



STATS 418 Final Project

Spotify Cover Art Quiz

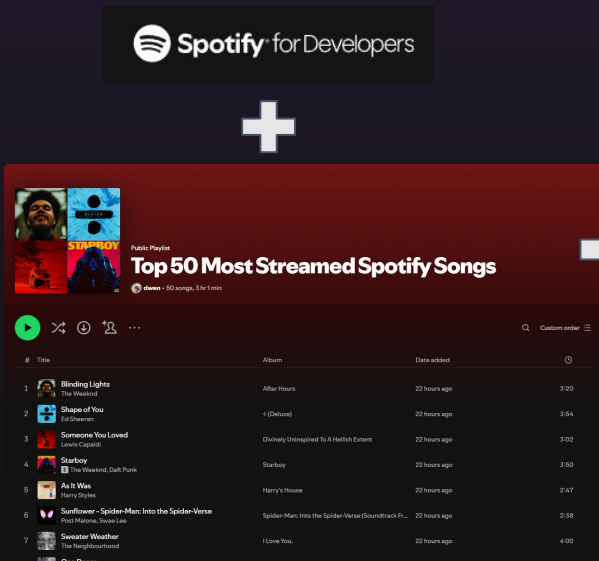
Derek Wen

The Data

Call Spotify API on Spotify Playlist

Python Script To Fetch and Create Dataset

Dataset created as CSV



```
C:\Users\derek\top50-spotify-quiz>python src/fetch_top50.py
Fetched 50 tracks
→ playlist_enriched.csv written with 50 rows

C:\Users\derek\top50-spotify-quiz>
```

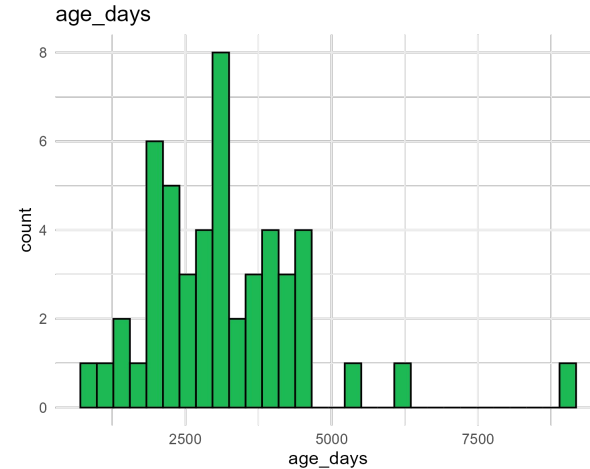
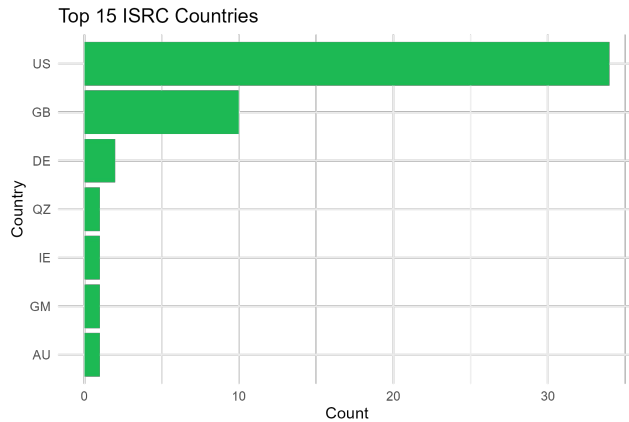
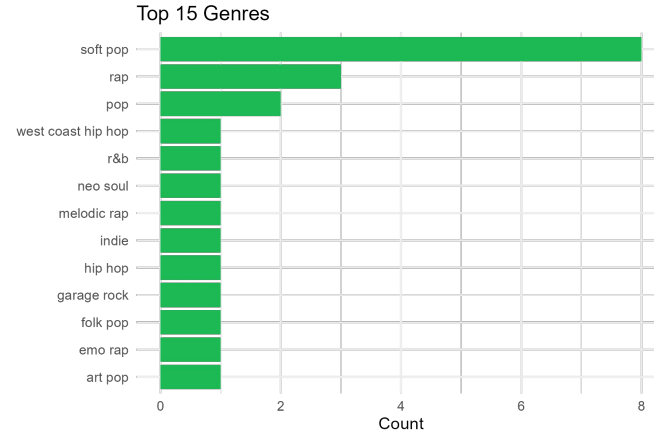
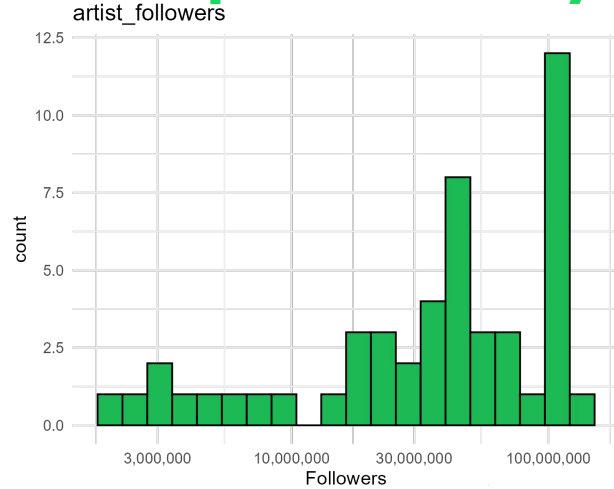
playlist_enriched.csv

Open with...

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	id	name	artists	cover_art	popularity	duration_ms	explicit	ppp_avg	like_probability	artist_followers	genres	n_listeners	max_reposts	rec_recently
1	71YQW0G0G0	Drinking Lullaby	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	91	200140	0	1879	91	14693114	0	0	0	0
2	71YQW0G0G0	Drinking Lullaby (feat. The Weeknd)	The Weeknd	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	89	233140	0	2011	89	14693114	0	0	0	0
3	71YQW0G0G0	Someone You Loved	Justin Bieber	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	88	192800	0	2160	88	13045122	alt pop	1	DE	1
4	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
5	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
6	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
7	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
8	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
9	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
10	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
11	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
12	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
13	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
14	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
15	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
16	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
17	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
18	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
19	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
20	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
21	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
22	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
23	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
24	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
25	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
26	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
27	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
28	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
29	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
30	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
31	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
32	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
33	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
34	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
35	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
36	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
37	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
38	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
39	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
40	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
41	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
42	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
43	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
44	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
45	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
46	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
47	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
48	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
49	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
50	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
51	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
52	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
53	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
54	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
55	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
56	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
57	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
58	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
59	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
60	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
61	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
62	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
63	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
64	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
65	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
66	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
67	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
68	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
69	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
70	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0
71	71YQW0G0G0	Blind	The Weekend	https://i.scdn.co/image/ab67616d0000b273e1824b26b2b2b2b2b2b2b2b2	5	239450	1	3089	5	14693114	0	0	0	0

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/>

