



# demo



Choose your Genrify tool:

Recommendation Classifier



The text inputs in the Genrify form require that you paste in track, artist, and playlist **URI's**. In your Spotify app, simply right click on the item you wish to copy and go to the 'Share' option. Hold down the 'Option' key on Mac or the 'Alt' key on Windows, and you will see the 'Copy Spotify URI' option appear! For a quick video, scroll to the bottom of this [article](#).

Genrify was built by me, David Wismer.  
Find me on [LinkedIn](#).

Visit my [Github](#) to see how the app was built. You'll also find notebooks detailing data collection, EDA, and the modeling process.



# Genrify

## Spotify Recommendations Genrifier

Provide up to 5 seeds (ex: 2 genres, 2 artists, 1 track)

Genres

Choose an option

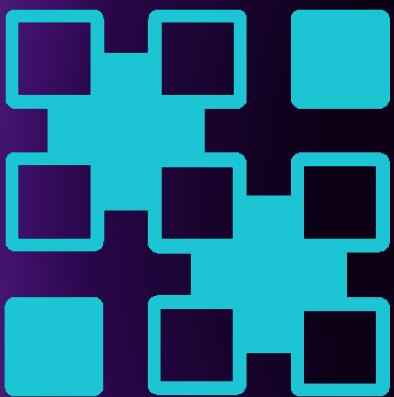
Artist URI's - Separate with commas

Track URI's - Separate with commas

Genrify!

# Future Work

- ❖ Expand Genrify to different music genres with several subgenres
  - ❖ Hip-Hop, R&B, Country, Jazz, Classical, etc.
- ❖ Work with a web developer to launch a global application
- ❖ Make use of lyrics, song and album names, and album art in the classification model

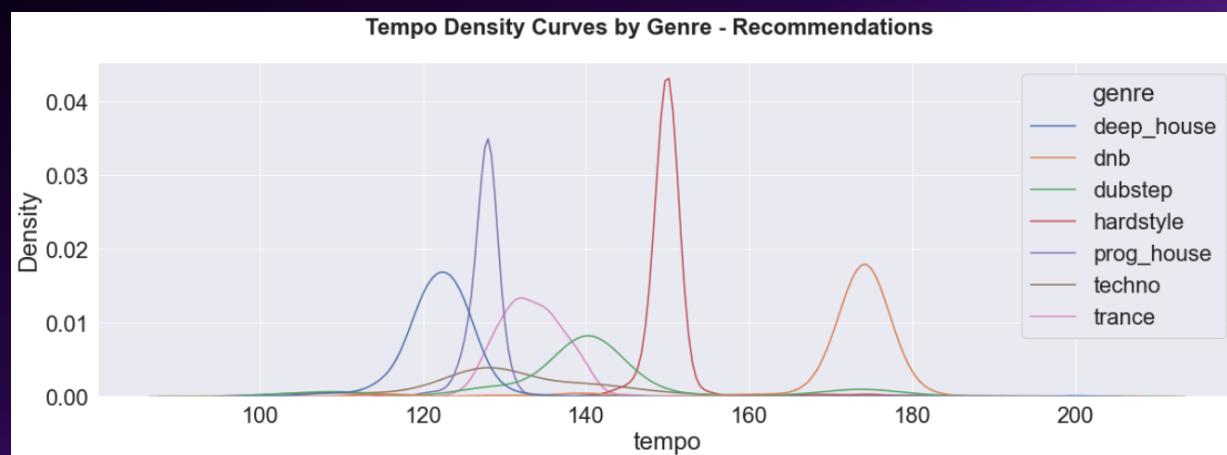
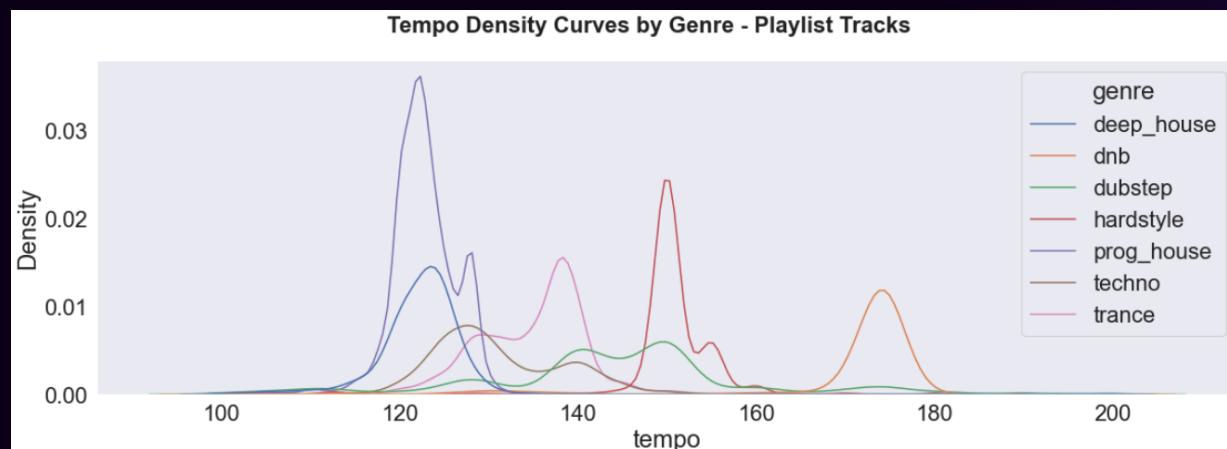


# Genrify

*Find your groove*

# Appendices

# Recommendations vs. Playlists



# Cross Validation - Baseline Models

Model	Train Score	Validation Score	Generalization Error
Logistic Regression	0.633637	0.640988	-0.007351
Gaussian Naive Bayes	0.548454	0.540407	0.008047
Multinomial Naive Bayes	0.327648	0.331395	-0.003747
Complement Naive Bayes	0.271926	0.268605	0.003321
Categorical Naive Bayes	0.779145	0.617006	0.162139
K Nearest Neighbors	0.735343	0.625145	0.110197
Decision Tree	0.998256	0.654070	0.344186
Random Forest	0.998256	0.756395	0.241860
Support Vector Classifier	0.760830	0.726163	0.034667
Nu-Support Vector Classifier	0.687421	0.685901	0.001520
Linear Support Vector Classifier	0.590997	0.600000	-0.009003
XGBoost Classifier	0.958572	0.763808	0.194763
XGBoost Random Forest Classifier	0.759182	0.728779	0.030403

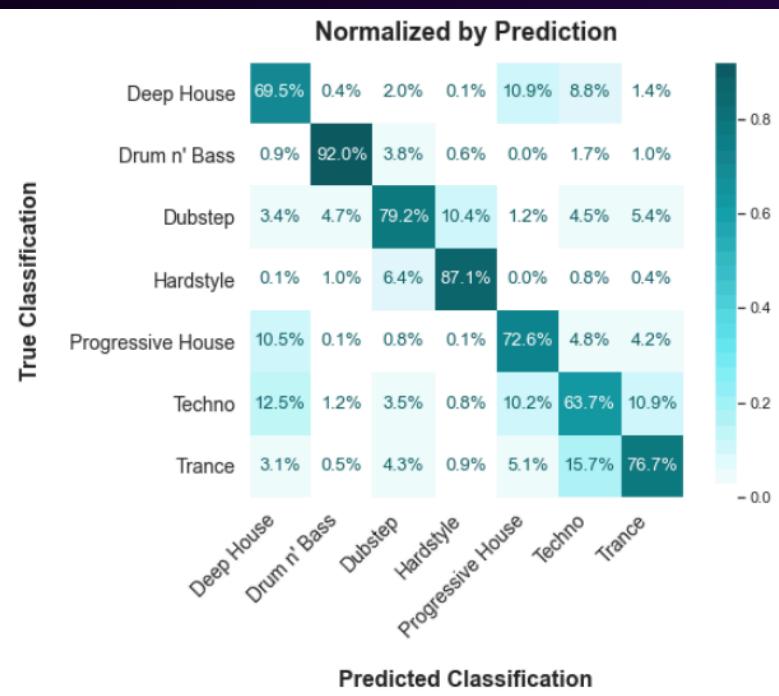
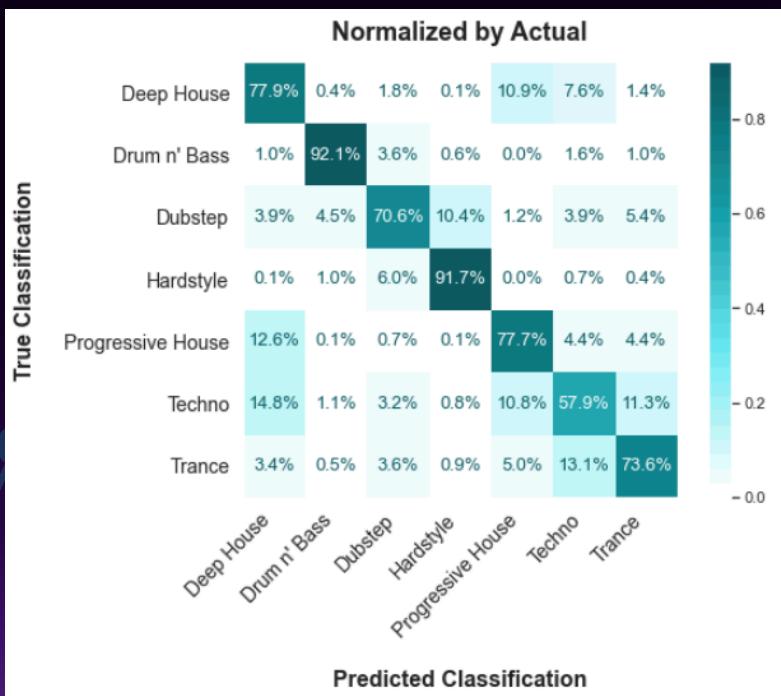
# Feature Importance - Final Model

Feature	Importance
Tempo	0.347
Danceability	0.101
Loudness	0.093
Duration (ms)	0.092
Instrumentalness	0.074
Energy	0.067
Speechiness	0.060
Valence	0.060
Acousticness	0.053
Liveness	0.045
Mode	0.008

# XGBoost Model Evaluation

 Training Score: **99.6%**

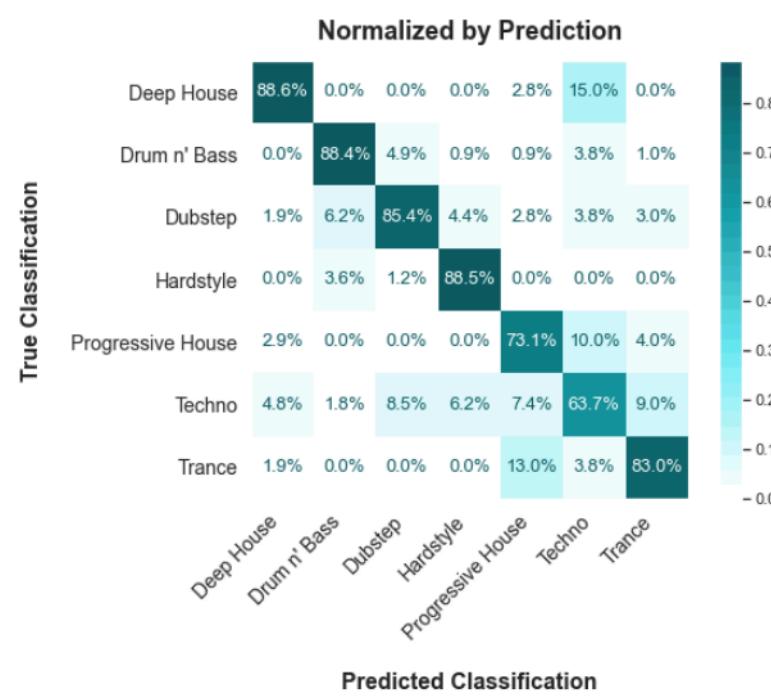
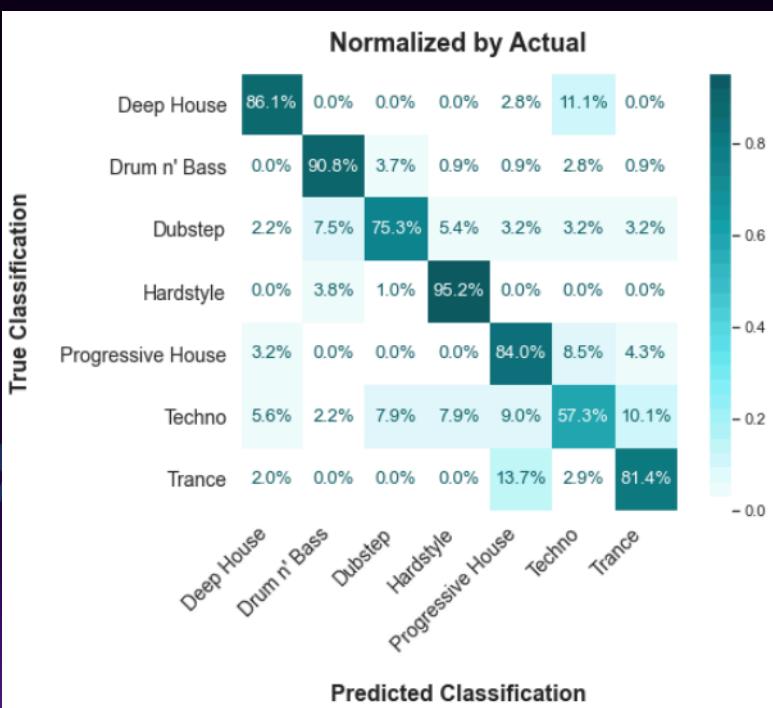
# Testing Score: **77.2%**



# RF Trained on Recommendations

■ Training Score: **100%**

■ Testing Score: **82.1%**



# Audio Features Defined (1)

- **Duration (ms)** - The duration of the track in milliseconds.
- **Acousticness** - A confidence measure from 0.0 to 1.0 of whether the track is acoustic. 1.0 represents high confidence the track is acoustic.
- **Danceability** - Danceability describes how suitable a track is for dancing based on a combination of musical elements including tempo, rhythm stability, beat strength, and overall regularity.
- **Energy** - Energy is a measure from 0.0 to 1.0 and represents a perceptual measure of intensity and activity. Typically, energetic tracks feel fast, loud, and noisy. Perceptual features contributing to this attribute include dynamic range, perceived loudness, timbre, onset rate, and general entropy.
- **Instrumentalness** - Predicts whether a track contains no vocals. "Ooh" and "aah" sounds are treated as instrumental in this context. Values above 0.5 are intended to represent instrumental tracks, but confidence is higher as the value approaches 1.0.
- **Key** - The key the track is in. Integers map to pitches using standard Pitch Class notation.
- **Liveness** - Detects the presence of an audience in the recording. Higher liveness values represent an increased probability that the track was performed live.
- **Loudness** - The overall loudness of a track in decibels (dB).

## Audio Features Defined (2)

- **Mode** - Mode indicates the modality (major or minor) of a track, the type of scale from which its melodic content is derived. Major is represented by 1 and minor is 0.
- **Speechiness** - Speechiness detects the presence of spoken words in a track. The more exclusively speech-like the recording (e.g. talk show, audio book, poetry), the closer to 1.0 the attribute value. Values above 0.66 describe tracks that are probably made entirely of spoken words.
- **Tempo** - The overall estimated tempo of a track in beats per minute (BPM). In musical terminology, tempo is the speed or pace of a given piece and derives directly from the average beat duration.
- **Time Signature** - An estimated overall time signature of a track. The time signature (meter) is a notational convention to specify how many beats are in each bar (or measure).
- **Valence** - A measure from 0.0 to 1.0 describing the musical positiveness conveyed by a track. Tracks with high valence sound more positive (e.g. happy, cheerful, euphoric), while tracks with low valence sound more negative (e.g. sad, depressed, angry).