



# LITNESS TEST



Evaluating Rap/Hip-Hop influences in  
mainstream music



# Automating the detection of Rap/Hip-Hop music

## Scenario:

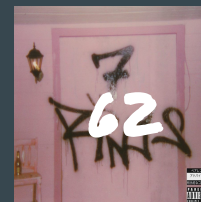
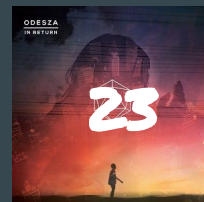
- Rap/Hip-Hop is perhaps the most dynamic and influential music genre – it challenges social norms, pushes creativity in music production, and revitalize music across all genres and time periods through sampling
- A record label wants to expand its management of Rap/Hip-Hop-inspired artists
- Because they receive hundreds of music submissions every day, the label hired us to develop an automated way of detecting and prioritizing songs with Rap/Hip-Hop influences

**Solution:** create model that evaluates songs and assigns a score of 0 to 100 - the higher the score, the more likely the song has rap/hip-hop influences

Song submissions



Litness Score: 0 to 100 real quick



# Model trained with data from Billboard and Spotify



- List of songs and labels
- Label based on Billboard chart:
  - Hot 100 (other)
  - Rap Songs (Rap/Hip-Hop)
- Granularity:
  - Bi-monthly
  - 2000 to 2020



- Query song attributes from Billboard charts
- Song attributes: danceability, energy, loudness, acousticness, speechiness, instrumentalness, liveness, valence, tempo, duration

# Random Forest Classifier was most effective at distinguishing between song genres

## MODEL FRAMEWORK

Song attributes  
(e.g., danceability,  
speechiness))



**LITNESS MODEL**



Probability that  
song is from Rap  
Song chart

## ASSUMPTIONS

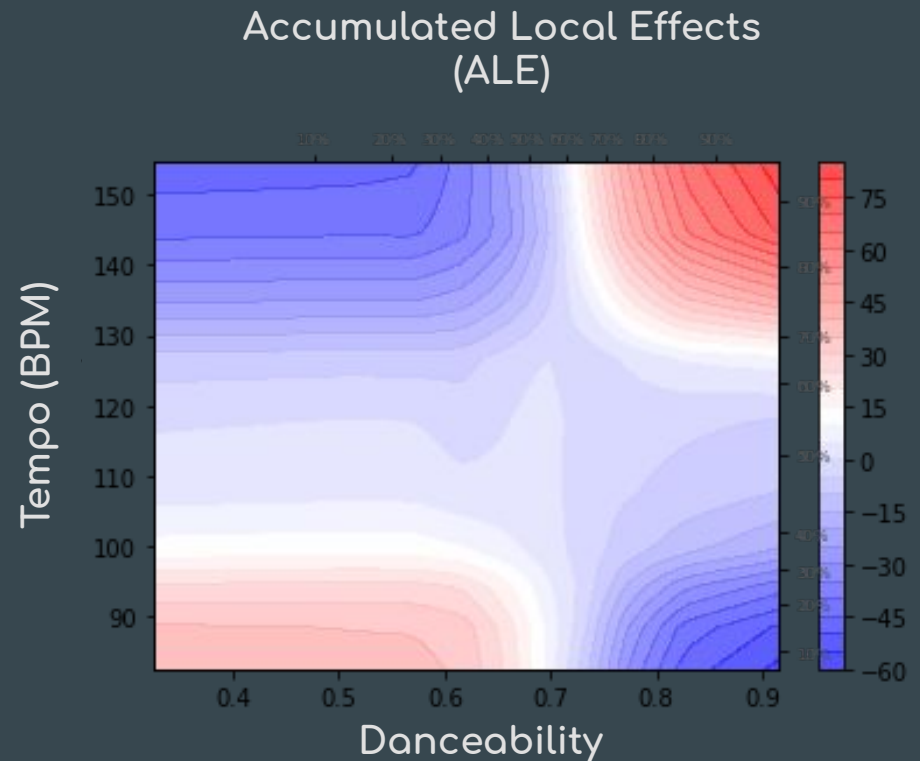
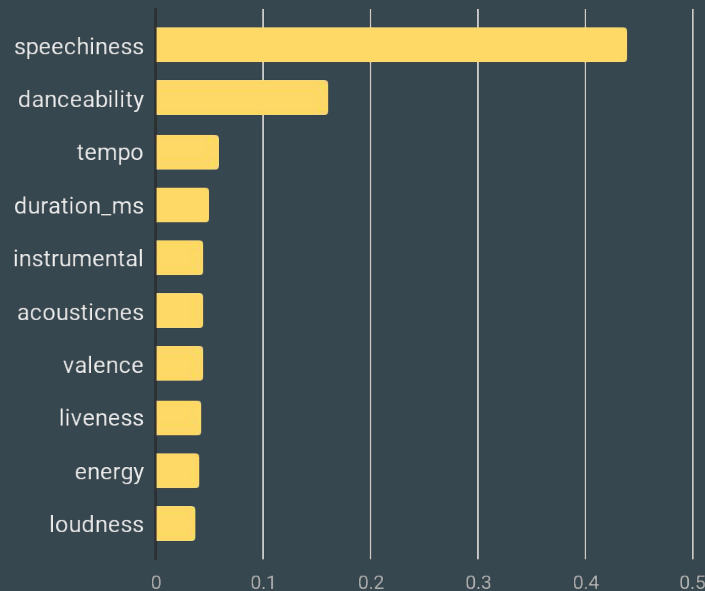
- Songs that have appeared in Billboard's Rap Song chart for the past 20 years represents the landscape of Rap/Hip-Hop music
- Spotify has song attributes for future predictions

## MODEL METRIC

- The probability generated from the model is used for prioritization
- Thus, ROC-AUC was used, as it is a classification threshold-agnostic metric
- Best testing ROC-AUC: 0.91

While it is expected that speechiness is most influential, there is a meaningful interaction between tempo and danceability

Gini importance



**While Rap/Hip-Hop tend to have high danceability scores, songs between 100 - 130 BPM are more likely electronic/dance music (EDM), which is also highly danceable**

# Thank you

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