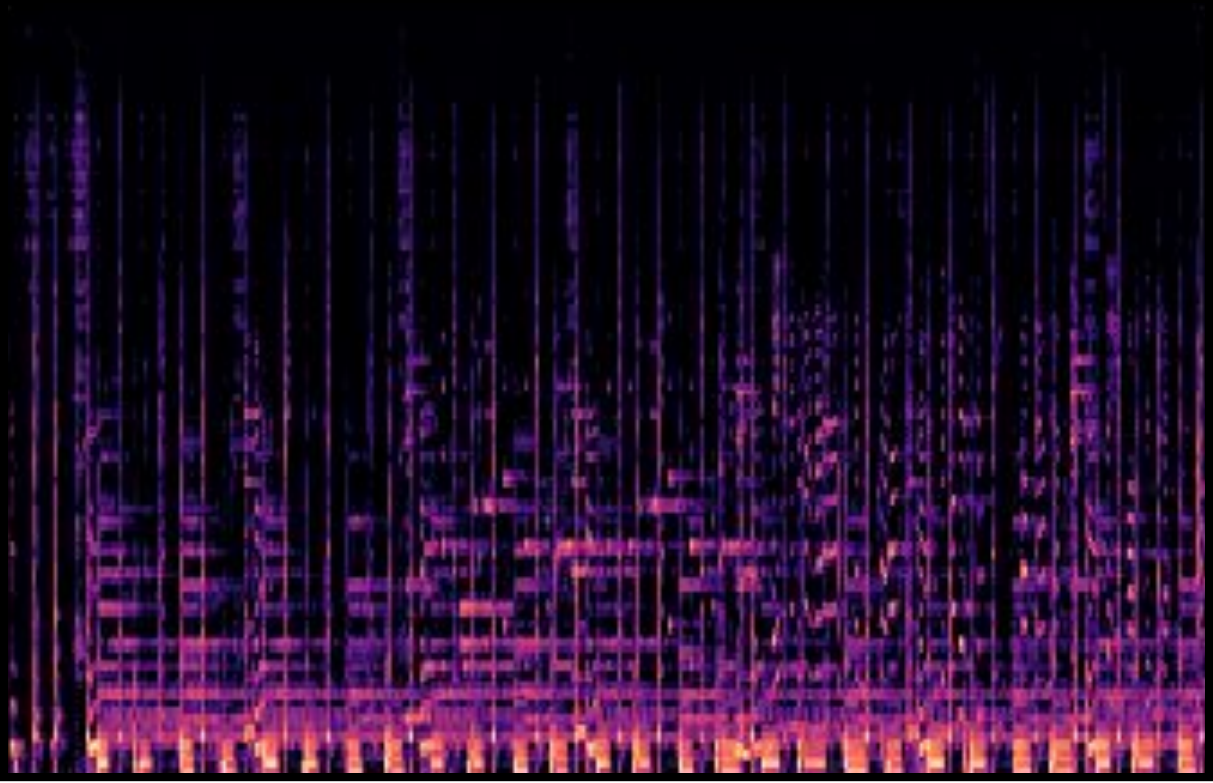
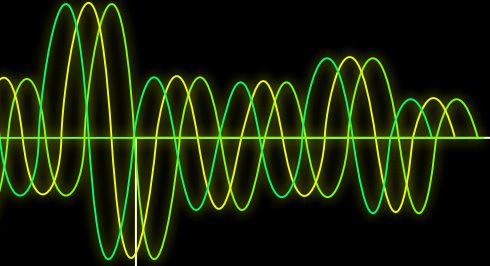
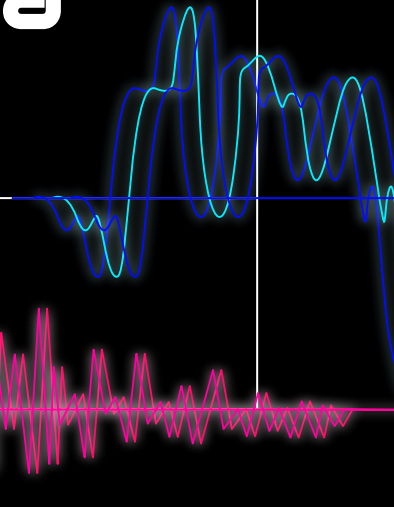
What Music Genre is shown below?



Music Genre Classification From extracted audio data

Aidan O'Keefe





AGENDA

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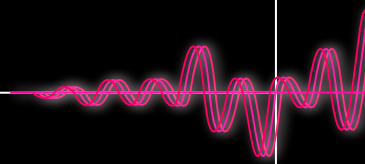
Business Understanding

A DJ has a disorganized collection of audio tracks from recording samples over the years.

The DJ wants to be able to sort each of these samples into the appropriate genres to make them easy to catalog and search through.

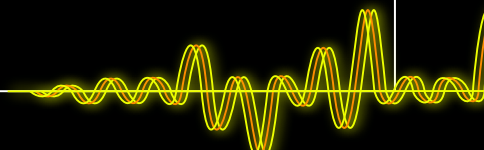
Since the DJ has no information on the samples but their audio files, we have been enlisted to create a classification model that can sort the audio tracks into genres.

Data Understanding

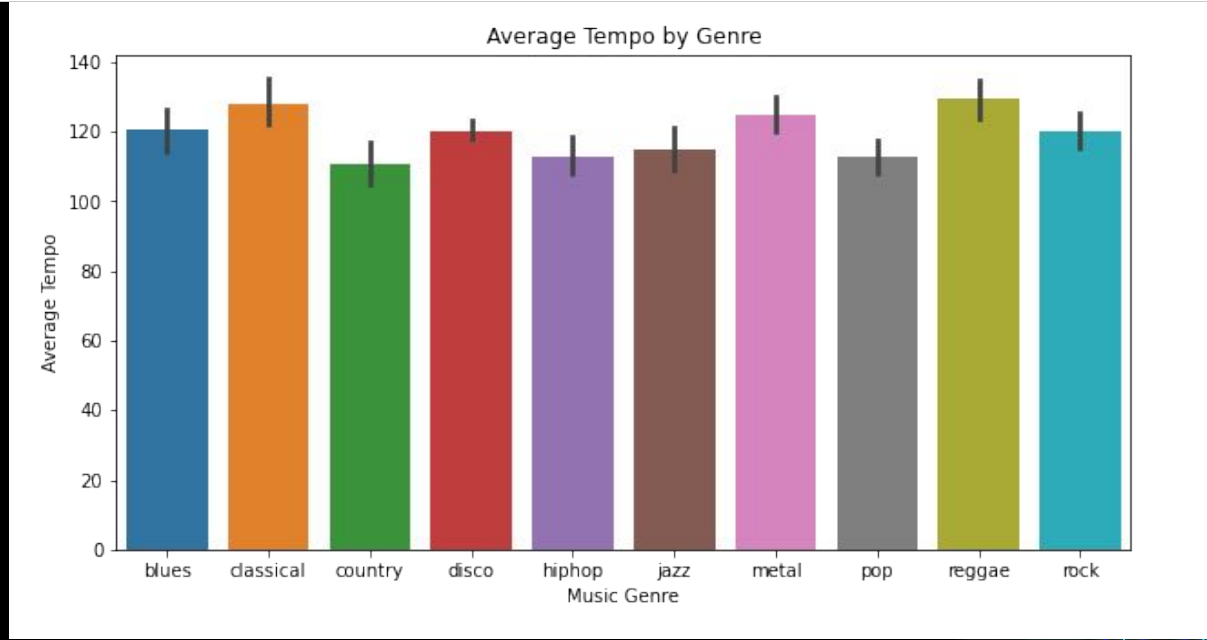


“GTZAN Dataset - Music Genre Classification" from Kaggle

- 1000 .wav audio tracks of a 30-second duration evenly divided into 10 genres.
- Data extracted using the Librosa python package already available.
- Each row represents an audio track with 60 columns mostly containing a mean and variance computed over multiple features.

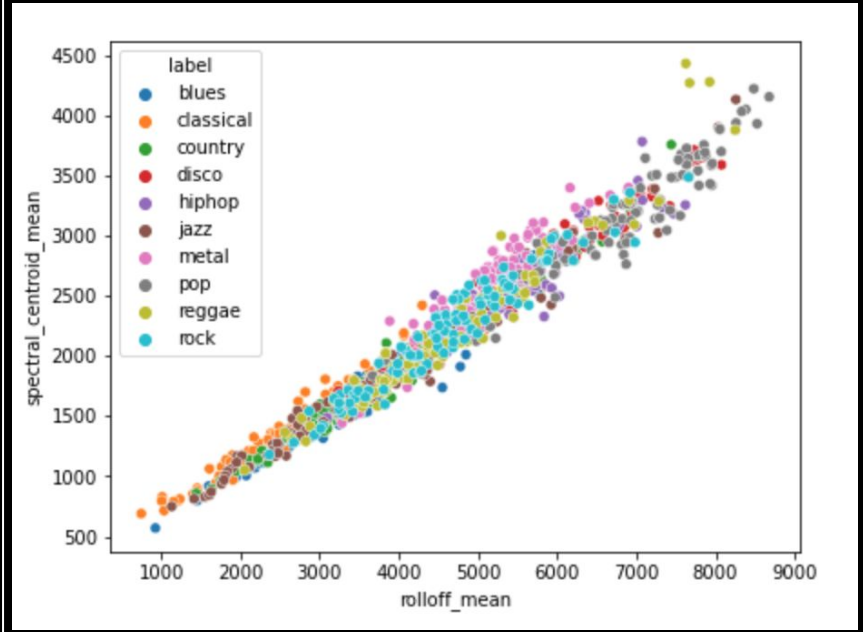


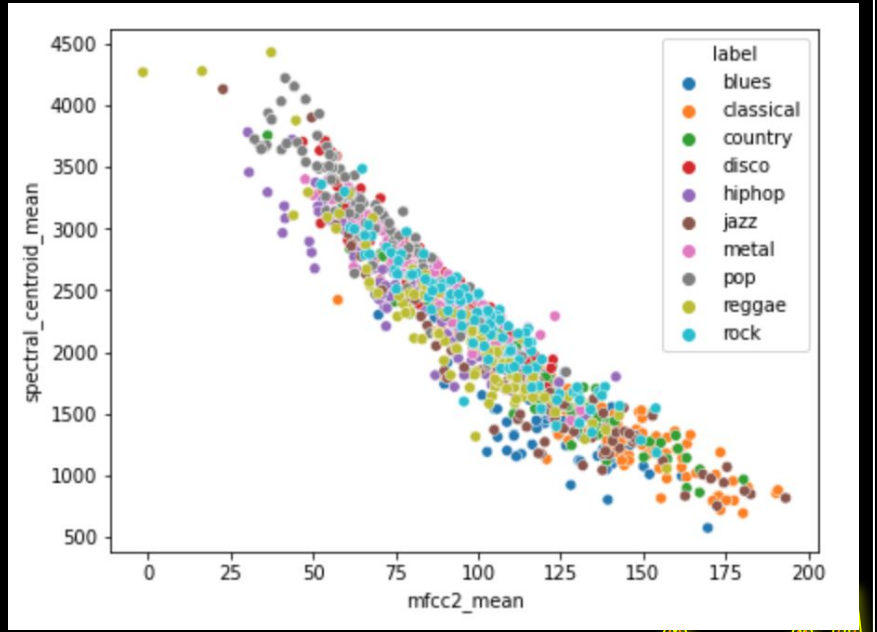
Data Understanding



Data Understanding

Predictive Features with some of the strongest correlations.





Methods

Data Preparation

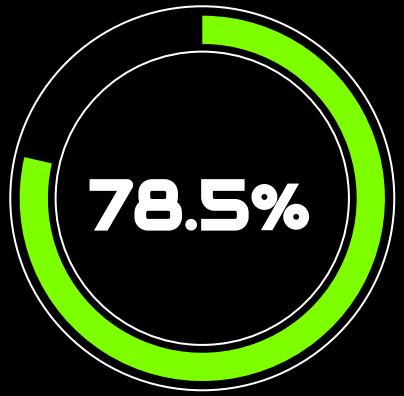
- Removed predictive variables with high collinearity
- Scaled data to deal with skewed variables

Modeling

- Implemented and tuned a combination of machine learning models

Results

Accuracy Scores on unseen data

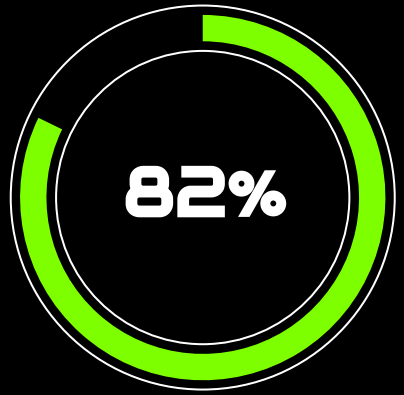


3rd Best Model

Untuned Stacked LR, XGB, QDA, Untuned LR

2nd Best Model

Tuned Stacked LR, RF, KNN, Untuned LR



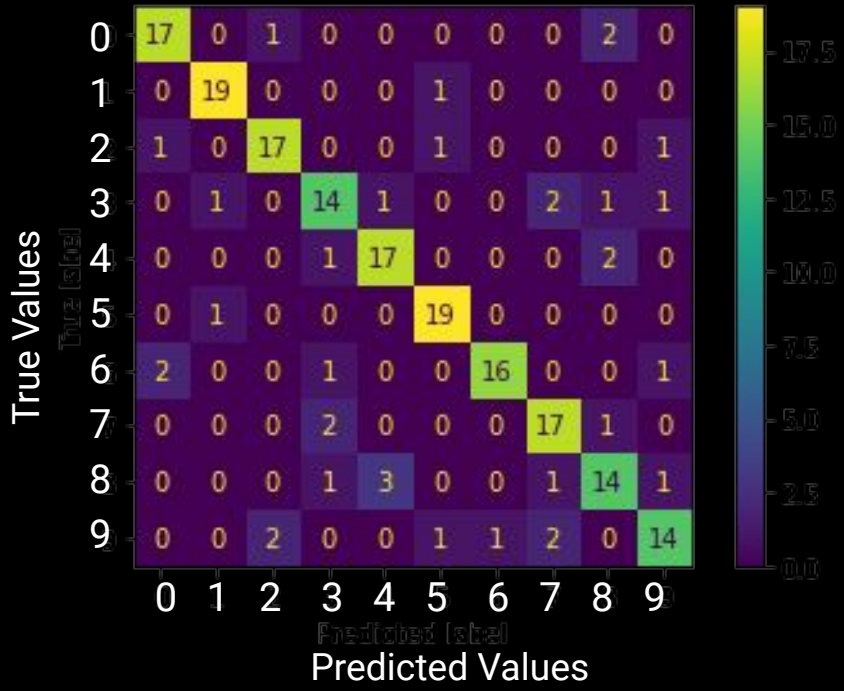
Best Model

Tuned Stacked LR, RF, KNN, XBG, QDA, Untuned LR

Results: Final Model

82% Test Accuracy

Tuned Stacked LR, RF, KNN, XBG, QDA, Untuned LR



0: Blues
1: Classical
2: Country
3: Disco
4: Hip hop
5: Jazz
6: Metal
7: Pop
8: Reggae
9: Rock

Recommendations

Work on trouble Genres

Struggled with three genres (Disco, Reggae, and Rock), classifying them correctly only 70% of the time compared to 80%+ accuracy for the other seven genres.

Get More Data

Using more data could help prevent recurrent overfitting issues and lead to better model performance.

Next Steps

Add Genres

Adding additional genres would be beneficial to the usefulness and specificity of this model on unseen audio files.

Extract Feature Importances

Try to better select which columns/features to extract from the audio files in order to reduce complexity and collinearity.

Thank you

Questions?

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