

Music genre analysis and prediction using audio features

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Can machines listen to the music?



Project Outline

- Getting the Data with Spotify API
- Data Cleaning and Wrangling
- Visual Data Analysis
- Developing Machine Learning Model to predict the genre of given artist

Audio Features are
mathematical
measurements
computed directly
from the sound wave



- Danceability
- Energy
- Key
- Loudness
- Mode
- Speechiness
- Instrumentalness
- Liveness
- Valence
- Tempo
- Duration
- Time Signature



Getting the Data with Spotify API

- Finding playlists based on genre
- Scraping all artists from playlists
- Scraping all songs from artists
- Getting audio features

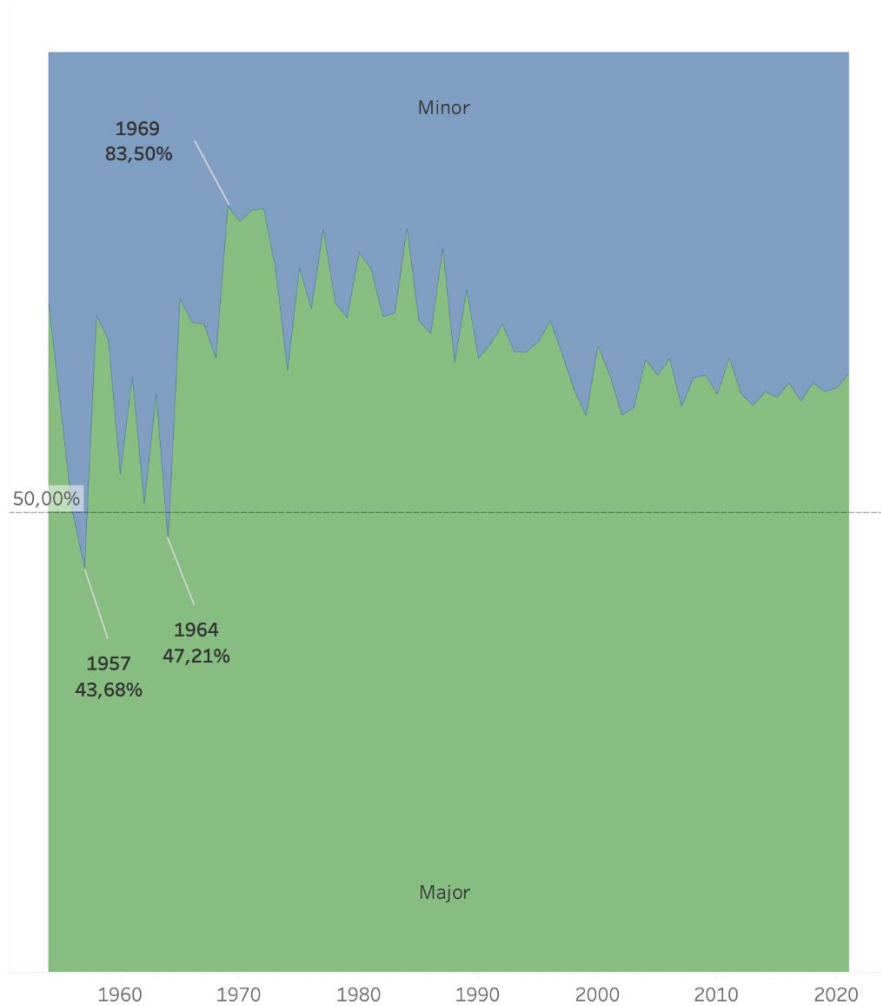
Data Cleaning and Wrangling

- Defining genres
- Adding release years
- Loading all songs in a DataFrame
- Deleting duplicates
- Fixing tempo values range from 60 BPM to 200 BPM

The background is a solid orange color. In the top-left corner, there are three vertical bars of varying heights, each composed of three overlapping circles. In the bottom-right corner, there are four vertical bars of varying heights, each composed of four overlapping circles.

Visual Data Analysis with Tableau

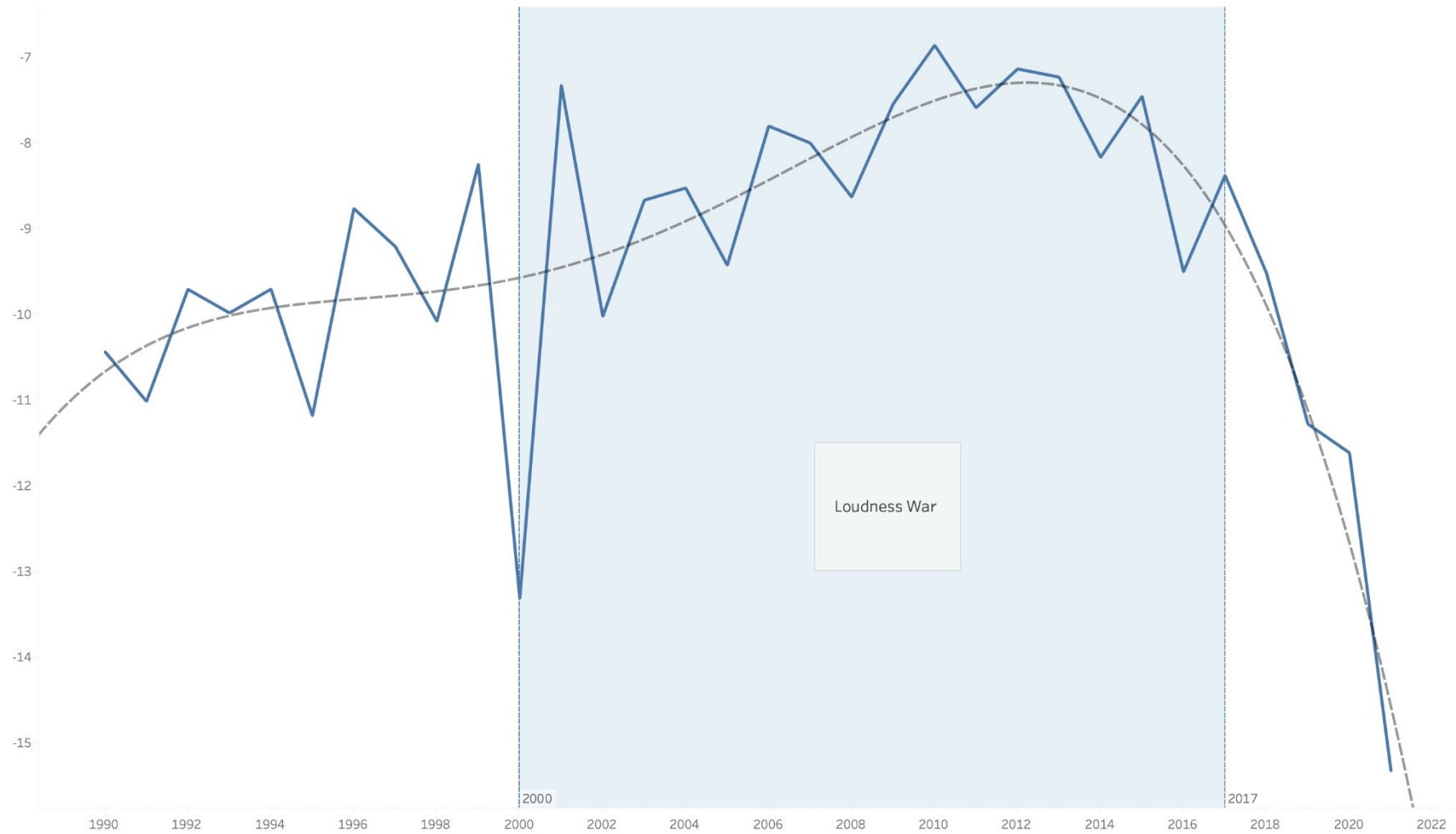
Major and Minor scales timeline



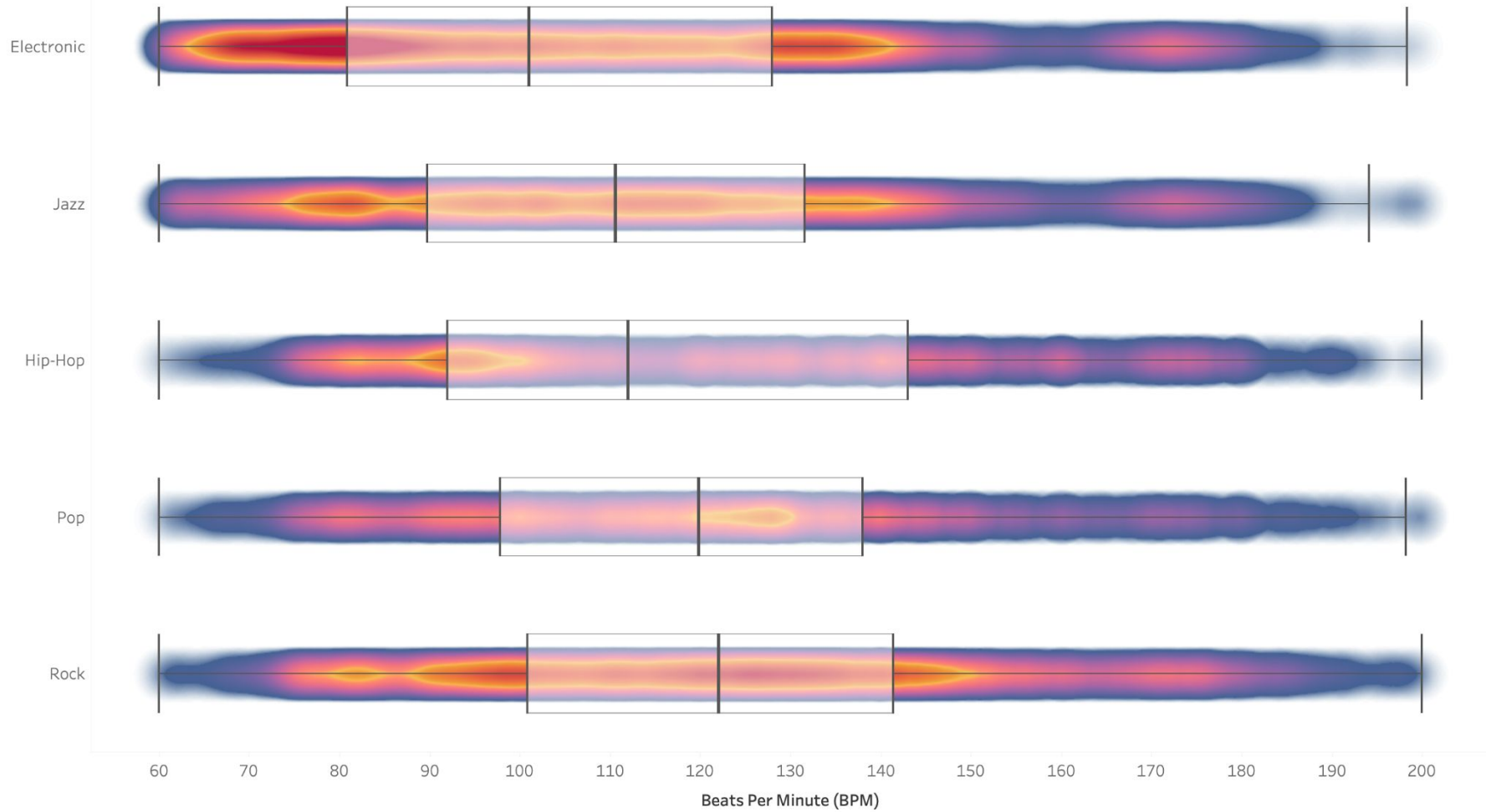
Modes by genre



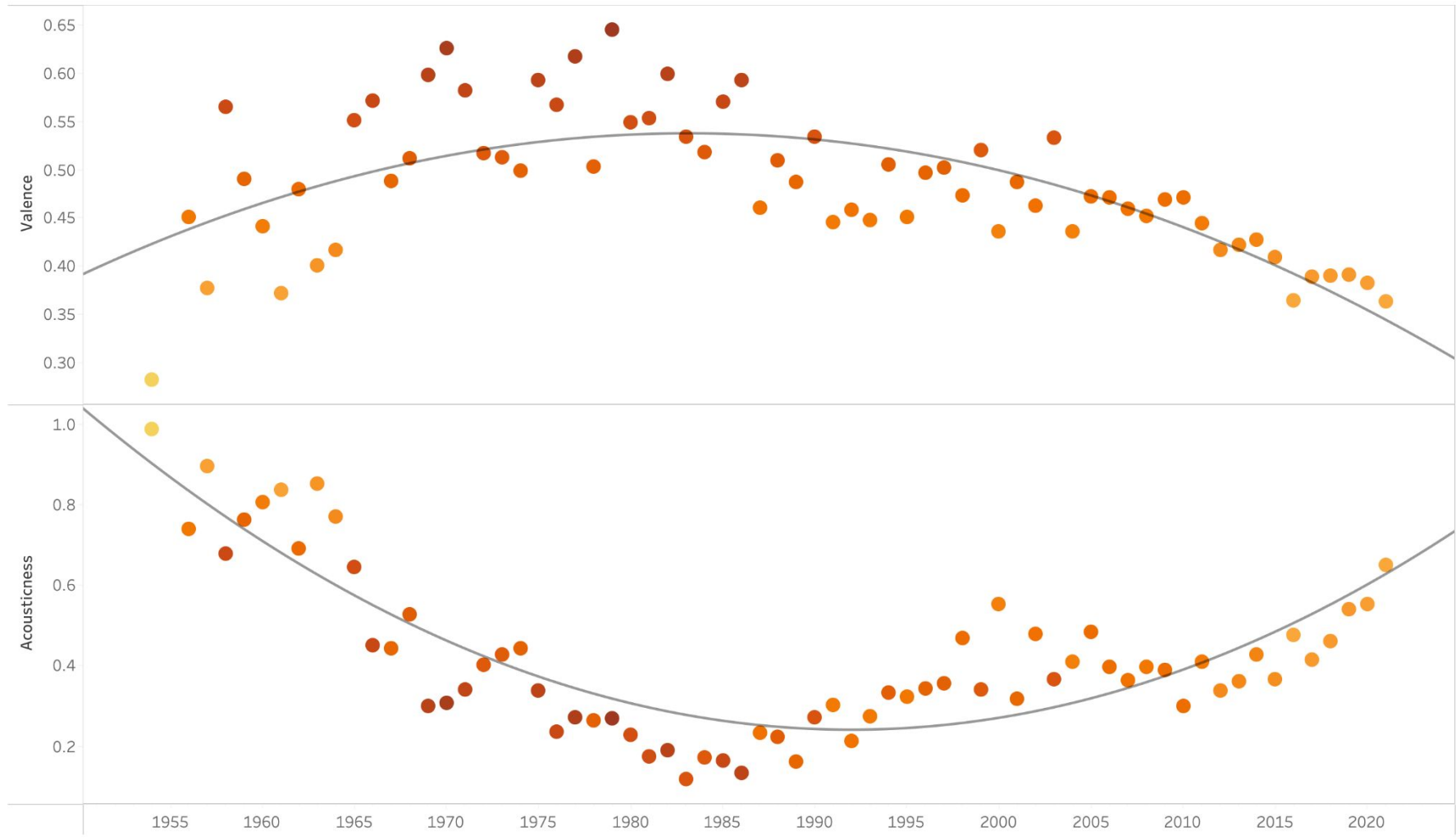
Loudness timeline

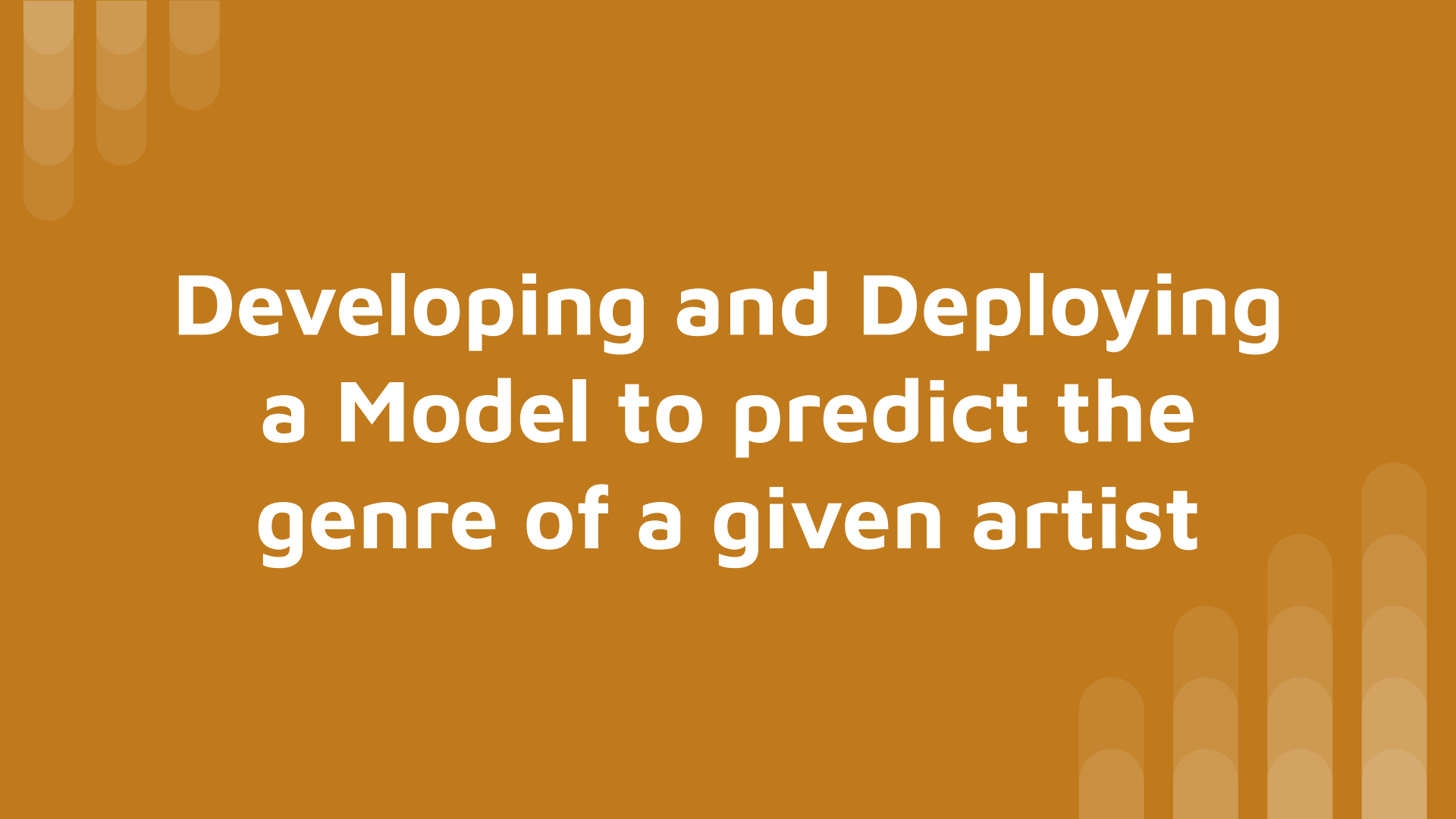


Tempo variance by genre



Valance and Acousticness timeline





Developing and Deploying a Model to predict the genre of a given artist

Machine Learning:

- Defining Random Forest Classifier model
- Training with 70% of Data
- Predicting
- Checking Accuracy Score
- Using Randomized and Grid search to tune parameters of the model
- Re-training with new parameters
- Predicting
- Final Accuracy Score 88%

Classification Report

