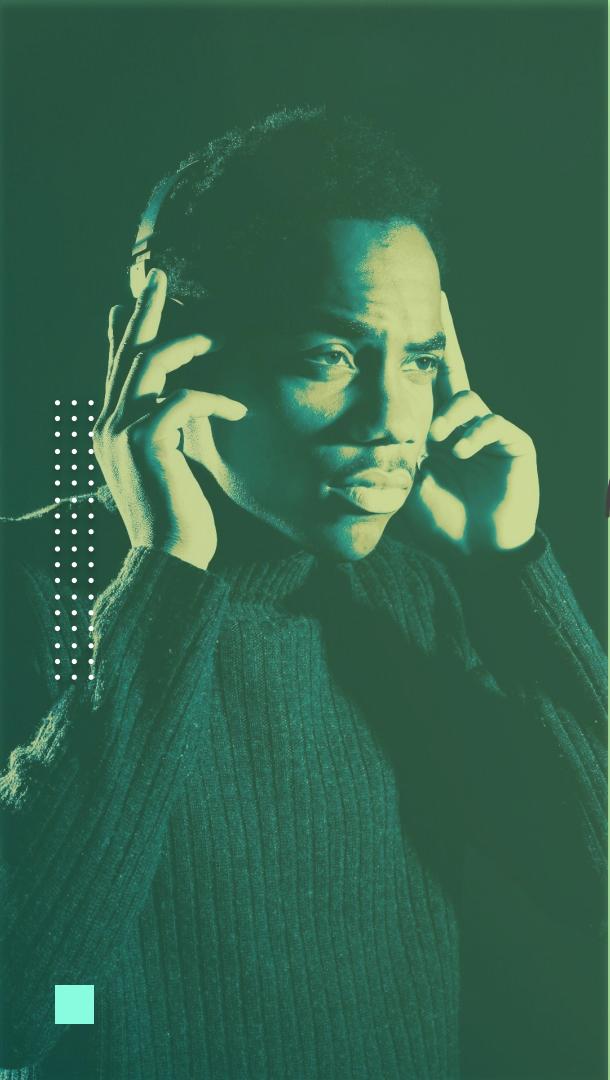




# STREAMLIT MUSIC APP

Making Predictions Using Machine  
Learning Models

PRESENTED BY: ANN CELESTINO



# FUN FACTS

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General  
Information

93%

## U.S Population

93% of the U.S American population spends more than 25 hours listening to music each week

75%

## Active Listeners

75% of Americans say they actively choose to listen to music.

More than they claim to watch TV (73%)

25%

## In the Car or During Commute

25% actively choose to listen to music in their car or their commute

15%

## While Doing Chores

15% actively choose to listen to it at work

15% actively choose to listen to it while doing chores

# QUESTIONS

1. Why are certain songs more appealing or popular?
2. What descriptive features of a song make it popular on music/online platforms

A photograph of three young adults—two women and one man—standing outdoors at night. They are positioned behind a yellow horizontal bar. Three large, glowing teal speech bubbles extend from the bar towards the right, each containing a white line-art icon: a camera, a microphone, and a saxophone. The background is dark with some blurred lights.

TARGET AUDIENCE

MUSIC  
ENTHUSIASTS

MUSIC  
PRODUCERS

MUSIC INDUSTRY  
PROFESSIONALS



# The Process

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## DATA OVERVIEW

General Information of the dataset

03 04

## EXPLORATORY DATA

Finding trends and gaining insights through data visualizations

## DATA CLEANING

Refine and prepare the data for analysis and modelling

03 04

## MODELING THE DATA

Fitting the dataset to a Machine Learning Model of your choice to make predictions of target outcome



# SONG POPULARITY DATASET

This dataset was retrieved from Kaggle.

Contains:

- 15 columns of song info
- 18835 rows of songs



# COLUMN FEATURES

1. song popularity
2. acousticness
3. danceability
4. energy
5. instrumentalness
6. key
7. liveness
8. loudness
9. audio mode
10. speechiness
11. tempo
12. time signature
13. valence
14. song duration in milliseconds



# DATA CLEANING



## Song Duration

Change from milliseconds to minutes



## Duplicates

Dropping duplicate songs

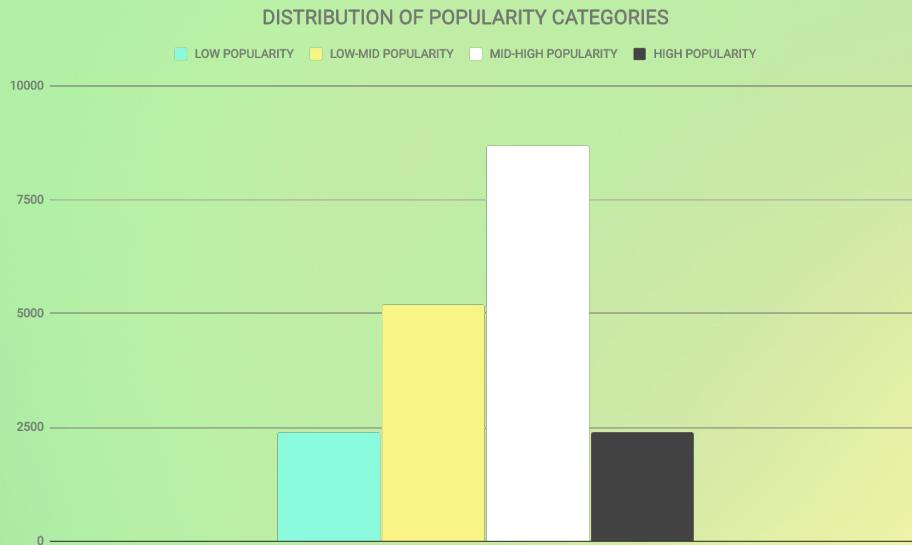


## Categorize

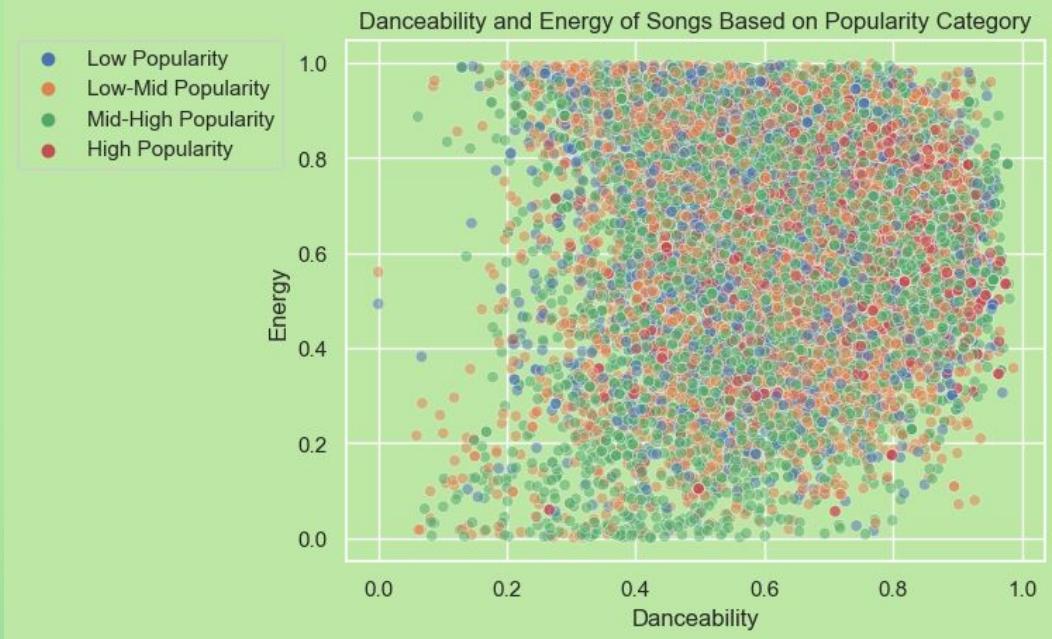
Categorizing song popularity ranking into four bins:

**Low Popularity (1-24),  
Low-Mid Popularity(25-49),  
Mid-High Popularity (50-74),  
and High Popularity (75-100)**

## EXPLORATORY DATA ANALYSIS



Data Visualization



Low correlation between  
Danceability, Energy.



## k-Nearest Neighbors

KNN is a type of machine learning model that categorizes objects based on the classes of their nearest neighbors in the data set. KNN predictions assume that objects near each other are similar.



## Logistic Regression

Logistic regression is a special case of regression analysis used when the dependent variable is nominally scaled. Estimates the probability of occurrence of the categories of the variable.



## Random Forest

A Random Forest is like a group decision-making team in machine learning. It combines the output of multiple decision trees (individual models) to reach a single result.

## STREAMLIT APP OVERVIEW

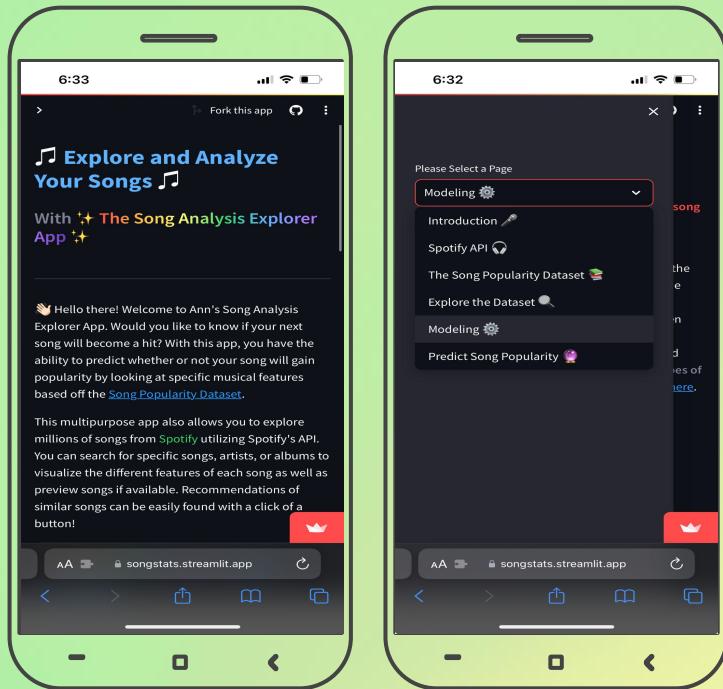


SCAN ME

## Song Stats App

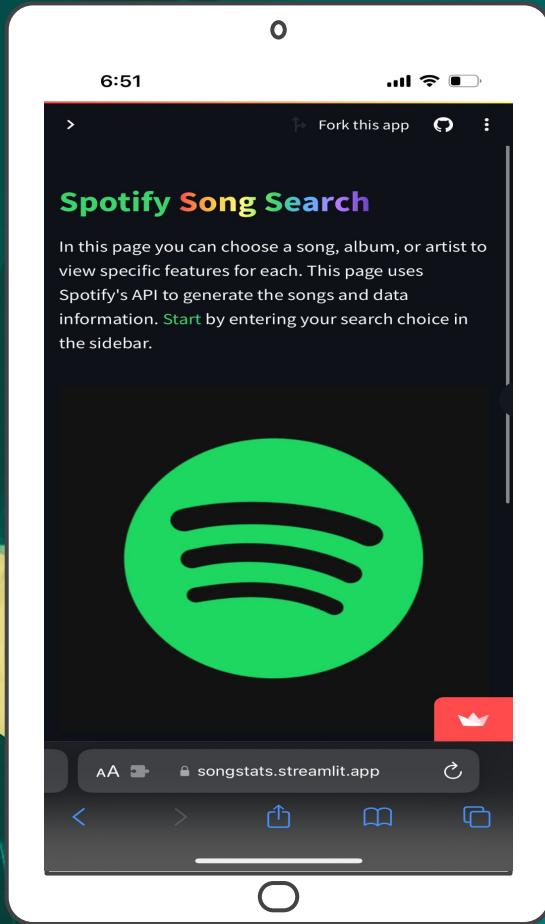
01.12.2024

A Streamlit Web App.  
Introduction Page of  
app



## Six Pages

Six pages included in  
the app with each page  
having different ways to  
visualize songs



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STREAMLIT  
APP INTRO

A blurred, colorful background image of a city street at night, showing streaks of light from traffic and buildings.

## CONCLUSION

The analysis revealed that popularity can not be attributed solely to quantifiable acoustic elements

Consider other contextual factors beyond the musical features, as captured by Spotify's measurables, that may contribute to the song's success



**THANK  
YOU**

# RESOURCES

## PHOTOS

- Going out concept with friends night
- Going out concept with couple night
- Going out concept with friends night
- Going out concept with girl night
- African american male walking roadside
- Woman with guitar background sky
- Guitar music outdoors
- Trails light street
- Black boy posing with headphones
- Female street dancer
- Black boy posing with headphones
- Hand holding purple vinyl
- Black model posing
- Black man posing
- Going out concept with girl night
- Hand crowd disco
- Two girls dancing disco

## VECTOR

- Camping
- Friendship
- Scrolling
- Payment method
- Music Multimedia
- Infographic element collection
- Gradient infographic element collection
- Flat gradient infographic with stats

## WEBSITES

- [Audio Features Definitions](#)
- [Fun Facts](#)
- [QR Code Generator](#)
- [Seaborn Graphs](#)
- [Music Information](#)

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