CS-480 - Data Visualization

Milestone 2

Certified Lover Data

Should you really be writing only *pop* music to make it to the Billboard Hot 100?

Music evolves constantly, and so do our tastes. With our project, our focus is on exploring genre trends, song features (like danceability, energy, valence), and regional popularity to answer: what makes a hit, and how does genre and emotion play into it?

We'll use interactive visualizations to help users explore how music and genre taste in particular have changed over time, and how listener preferences shift across the globe.

Project Breakdown

Core Visualizations (MVP)

1. **Genre Race Timeline**
   A time-based race chart showing top genres per year on the Billboard charts.
   Tools: D3.js, pandas (CSV data merged from Billboard & Spotify).
   Lectures: D3.js, Sound Viz
   Exercises: Exercise 05 D3.js - Time-series data. Multiple Area Charts
2. **Popularity vs. Audio Features**
   Interactive scatter plot correlating Spotify popularity with features like energy or valence.
   Tools: Plotly or Chart.js.
   Lectures: Perception colors, Marks and Channels, Tabular Data
3. **Genre Heatmap**
   Correlation heatmap between audio features and chart performance across genres.
   Tools: seaborn or D3 heatmap.
   Lectures: D3.js
4. **Geographic Genre Map**
   Choropleth showing top genres per country.
   Tools: D3 geo.
   Lectures: D3.js, Maps, Practical Maps.
5. **“Genrify” Tool**
   Interactive tool to predict a genre based on user-selected audio features sliders (valence, danceability, etc.), and suggest top matching tracks.
   Tools: D3.js, TensorFlow.js or sklearn(backend), Spotify API
   Lectures: D3.js, Sound Viz

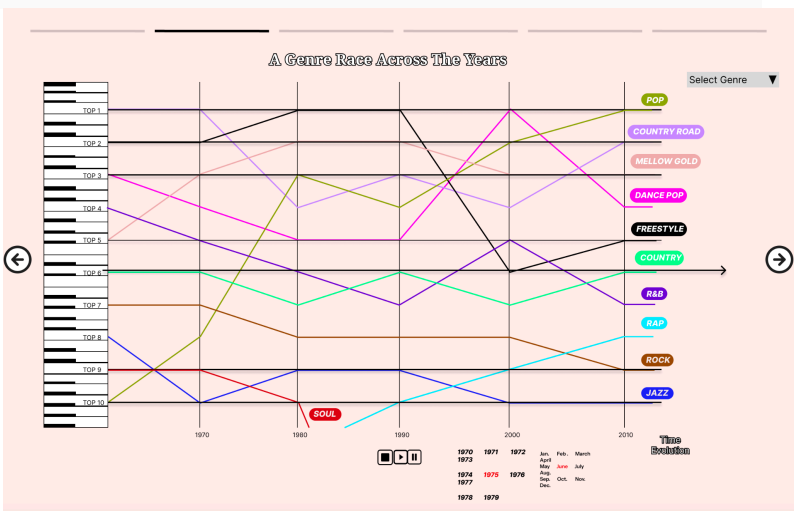
Stretch Goals

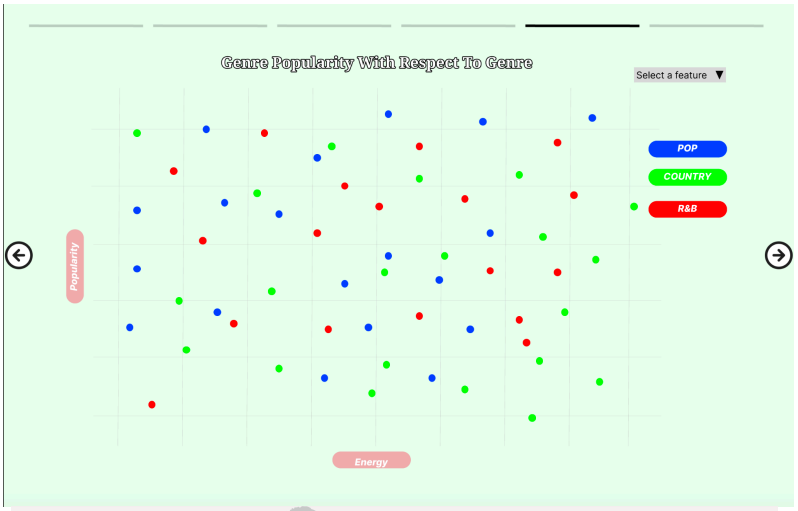
- **Artist Race within Genre**: Presents an extension to the Genre Race Timeline visualization that enables users to drill-down into individual genres and view a time-based race chart of top performing artists within the selected genre.
- **Top Artists by Genre Diversity**: Bubble chart showing which artists dominate across multiple genres.
- **Audio-Feature Radar Charts**: Highlight what makes a song successful in different genres.

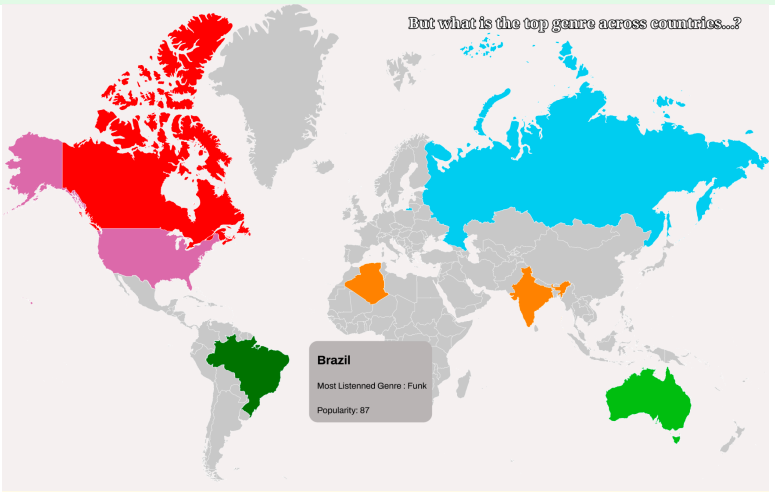
Current Prototype

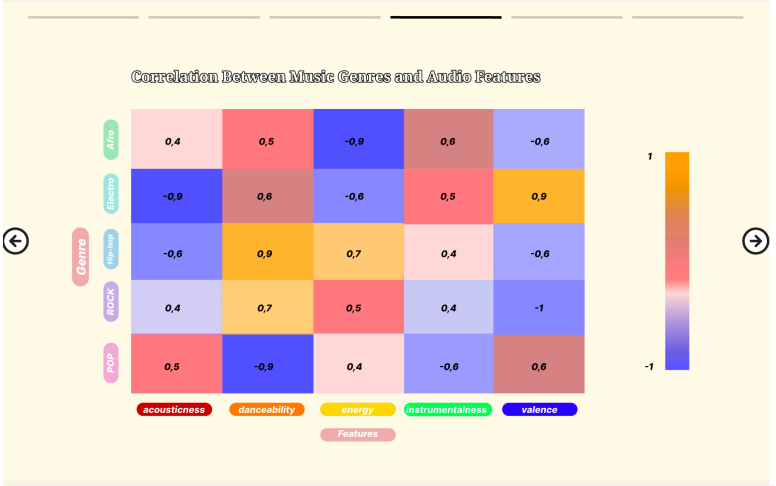
- We have a working website skeleton with routing, styling, and placeholder sections
- Linked **Figma prototype**: Certified Lover Data on Figma
- Initial visualizations (genre distribution, chart peaks) developed in Jupyter and partially ported to JS.

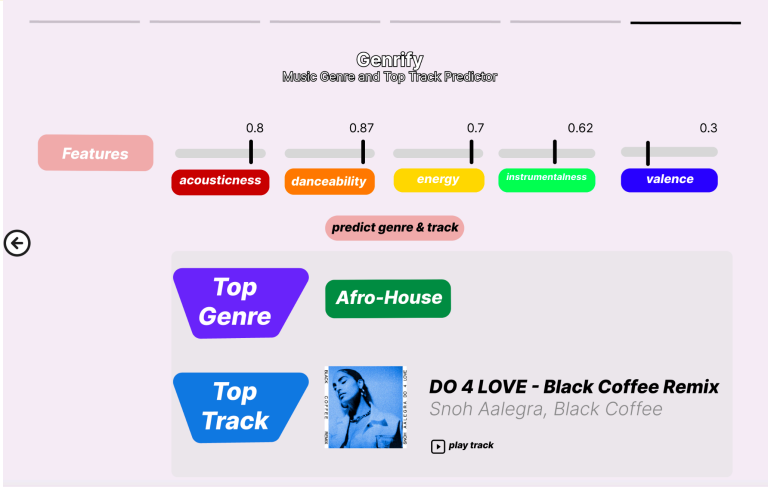
Sketches of Visualizations




Genre Popularity With Respect To Genre
Select a feature
POP
COUNTRY
R&B
Popularity
Energy


But what is the top genre across countries...?
Brazil
Most Listenned Genre : Funk
Popularity: 87


Correlation Between Music Genres and Audio Features
Genre
Afro
Electro
Hip-hop
ROCK
POP
0,4 0,5 -0,9 0,6 -0,6
-0,9 0,6 -0,6 0,5 0,9
-0,6 0,9 0,7 0,4 -0,6
0,4 0,7 0,5 0,4 -1
0,5 -0,9 0,4 -0,6 0,6
acousticness
danceability
energy
instrumentalness
valence
Features
1
-1


Genrify
Music Genre and Top Track Predictor
Features
0.8
0.87
0.7
0.62
0.3
acousticness
danceability
energy
instrumentalness
valence
predict genre & track
Top Genre
Afro-House
Top Track
DO 4 LOVE - Black Coffee Remix
Snoh Aalegra, Black Coffee
play track