

DATA SCIENCE TOOLS

" SPOTIFY WRAPPED: POWERBI DASHBOARD USING SPOTIPY "

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Declaration

I hereby declare that all the work presented in this assignment is entirely my own. I have not used any unauthorized assistance, sources, or materials in completing this assignment. All ideas, concepts, and content presented herein are the result of my own efforts unless stated otherwise.

Signed

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27/01/2024

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I am thankful for the contributions of these individuals, and their support has enriched my learning experience and helped me complete this assignment to the best of my abilities.

Signed

Pravesh Gupta

Avi Vaswani

27/01/2024

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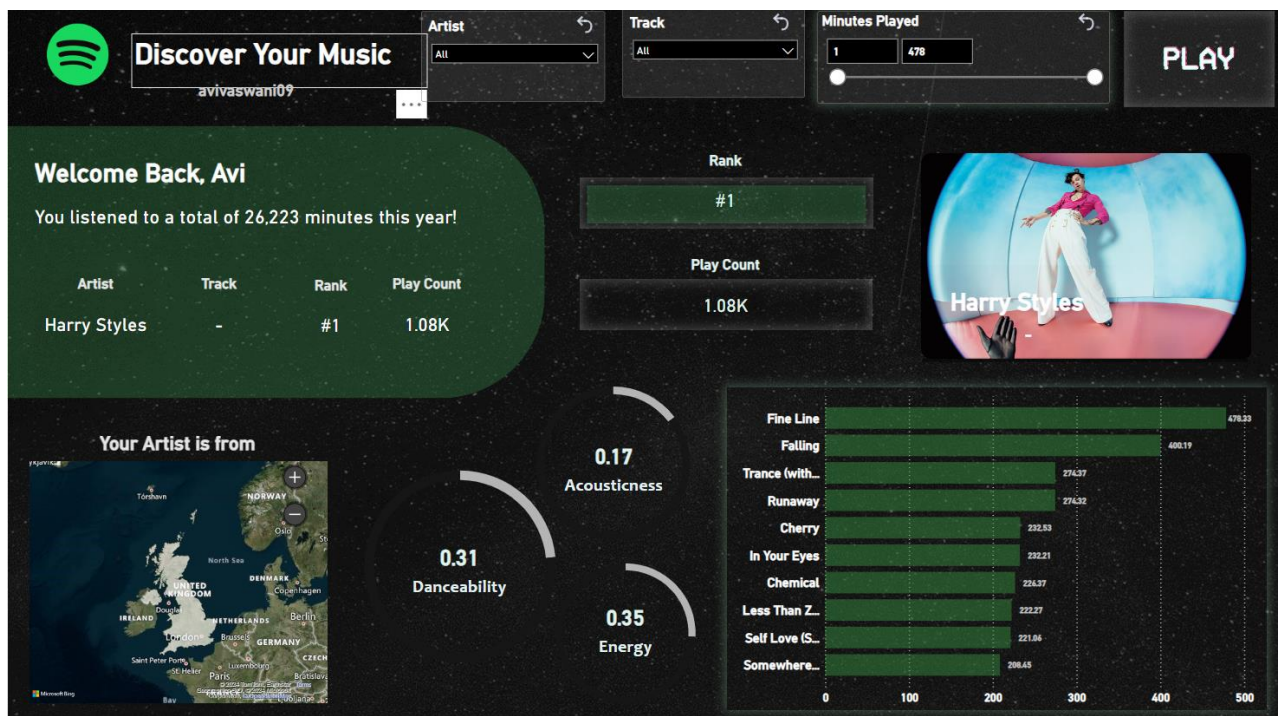
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Introduction

With music being a part of my daily life, the annual release of Spotify Wrapped has always been a moment of excitement and reflection. However, as exciting as it is, the experience is short-lived, available only for a limited time. Faced with this realization, I embarked on a journey to leverage my data analytical skills to craft an interactive and personalized Spotify Wrapped experience.

Drawing inspiration from Spotify's innovative approach to data visualization, I sought to replicate and extend the experience, ensuring that insights into my music consumption would remain accessible and engaging year-round. Thus, the idea of crafting my very own personalized Spotify Wrapped Dashboard was born—a project that would not only provide a comprehensive snapshot of my musical preferences but also serve as a testament to the power of data analytics in illuminating personal experiences.

In this report, I invite you to join me on this journey as we explore the process of creating and refining my personalized Spotify Wrapped. We're going to take a closer look at my music preferences. We'll explore which artists and songs I love the most, and we'll dig into any interesting patterns we find. Think of it as an adventure where we use data to better understand how music influences my life. So, let's embark on this journey together and uncover the fascinating connection between music and data!



Description and Novelty

This project harnesses the power of data to uncover hidden patterns within seemingly simple daily activities, such as the act of listening to music. By delving into the wealth of data provided by Spotify, we embark on a journey to unravel insights into our musical preferences and habits. But we don't stop there. We strive to present these insights in an engaging and interactive manner, inviting users to explore and interact with their own musical data in ways they may not have imagined before.

Steps:

1. Accessing Spotify API using Jupyter Notebook: (Spotify for Developers, Jupyter)

- Utilize Jupyter Notebook to access the Spotify API.
- Authenticate access to the Spotify API using appropriate credentials.
- Explore available endpoints and methods for retrieving data.

```
import spotipy
from spotipy.oauth2 import SpotifyOAuth

# Replace with your own credentials
CLIENT_ID = 'XXXXXXXXXXXXXXXXXXXX'
CLIENT_SECRET = 'XXXXXXXXXXXXXXXXXXXX'
REDIRECT_URI = 'http://localhost:8888/'

# Set up the Spotify API authentication
sp = spotipy.Spotify(auth_manager=SpotifyOAuth(client_id=CLIENT_ID, client_secret=CLIENT_SECRET, redirect_uri=REDIRECT_URI))
```

2. Retrieving and Processing Data: (NumPy, Pandas)

- Retrieve relevant data from the Spotify API, such as user listening history, track-wise and artist-wise information.
- Preprocess the retrieved data to ensure it is in a suitable format for analysis.
- Cleanse and filter the data as necessary to remove any inconsistencies or irrelevant information.

3. Saving in CSV format:

- Save the processed Spotify data into a CSV (Comma-Separated Values) format.
- Ensure that the CSV file contains all necessary information required for further analysis and visualization.

4. Transform and Load into Microsoft PowerBI:

- Utilize Microsoft Power BI to import the CSV file containing Spotify data.
- Transform the data as needed to create a suitable data model for visualization.
- Load the transformed data into Power BI for further analysis and visualization.

5. Design and add visuals:

- Design interactive visuals within Power BI to represent key insights from the Spotify data.

- Select appropriate visualizations such as bar charts, line graphs, or scatter plots to convey insights effectively.
- Incorporate elements such as color coding and labeling to enhance the clarity and understanding of the visuals.

6. Implement DAX Code to link visuals:

- Write Data Analysis Expressions (DAX) code within Power BI to create calculated columns, measures, and other data calculations.
- Use DAX functions to link visuals and perform advanced data manipulations, such as aggregations or comparisons.

```

1 SelectedURL =
2 VAR SelectedArtist = SELECTEDVALUE('Sheet1 (2)'[artistName])
3 VAR SelectedTrack = SELECTEDVALUE('Sheet1 (2)'[trackName])
4 RETURN
5     IF(ISBLANK(SelectedArtist) && ISBLANK(SelectedTrack),
6         "https://open.spotify.com/artist/6K1mCVD70vtloJWnq6nGn3",
7         IF(ISBLANK(SelectedTrack),
8             SELECTEDVALUE('Sheet1 (2)'[ArtistURL]),
9             SELECTEDVALUE('Sheet1 (2)'[SpotifyURL])
10        )
11    )
12

```

7. Dashboard Design:

- Arrange the created visuals within Power BI to design an intuitive and user-friendly dashboard.
- Consider factors such as layout, navigation, and interactivity to optimize the user experience.
- Customize dashboard elements, such as titles, headers, and filters, to enhance visual appeal and usability.

8. Explore and Discover:

- Encourage users to explore the dashboard and discover insights into their Spotify usage patterns.
- Provide guidance on how to interact with the visuals and interpret the displayed information effectively.
- Foster a culture of data-driven decision-making by empowering users to derive actionable insights from their Spotify data.

Novelty

The uniqueness of my project stems from its exclusive focus on my individual listening history for the entirety of 2023. Unlike many Spotify data analysis projects that predominantly utilize global data, my approach involves direct access to the Spotify API to extract and showcase my personalized listening data. By harnessing this personalized dataset, my project offers a distinct perspective, providing insights into my unique music preferences, trends, and habits. Moreover, the project diverges from the conventional Spotify Wrapped experience by offering continuous access to my wrapped data throughout the year, enhancing its longevity and utility. Additionally, the interactive nature of the dashboard fosters a richer user experience, enabling deeper exploration and customization tailored to individual preferences. This personalized and interactive approach not only sets my project apart but also enhances its relevance and value to users seeking a deeper understanding of their own music consumption journey.

Learnings

Through this project, we gained invaluable insights into both the technical aspects of data visualization using PowerBI and the practical application of personalized data analysis on Spotify listening data. Key learnings include:

1. Utilization of PowerBI for Data Visualization

Developing a personalized and interactive Spotify dashboard provided an opportunity to explore the capabilities of PowerBI in visualizing complex datasets. Leveraging PowerBI's intuitive interface and robust features, we created dynamic visualizations that enabled deep insights into my listening habits and preferences.

2. Mastery of DAX (Data Analysis Expressions) in PowerBI

Working with DAX expressions within PowerBI allowed for sophisticated data manipulation and analysis. By writing DAX code, we could calculate key metrics, perform advanced calculations, and create custom measures to enhance the depth of analysis in the Spotify dashboard. This experience enhanced our proficiency in handling and transforming data within the PowerBI environment.

3. Integration of Jupyter Notebook for Data Retrieval and Processing

Incorporating Jupyter Notebook into the project workflow facilitated efficient data retrieval and preprocessing using libraries such as NumPy and Pandas. Utilizing Jupyter Notebook alongside PowerBI provided a seamless transition from data extraction and transformation to visualization, allowing for comprehensive data exploration and analysis.

4. Experience with API Data Retrieval using Spotipy (Spotify API)

Implementing the Spotipy library for accessing the Spotify API enabled seamless retrieval of personalized listening data. By interfacing directly with the Spotify API, we gained insights into my listening history, top tracks, and favorite artists, enriching the dashboard with real-time and personalized information. This experience enhanced our understanding of API integration and data retrieval techniques within the PowerBI environment.

5. Communication and Collaboration Skills

Collaborating on this project honed our communication and collaboration skills, as we worked together to define project objectives, divide tasks, and synthesize findings. Effective communication was essential for conveying complex technical concepts and insights to stakeholders in a clear and accessible manner.

Conclusion

In conclusion, our journey into the realm of data visualization and personal analytics has been both enlightening and empowering. By harnessing the capabilities of PowerBI and exploring the depths of my own Spotify listening data, we have gained invaluable insights into my music preferences and listening habits.

Through the application of interactive visualizations and personalized data analysis techniques, we have unearthed nuanced patterns and trends within my music consumption journey, illuminating the diverse tapestry of my musical tastes and preferences.

Moreover, our project highlights the significance of individual experiences and the power of self-reflection in shaping personal narratives. Every song listened to tells a story, and our work serves as a testament to the transformative potential of data visualization in illuminating and celebrating the unique journey of music discovery and appreciation.