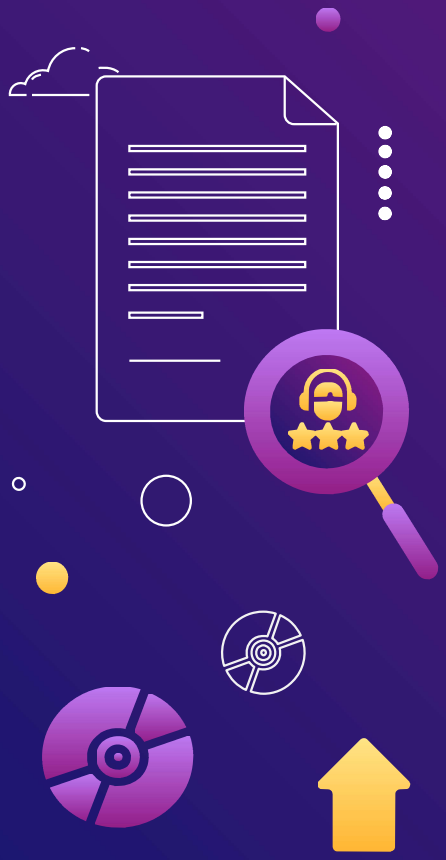
SONG MOOD ANALYSIS



HELLO

Devin Monsen
Andi Cameron
Zach Ellsworth
Jamee Jenkins

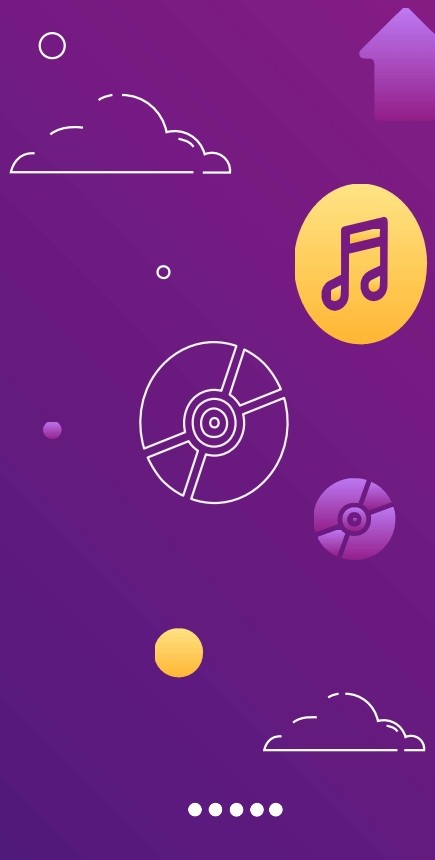


TABLE OF CONTENT

INTRODUCTION

Music can greatly alter the mood of the listener. It can help hype up a crowd at a party, or soothe as you wait on hold or in an elevator. Music triggers emotional responses whether positive or negative

01

THE QUESTION

Andi Cameron

PURPOSE

MUSIC

As connoisseurs of the music industry, we recognize the vast range of emotional release that music can induce.

LANGUAGE

The purpose of this study is to examine the language of music and attempt to anticipate the effects on a listener.

QUESTIONS TO ANALYZE

ATTRIBUTES

How can rhythm, loudness, or other attributes of a song prompt an emotional response?

IMPORTANCE

Which attributes are most important in determining the emotional resonance of a song?

PATTERNS

Is there a pattern of attributes that could affect individuals similarly?

RESOURCES/TECHNOLOGIES

SOURCE DATA

Kaggle: Spotify 1.2M+ Songs with track features

Obtained through the Spotify API

DATABASE MANAGEMENT

pgAdmin/postgreSQL
Python
VS Code
SQLAlchemy
Quick DBD for ERD development

VISUALIZATIONS

Google Slides
Javascript
Flask
Python
VS Code

ANALYSIS

Jupyter Notebook
Python

STORAGE

GitHub

DATA PREPROCESSING

Python
pgAdmin/postgreSQL

02

ETL & DATABASE

Jamee Jenkins

REVIEWING THE DATASET

DANCEABILITY

The higher the value, the easier it is to dance to the song

LOUDNESS

The higher the value, the louder the song

TEMPO

The higher the value, the faster the song is played

id character varying (22)	danceability double precision	energy double precision	loudness double precision	valence double precision	tempo double precision	acousticness double precision
7lmeHLHBe4nmXzuXc0H...	0.47	0.978	-5.399	0.503	117.906	0.0261
1wsRitfRRtWyEapl0q22o8	0.599	0.9570000000000001	-5.763999999999999	0.489	103.68	0.0129
1hR0fIFK2qRG3f3RF70pb7	0.315	0.97	-5.4239999999999995	0.37	149.749	0.0234
2lbASgTSoDO7MTuLAXIT...	0.44	0.9670000000000001	-5.83	0.574	96.75200000000001	0.163
1MOTmpYOZ6fcMOc56Hd	0.426	0.929	-6.729	0.539	127.059	0.00162

REVIEWING THE DATASET CONT

ENERGY

The higher the value, the more energetic the song

VALENCE

The higher the value, the more positive mood of the song

ACOUSTICNESS

A higher value would indicate acoustic instruments and a lower value would indicate electronic instruments

id character varying (22)	danceability double precision	energy double precision	loudness double precision	valence double precision	tempo double precision	acousticness double precision
7lmeHLHBe4nmXzuXc0H...	0.47	0.978	-5.399	0.503	117.906	0.0261
1wsRitfRRtWyEapl0q22o8	0.599	0.9570000000000001	-5.763999999999999	0.489	103.68	0.0129
1hR0fIFK2qRG3f3RF70pb7	0.315	0.97	-5.4239999999999995	0.37	149.749	0.0234
2lbASgTSoDO7MTuLAXIT...	0.44	0.9670000000000001	-5.83	0.574	96.75200000000001	0.163
1MOTmpYOZ6fcMOc56Hd	0.426	0.929	-6.729	0.539	127.059	0.00162

DATABASE

Using PgAdmin and SQLAlchemy, 2 tables were joined using id (song id).

- Spotify_track_info lists the id, name of song, and the artist
- Spotify_features lists the id and the chosen attributes: energy, loudness, valence, tempo, and danceability

Sample table was created to show the top 100,000 songs due to size limitation

03

PREPROCESSING & MACHINE LEARNING

Devin Monsen

METHODS, TECHNIQUES AND TOOLS

- SKLearn
- Pandas
- SQLAlchemy

DATA ANALYSIS & MACHINE LEARNING

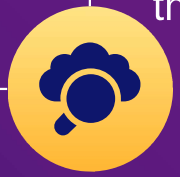
SCALE

Scale values with
sklearn.preprocessing.MinMaxScaler()

LABEL

Determine label based of songs in grouping to then attach a mood



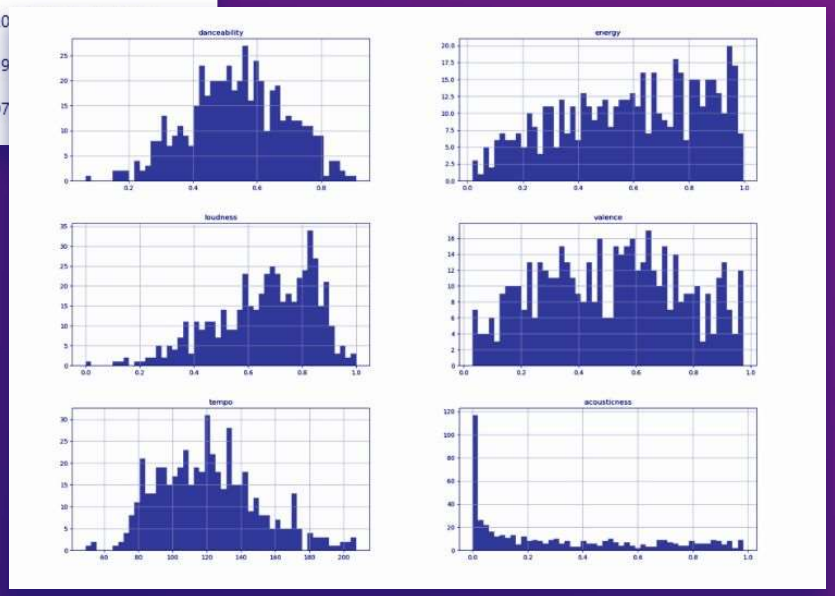
GROUP

Group songs on
chosen attributes

PREPROCESSING

Use K-means clustering elbow method based off features

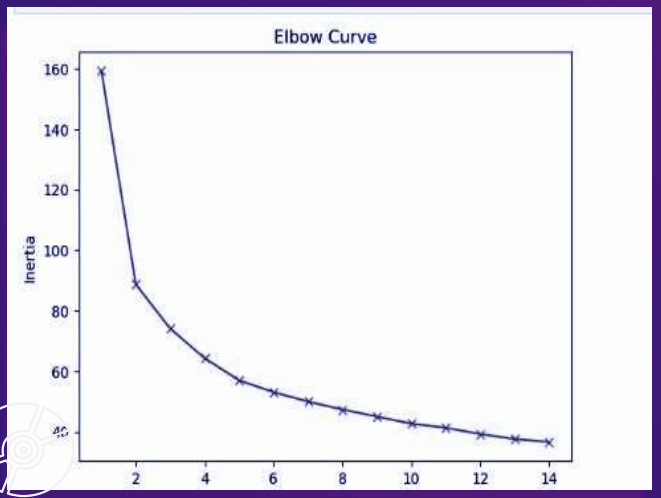
	Danceability	Energy	Loudness	Valence	Tempo	Acousticness
Mean	0.540939	0.591070	-10.166142	0.515204	121.336214	0.316986
Standard Deviation	0.151960	0.258203	4.126904	0.247071	29.497190	0.316747
Minimum	0.065700	0.019200	-25.189000	0.030500	49.179000	0.000003
25% Percentile	0.436000	0.390000	-12.624000	0.313750	98.366750	0.023375
50% Percentile	0.545000	0.613000	-9.592500	0.535000	120	
75% Percentile	0.653250	0.814250	6.750000	0.701500	139	
Maximum	0.909000	0.996000	-2.584000	0.974000	207	

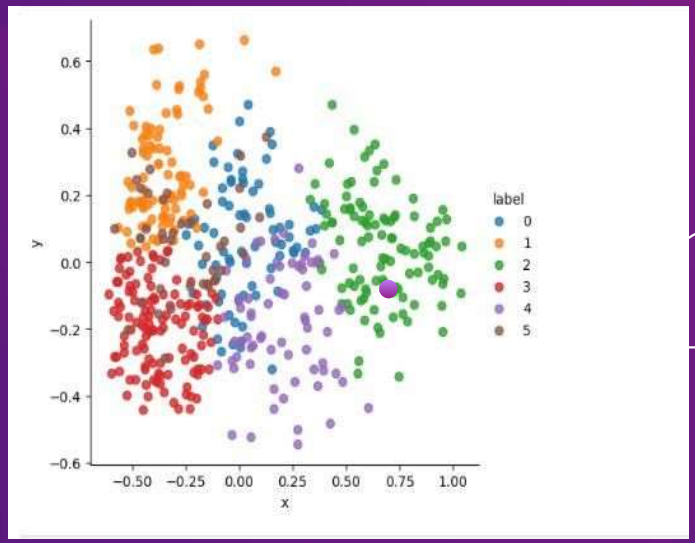


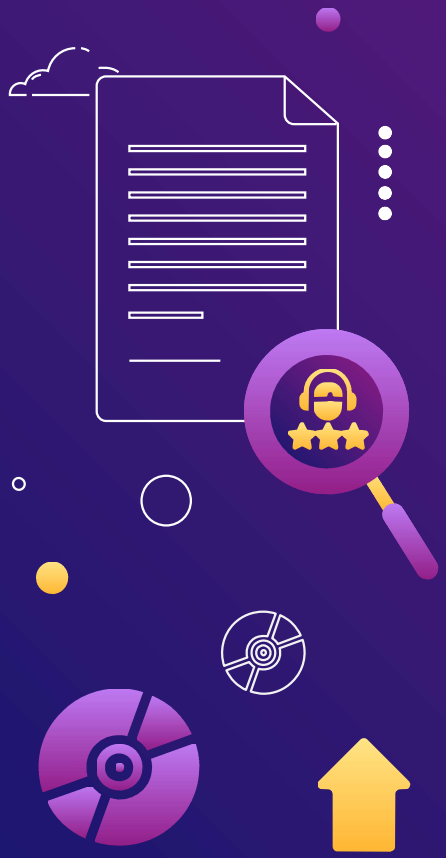
GROUP

SCALE

PREPROCESSING







WHOA!

Turns out mood is subjective

LABEL

	id	danceability	energy	loudness	valence	tempo	acousticness	label
155	7CAXrvSR4K7xaWyAyPmECh	0.597	0.661	-10.247	0.5910	169.575	0.225000	Angry
123	5fSU4DYw2UNcMZ5OD5FUm0	0.[illegible]	0.415	-8.[illegible]	[illegible]	128.[illegible]	0.138000	Laid-Back
385	01Vjr2ox7iQr[illegible]	[illegible]	0.518	-11.50[illegible]	[illegible]30	97.928	0.555000	Calm
275	1CTTXciW8vvCUd2AJZjp95	0.436	0.500	-7.480	0.3200	141.856	0.139000	Laid-Back
129	2cMW6KjnjFrYcYdlsk0ER5	0.545	0.557	-11.611	0.2690	125.876	0.079000	Laid-Back
23	0QCQ1lsa0YPVyIbs6IwnQ1	[illegible]	0.958	-5.1[illegible]	[illegible]	87.[illegible]	[illegible]	Happy
324	3AToIDUVQ8rIw86Fp90AkME	[illegible]	0.814	-11.6[illegible]	[illegible]20	132.115	0.002060	Happy
76	0UxGJ0eyqOdcPrOWCNJtmp	0.276	0.224	-11.980	0.2610	127.688	0.923000	Sad
229	3WkdA05KkhCaCunFqkkvvX	0.532	0.457	-9.615	0.1590	105.103	0.006250	Laid-Back
293	5zAUNFiMFn8O2hBtzIidcQ	[illegible]	0.191	-13.7[illegible]	[illegible]0	82.651	0.590000	Sad
454	4WAMmqDoI0S9zTrF3JxGjQ	[illegible]	0.239	-16.7[illegible]	[illegible]0	201.672	0.473000	Calm
330	0yRwZNh6tTg5Klz42Jsrr9	0.422	0.985	-2.724	0.3440	157.035	0.007830	Energetic

HAPPY

SAD

LAID BACK

ENERGETIC

CALM

ANGRY

04

VISUALIZATION

Zach Ellsworth

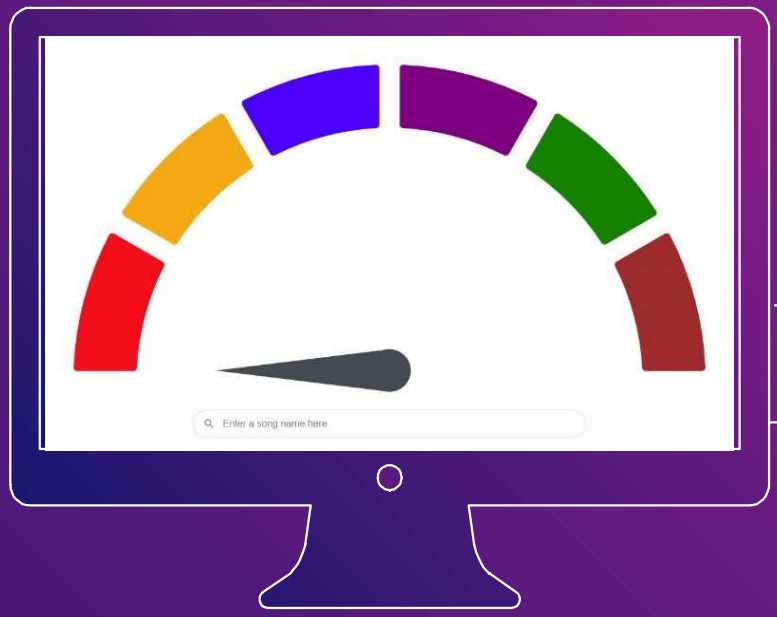
METHODS, TECHNIQUES AND TOOLS

- React
- Go
- Websockets

DASHBOARD & INTERACTIVITY

Visualization and dashboard produced through plotly python libraries and [dash]GitHub hosted at:

https://neuralburst.io/MusicGroup



THANKS!

DO YOU HAVE ANY QUESTIONS?

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