STATS 418 Final Project

Spotify Cover Art Quiz
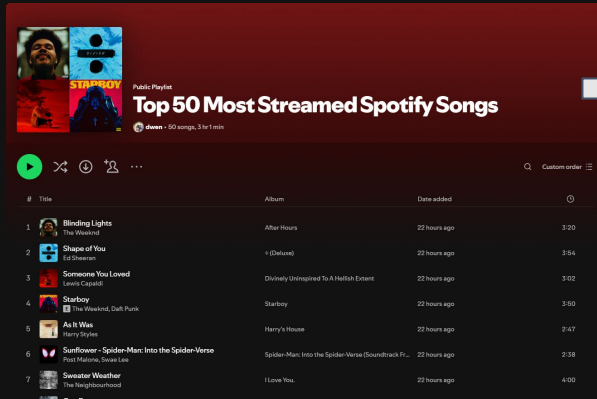
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The Data

Data includes track id, song name, artist name, cover url, artist popularity, song duration (ms), explicit, song age (days), artist popularity score, genres, number of artist genre, and artist country.

Exploratory Data Analysis
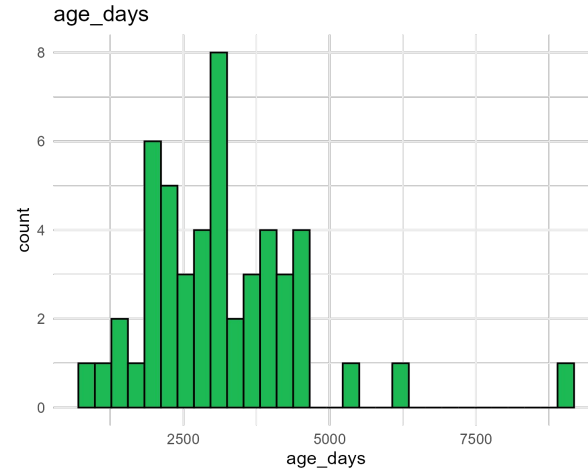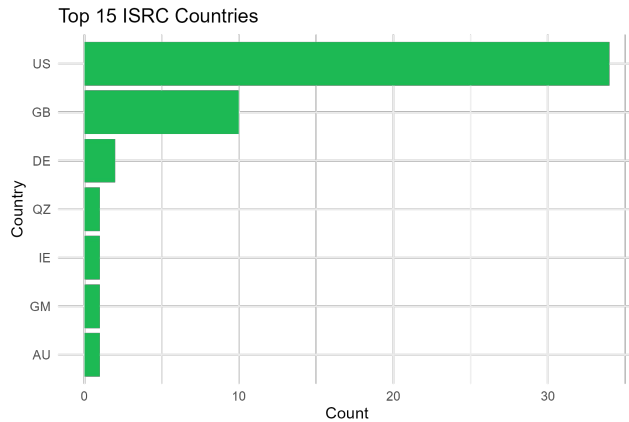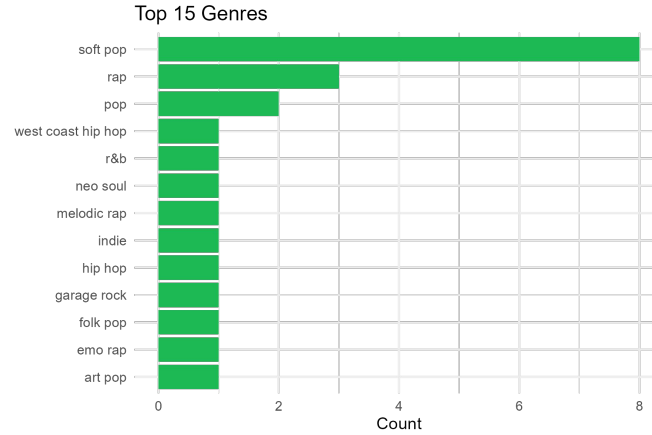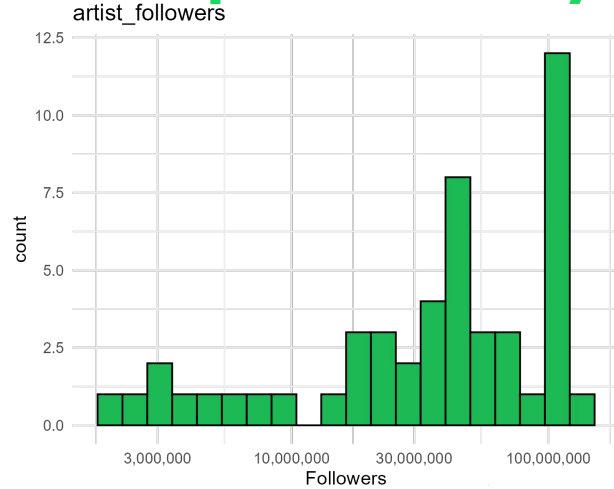
The Recommendation Model

- **k-Nearest Neighbors**
  - Lightweight, very fast, no training labels needed, simple and interpretable
  - Take song vector and compute Euclidean distance to all other songs and return closest ones
- **Features Used:**
  - popularity, duration_ms, explicit, age_days, artist_popularity, artist_followers, n_artist_genres
  - one-hot encode for genre and countries
- **Step by Step**
  - All numerical features scaled using StandardScaler to ensure equal influence in distance calculations
  - Each song is represented by a numeric feature vector
  - k-NN identifies tracks similar to the current song
  - Similarity measured using Euclidean distance after scaling

Spotify Cover Art Quiz

2.0 / 3

Round 3 / 5

locked out of heaven

bruno mars

Submit   Next

Correct! ✔
Correct! ✔

Recommended songs:

Just the Way You Are — Bruno Mars
Love Yourself — Justin Bieber
That's What I Like — Bruno Mars
Die For You — The Weeknd
Sweater Weather — The Neighbourhood

Source: Top 50 Most Streamed Songs
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Deployment

- Frontend: R Shiny (hosted on shinyapps.io)
    - Interactive UI & displays Spotify cover art for user
- Backend: Flask API (hosted on Amazon EC2)
    - Provides recommendations using Docker container
- App
    - User has five rounds in a single session and has to guess song name and artist name based on cover art
    - Shows answers and shows whether or not the user guess the song and artist name correctly
        - + 0.5 for correctly guessing song name or artist name
    - After each round, recommends similar songs based on recommender model

Demo

https://dwen.shinyapps.io/spotify-cover-art-quiz/

Spotify Cover Art Quiz

1.0 / 2

Round 2 / 5

as it was

i forgot...

Submit   Next

Correct! ✓
The correct artist was Harry Styles ✗

Recommended songs:
Watermelon Sugar — Harry Styles
Señorita — Shawn Mendes, Camila Cabello
Sunflower - Spider-Man: Into the Spider-Verse — Post Malone, Swae Lee
Circles — Post Malone
Kill Bill — SZA

Source: Top 50 Most Streamed Songs
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