CAPSTONE TEAM 4 - Alvin Kuo and Sundar Murugesen

INTRODUCTION

We noticed that collaboration in the music industry is getting trendy from 10%-20% around 3 decades ago to approaching 30%+ of the top charts nowadays. It motivates us to create a "Collab Index/Score" dashboard concept to see how the artist is hot for collab success and how the audio features could be successful based on this collab in our project Part 1. We are going to generate the recommendation for collab success in audio features details and more in Part 2 with LLM leverage. Overall the application would be for the users to apply our collab model and index success with more customized feedback to brainstorm their music collab potential. The dataset to help model training is the Billboard 200 song Spotify audio features and Billboard 100 Chart dataset.
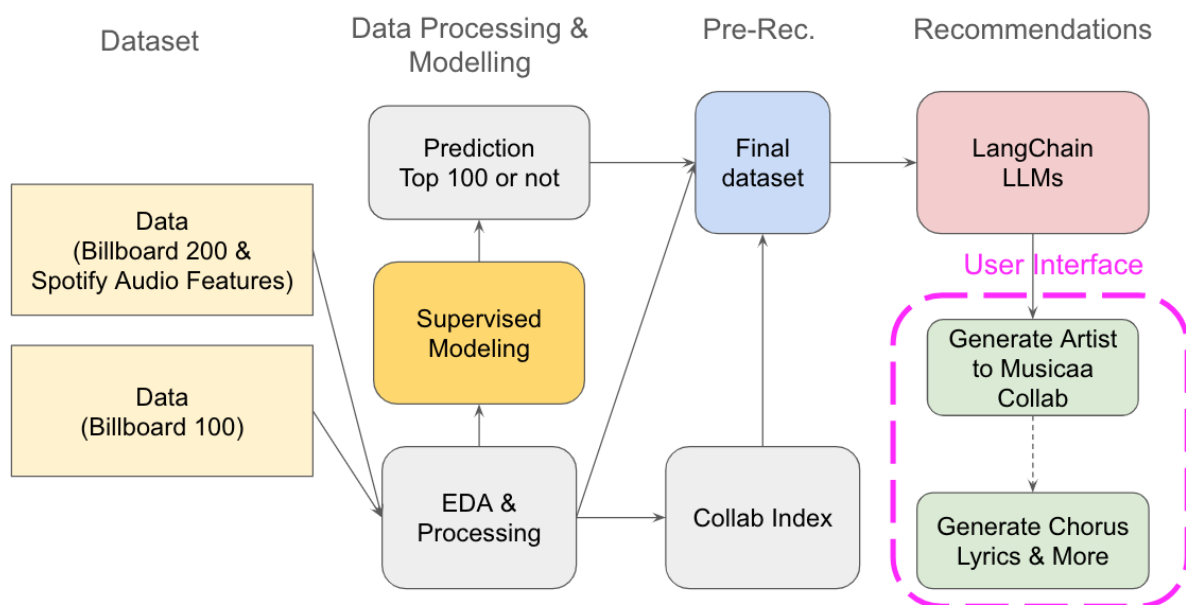
METHODS SELECTION

Part 1 is trained by ensembles among supervised models like neural networks and RF/DT tree-based models to generate the Collab Index in a simple or advanced version.

Part 2 is leveraging LangChain to deal with multiple LLMs in a generation of the recommendation. It could be facilitated by Streamlit for a better application presentation at the end.

RESULTS

Part 1 currently runs well. Our Simple and Advanced Index could tell appealing stories while some polishing under corner conditions. The current prediction treats data leakage prevention carefully (using 2010-2014 to predict 2015), and we still can get 95-98% accuracy by NN to confirm if the song would be listed in BB Hot 100.

Within Part 2 two goals: 1) Recommendation and Question Answering from trained data and .2) Generating chorus lyrics based on artist recommendations. We see the data to recommend collaborative artists to users, leveraging LangChain's retrieval-augmented generation to ensure relevance and accuracy. The second half is under way and it may explore generating tailored lyrics for these artist pairings.

DISCUSSION

Our Analysis could offer a lot of intriguing applications with nuance:

1) Collaboration becomes a great tool for artists to explore their uncharted success. We could show the strategy and logic behind it.

2) We could take the audio features to predict the success of BB100 or not, aiming for industry references.

3) We could inspire any new artists to simulate their success of collaborating with certain styles of the artists for them to approach popularity with better tools.

4) We could offer generative AI's step into the music creation process with nuance and the possibility for further exploration of the whole process to connect the audio features, and title/hook to the success of the collaboration.