Identifying Record Producers from Audio Data

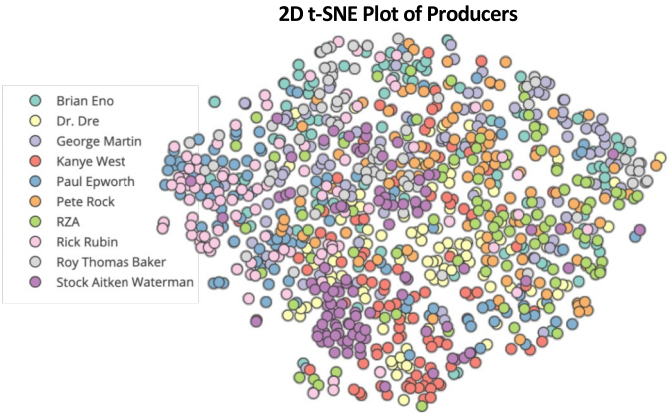
Background

A record producer controls the creation of a music album. Each music producer leaves a sonic fingerprint on every album they produce. Production Value seeks to identify and quantify that signature. This model could be used for:

- **Music discovery:** aiding Spotify and Pandora users in finding music they like.
- **Music publishing:** helping record labels identify and distribute royalties to song collaborators.

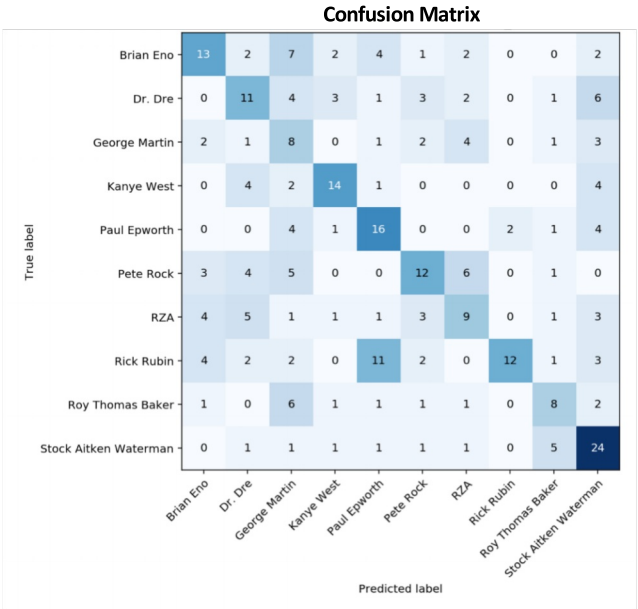
Approach

- 1000 songs from 10 producers (100 songs each) were chosen.
- 30-second snippets of audio from Spotify's API were processed and transformed into Mel – a Cepstral Frequency Coefficients (MFCCs) featurization that roughly translates to timbre.
- Principal Component Analysis (PCA) reduced dimensionality (24k features → 12).
- K-Nearest Neighbors (KNN) classification was used to classify the record producers.



Results and Analysis

- KNN model multiclass accuracy (10 balanced classes) was 44% compared to a baseline of 10%.
- Producers and songs cluster in MFCC-space. Some producers have characteristic sound (e.g. Stock Aitken Waterman), others are diverse (e.g. George Martin).
- Future improvements:
  - Deconvolution of variables (e.g. Artist, Album, Genre) via nuanced feature engineering.
  - Neural Network Model with Increased Scale (>100k songs)



Tech Stack: python, mongoDB, NumPy, matplotlib, Pandas, Spotify, librosa, plotly, scikit-learn