Popular Audio Features Analysis

• • •

By: Myrna Grace Calip

Objective

Use classification machine learning models to understand what types of audio features and genres impacts popularity based on the dataset

Business Value

To provide our record labels, artists, and producers determine what qualities they should consider when releasing music to streaming platforms

Business Problem

- Which audio features makes an impact on a song's popularity?

- What genre should a record label and artists focus on?

- Does music theory features contribute to a song's popularity?

Data

Audio Features

- Acousticness
- Danceability
- Song duration (ms)
- Instrumentalness
- Liveness
- Loudness (dB)
- Spechiness
- Valance
- Tempo

Music Theory Features

- Key Signature
- Tempo

Music Genres

- Electronic
- Anime
- Jazz
- Alternative
- Country
- Rap
- Hip-Hop
- Blues
- Rock
- Classical

Our Target Feature: Popularity => 50 and Popularity < 50

Based on:
- Total number of plays the track has and how recent those plays are
- Values between 0 and 100, with 100 being the most popular

Model Performance Predictions

Decision Tree

- 32% Popular
- 57% Non Popular
- Accuracy Score: .87

Logistic Regression

- 6.8% Popular
- 51% Non Popular
- Accuracy Score: 0.58

Random Forest

- 28% Popular
- 58% Not Popular
- Accuracy Score: 0.86

XGBoost

- 29% Popular
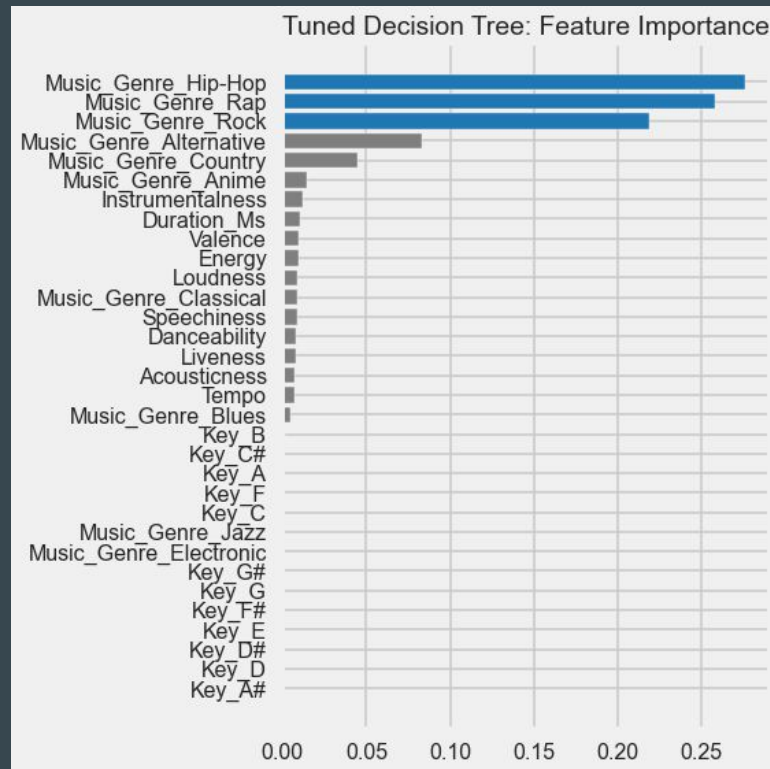- 57% Not Popular
- Accuracy Score: 0.86

Conclusion - Decision Tree

Feature Importance

- Genres : Hip-Hop, Rap, & Rock
- Audio features: Instrumentalness, duration, Valence, Energy, Loudness

No Impact:

- Genres : EDM, Jazz
- Key Signatures

Tuned Decision Tree: Feature Importance

Next Steps

- Add more audio features from Spotify's API

- Compare data from BillBoard, SoundCloud, Apple Music

- Audio Feature Importance on Rock, Hip-Hop, Rap Artists

Thank You!

Email: myrnaa.grace@gmail.com
GitHub: @myrnagrace