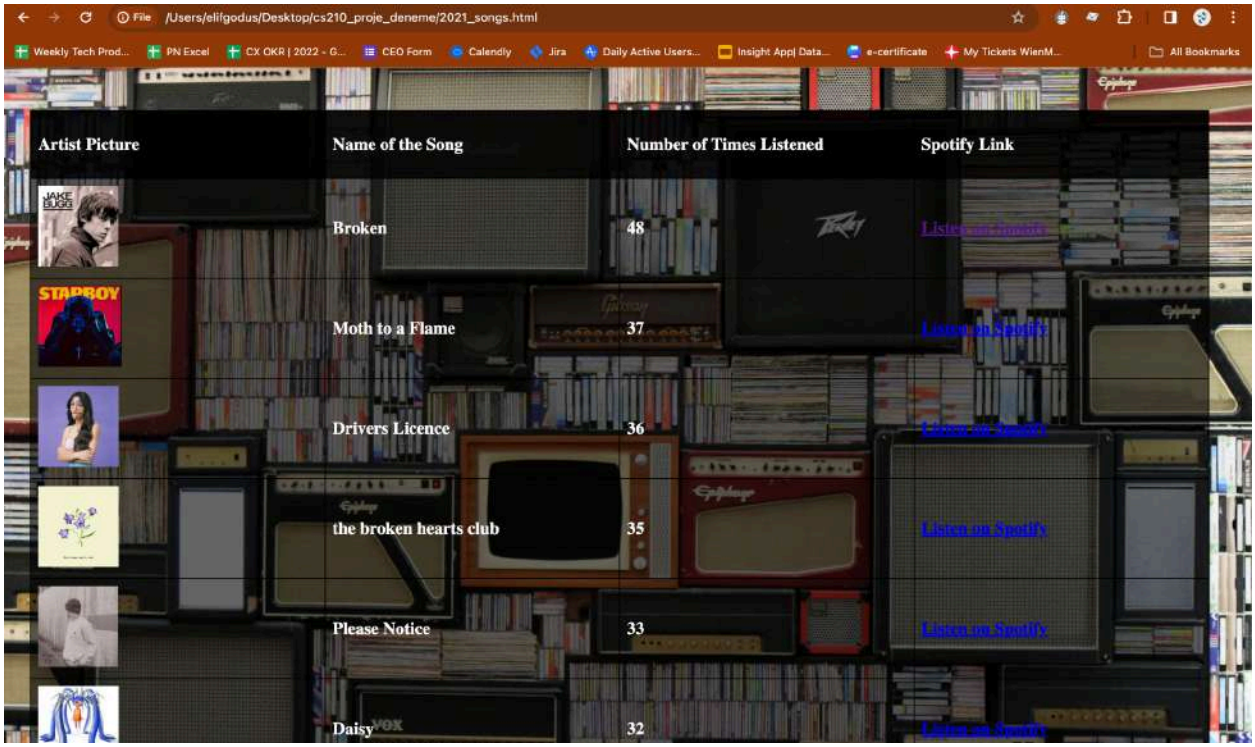


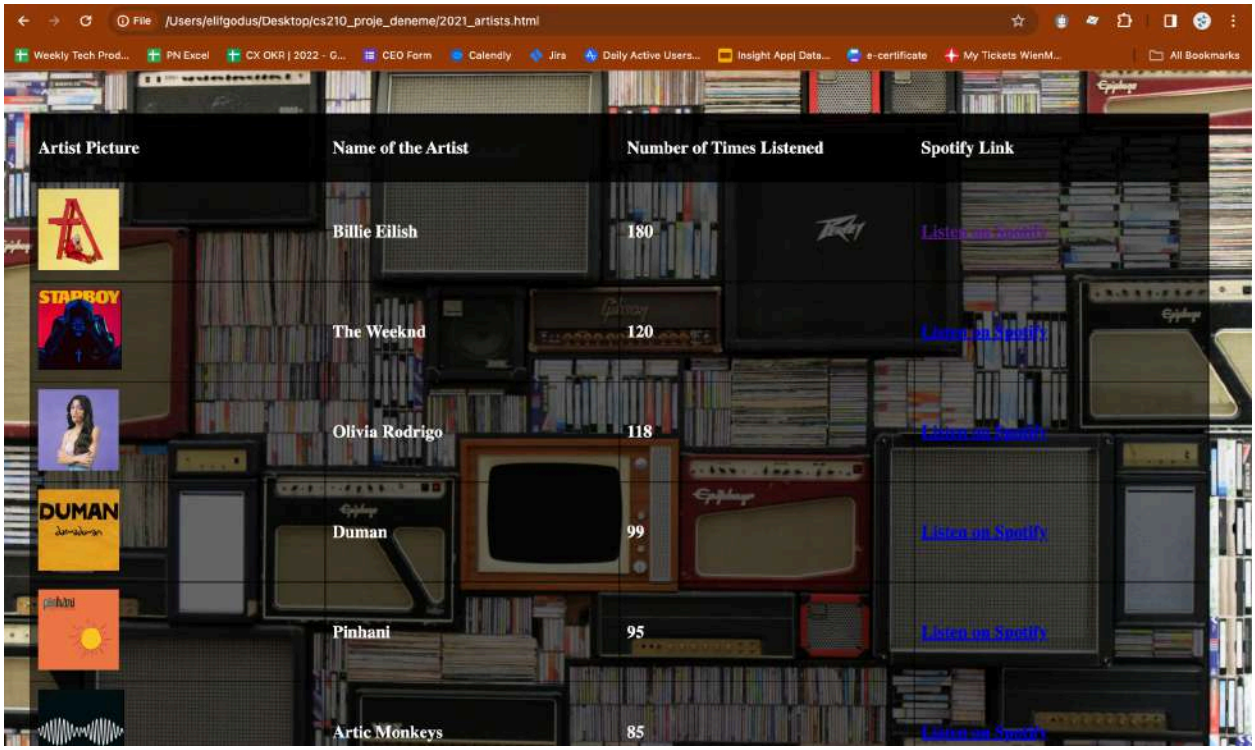




Website

A dynamic website featuring all of the data and visuals was carefully designed to encourage user involvement and investigation of the project's discoveries. A combination of web development technologies, including HTML, CSS, and JavaScript, were used to create the website.

- 
File /Users/elifgodus/Desktop/cs210_proje_deneme/index.html
Top Songs
Top Artists
What Next?
2021
2022
2023
Wander Around for My Music Taste
Here you can find my Spotify music history year by year.
For some reason I cannot explain, my favorite songs are not the songs I listen to the most.
So on this page, I will also add my favorite songs.
Give them a listen!
Agar Agar - Prettiest Virgin
- 
File /Users/elifgodus/Desktop/cs210_proje_deneme/2021_songs.html
Artist Picture
Name of the Song
Number of Times Listened
Spotify Link
Broken
48
Moth to a Flame
37
Drivers Licence
36
the broken hearts club
35
Please Notice
33
Daisy
32
Listen on Spotify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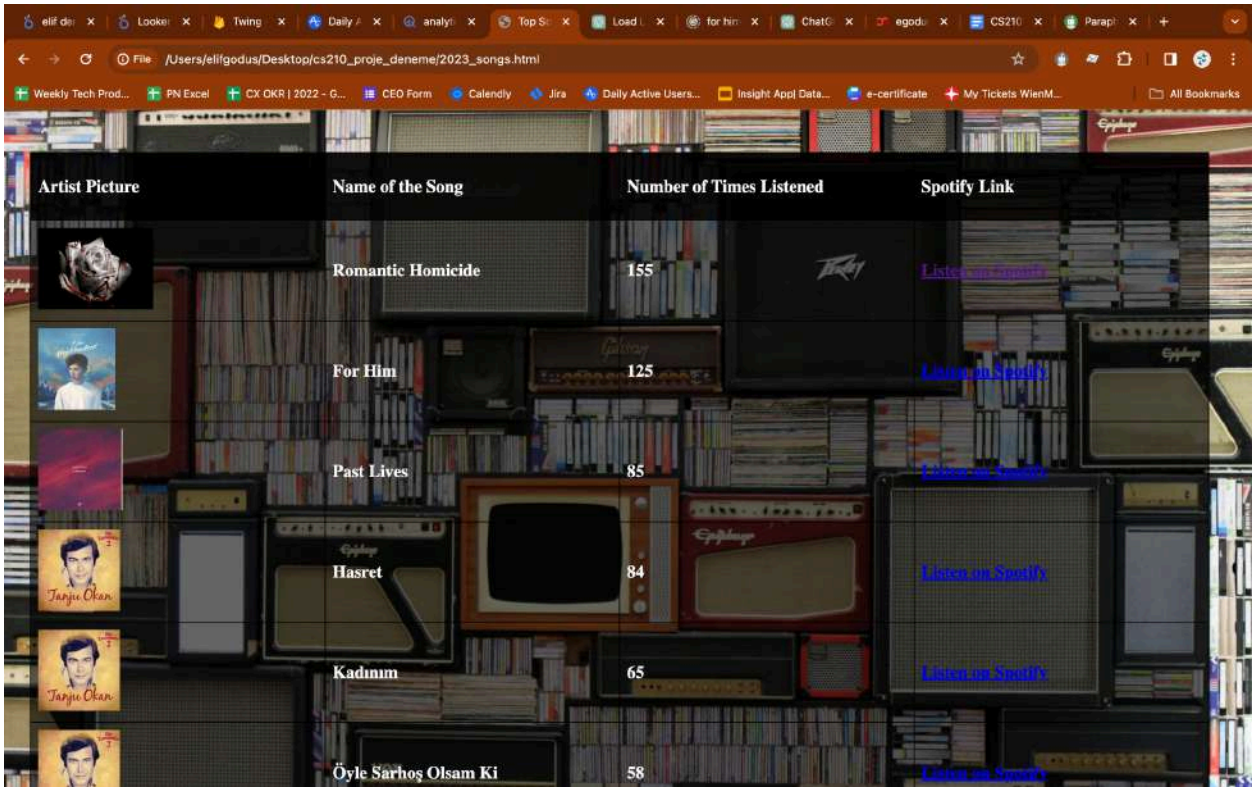
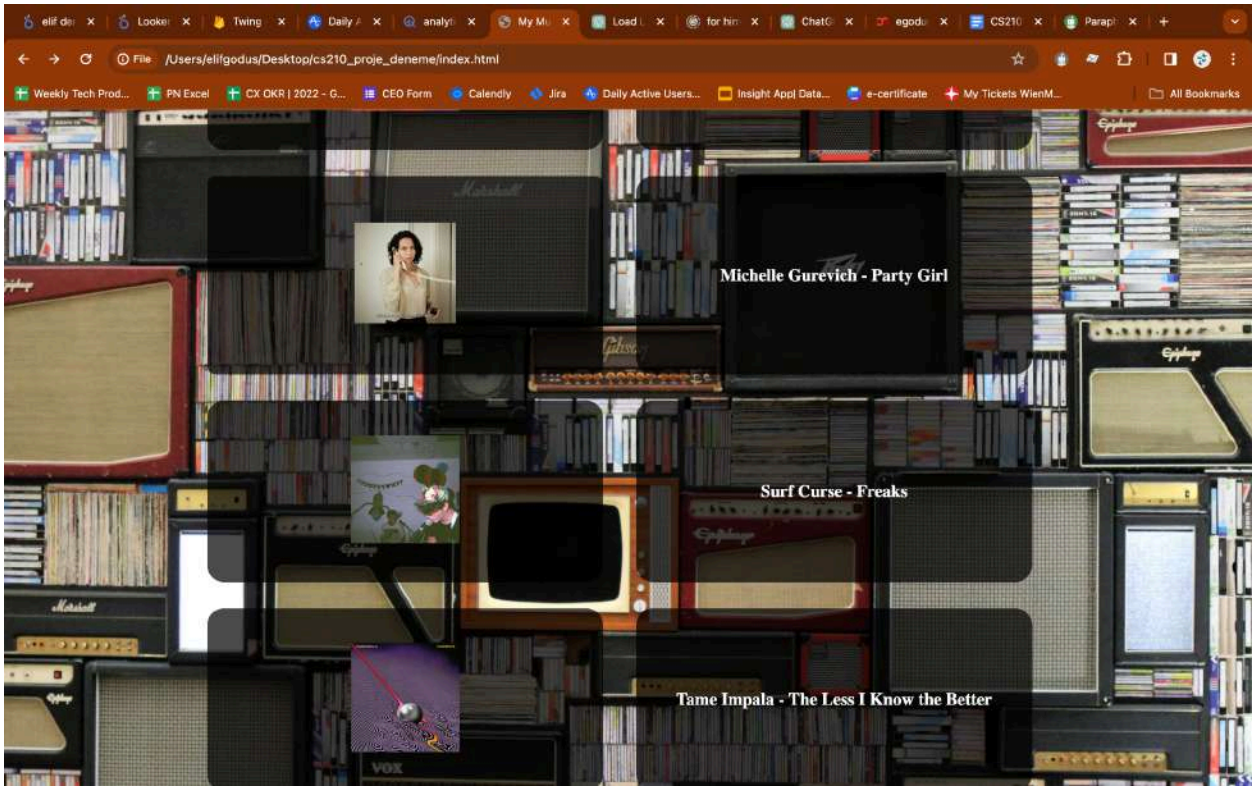
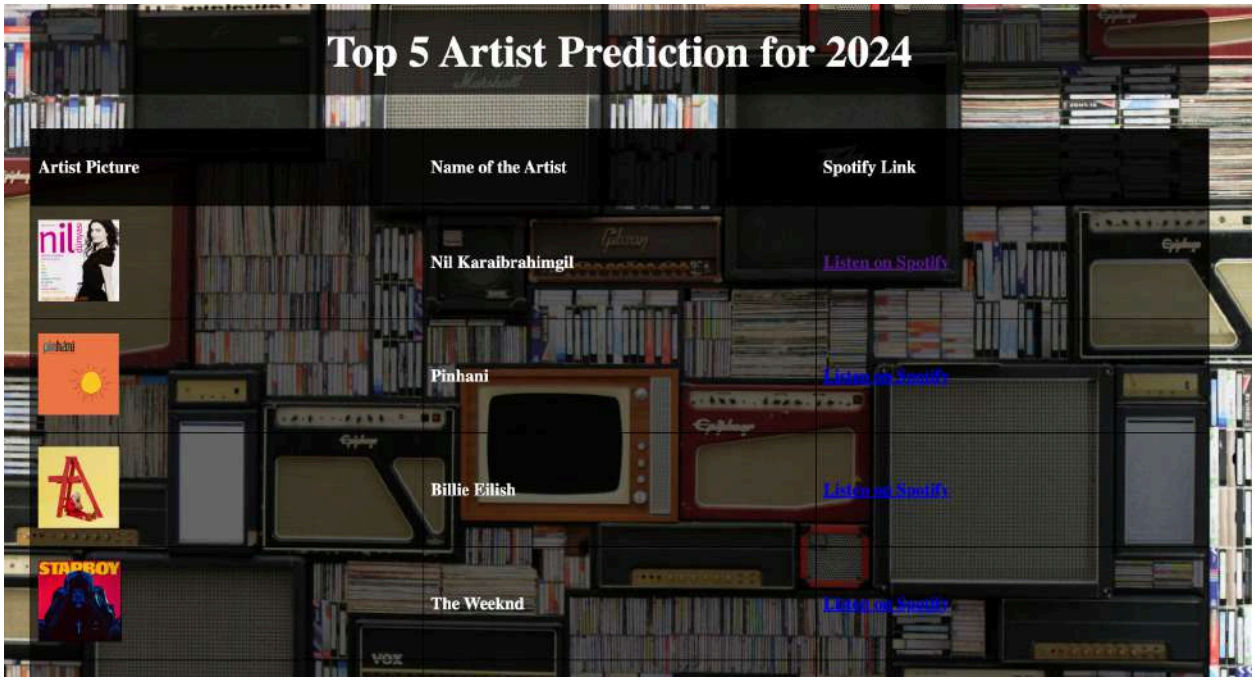
Weekly Tech Prod...
PN Excel
CX OKR | 2022 - G...
CEO Form
Calendly
Jira
Daily Active Users...
Insight App| Data...
e-certificate
My Tickets WienM...
All Bookmarks
Artist Picture
Name of the Artist
Number of Times Listened
Spotify Link
Billie Eilish
180
Listen on Spotify
The Weeknd
120
Listen on Spotify
Olivia Rodrigo
118
Listen on Spotify
Duman
99
Listen on Spotify
Pinhani
95
Listen on Spotify
Artic Monkeys
85
Listen on Spotify


File /Users/elifgodus/Desktop/cs210_proje_deneme/2023_songs.html
Weekly Tech Prod...
PN Excel
CX OKR | 2022 - G...
CEO Form
Calendly
Jira
Daily Active Users...
Insight App| Data...
e-certificate
My Tickets WienM...
All Bookmarks
Artist Picture
Name of the Song
Number of Times Listened
Spotify Link
Romantic Homicide
155
Listen on Spotify
For Him
125
Listen on Spotify
Past Lives
85
Listen on Spotify
Hasret
84
Listen on Spotify
Kadınım
65
Listen on Spotify
Öyle Sarhoş Olsam Ki
58
Listen on Spotify





Conclusion

To sum up, this project is a prime example of how data analysis, machine learning, and data visualization approaches can be used to mine Spotify user listening data for insightful information. It demonstrates how these kinds of insights can be used to forecast preferences in

the future, monitor changes in musical preferences over time, and offer an engaging and interactive means of presenting the results via a specialized website.
The initiative not only advances our knowledge of individual listening preferences but also points to the possibility of more general uses, such tailored music suggestions and the examination of larger patterns in music consumption.