أكاديمية سدايا
SDAIA Academy

Predicting Songs Genres

A machine learning model for identifying song genre

Ziyad M. Subyani

Project Goal

To predict genre of a song

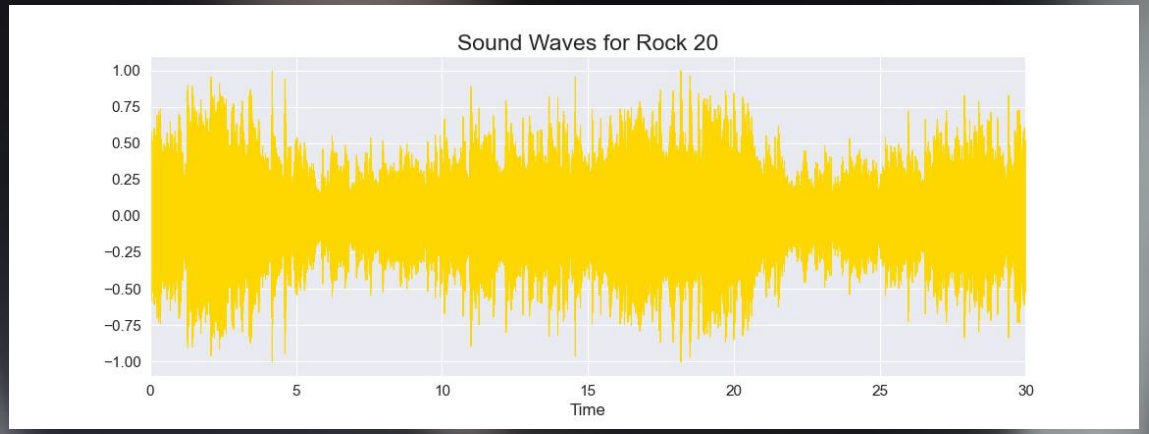
Too many genres

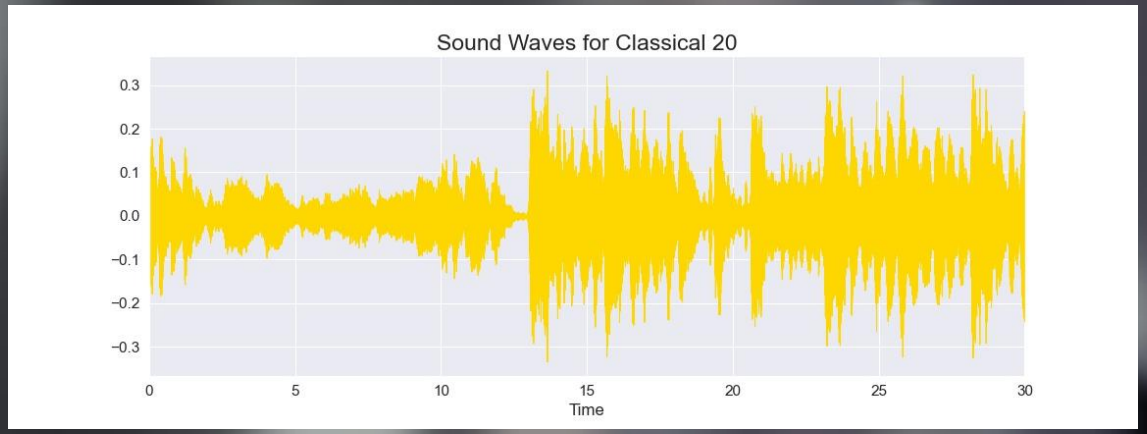
Understanding yourself and personality more

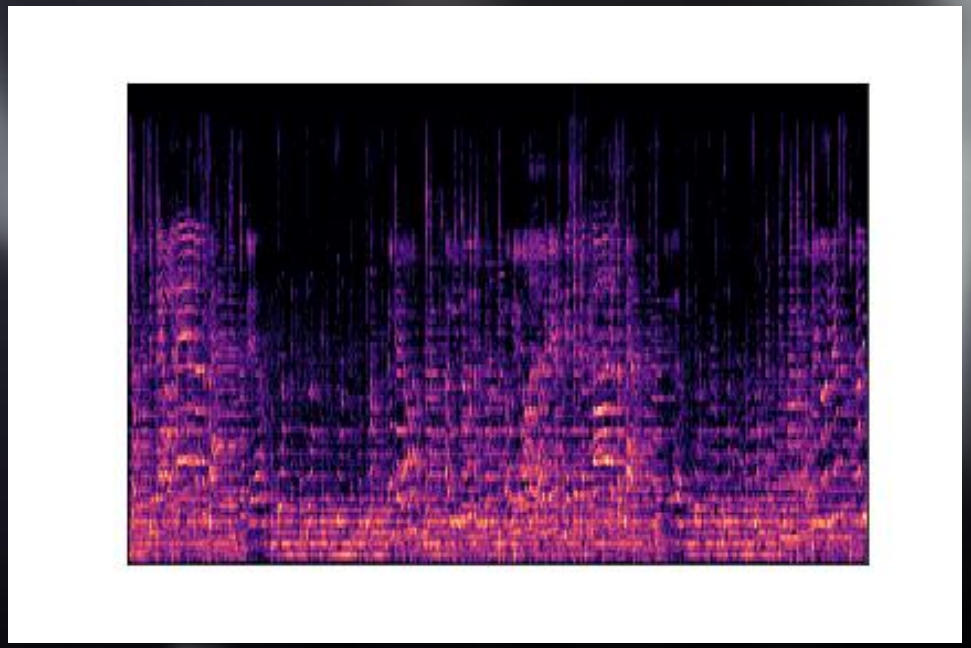
Tools:

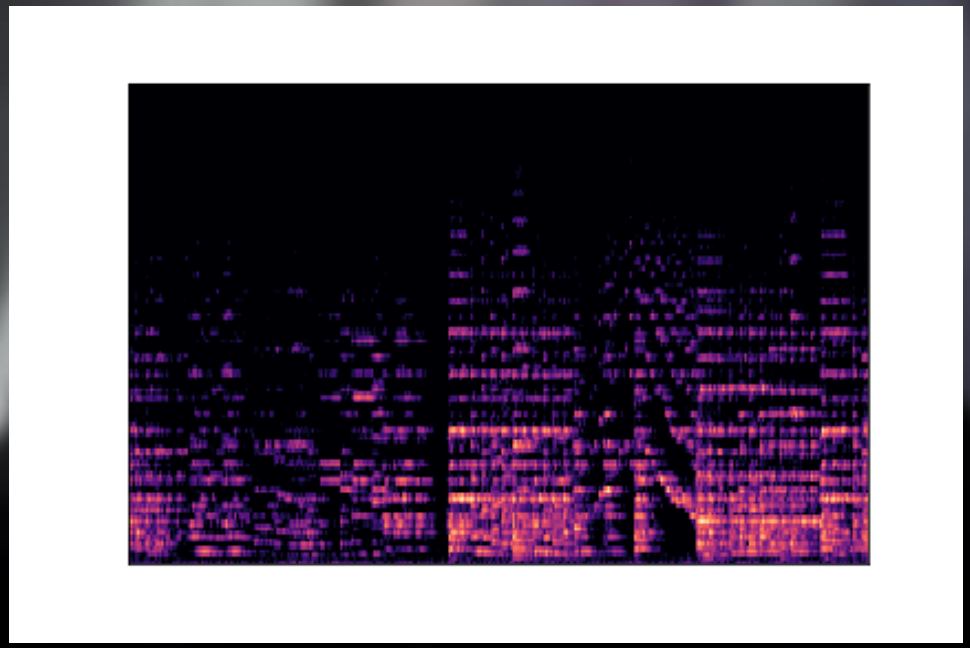
Understanding the Audio Data

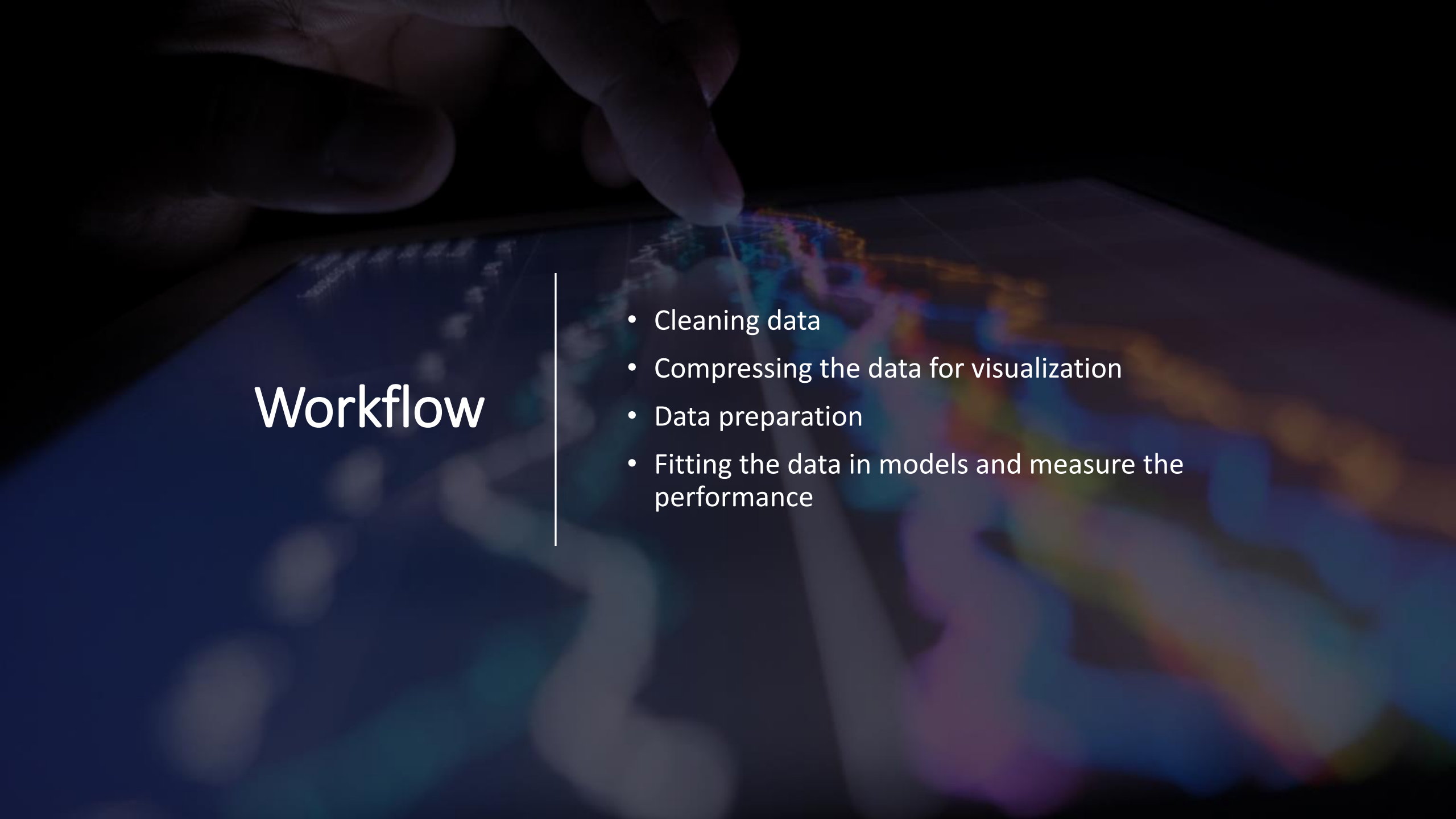
- Librosa: Mother of Audio files
- Songs were translated to Wave forme
- using Librosa we can see what the audio file look like


Sound Waves for Rock 20
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
0
5
10
15
20
25
30
Time


Sound Waves for Classical 20
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
0
5
10
15
20
25
30
Time

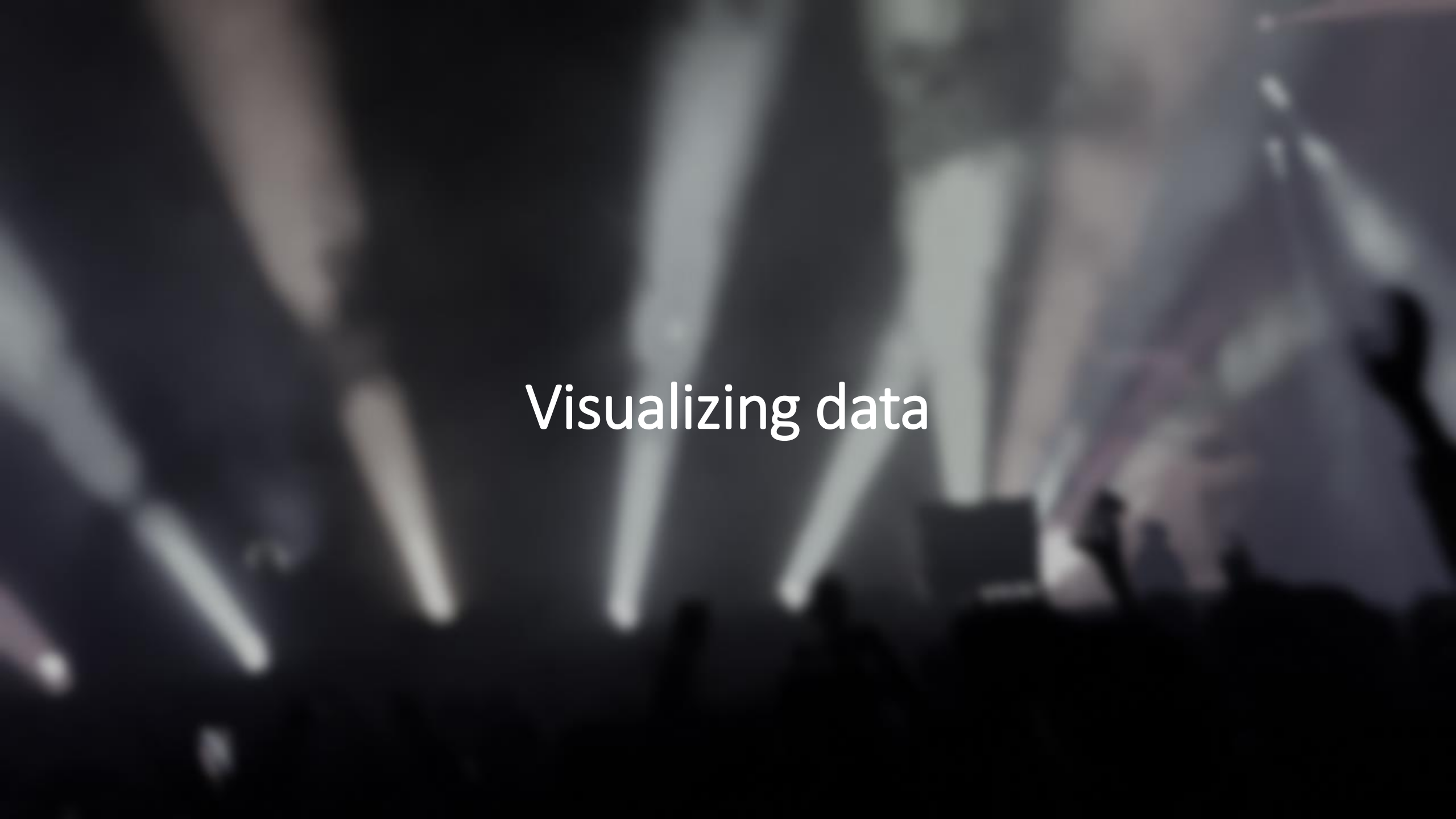




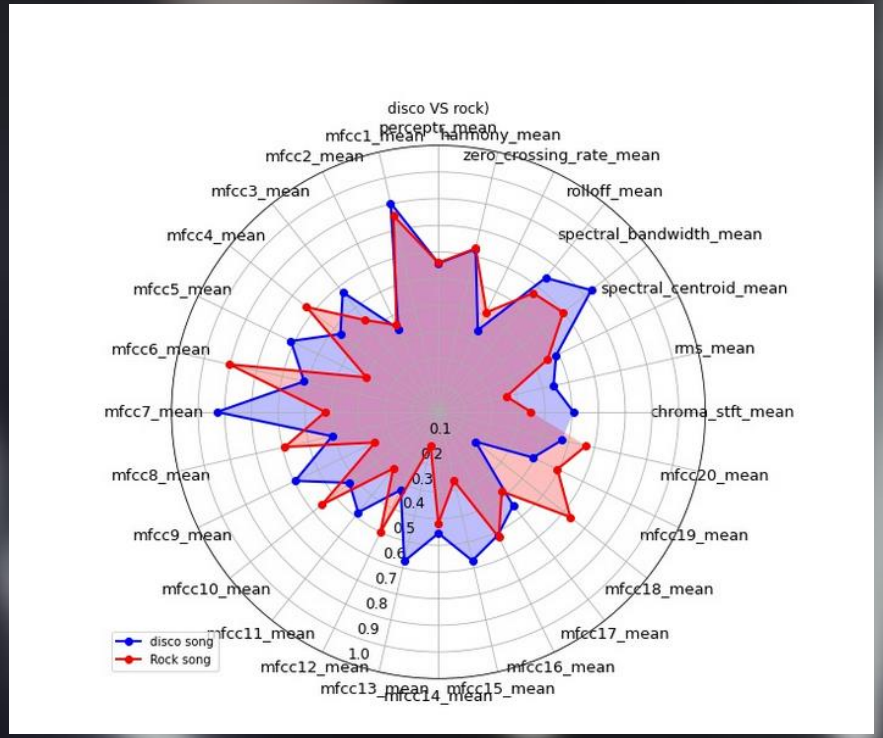


Workflow

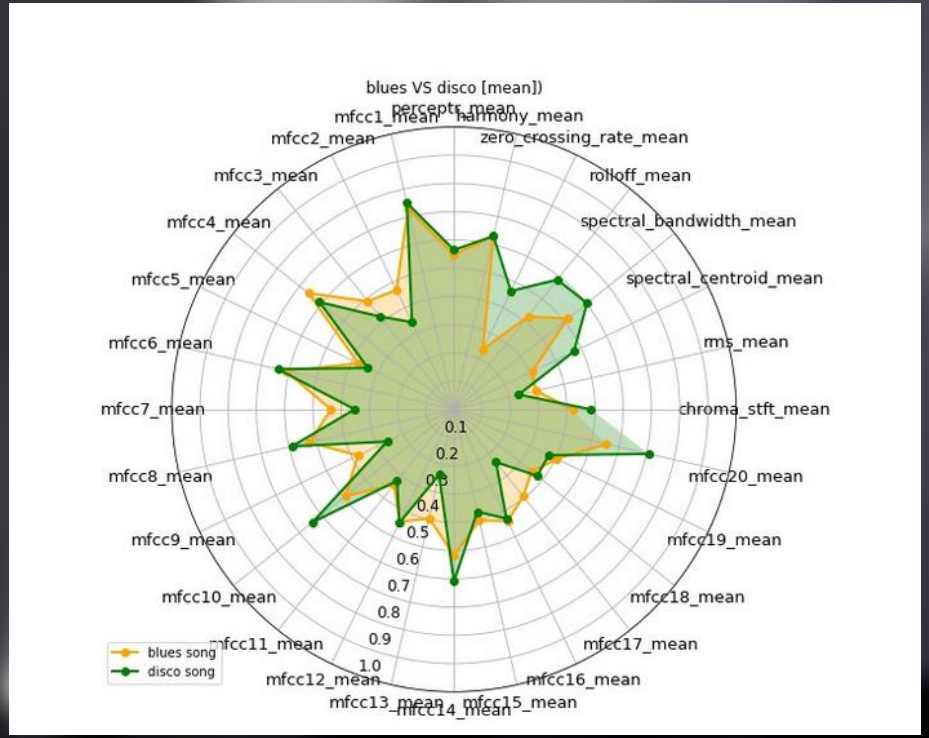
- Cleaning data
- Compressing the data for visualization
- Data preparation
- Fitting the data in models and measure the performance


Visualizing data

Two songs comparison

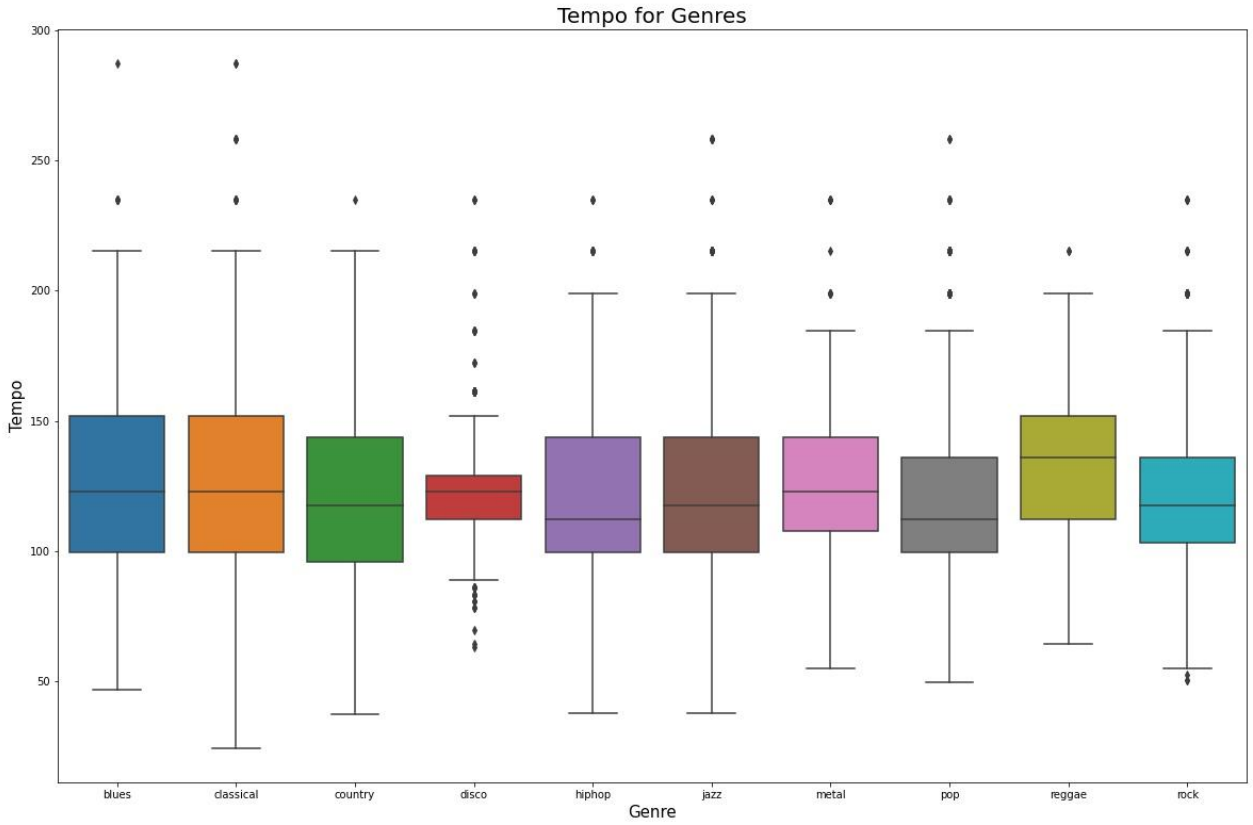


Disco has more rolloff than Rock has

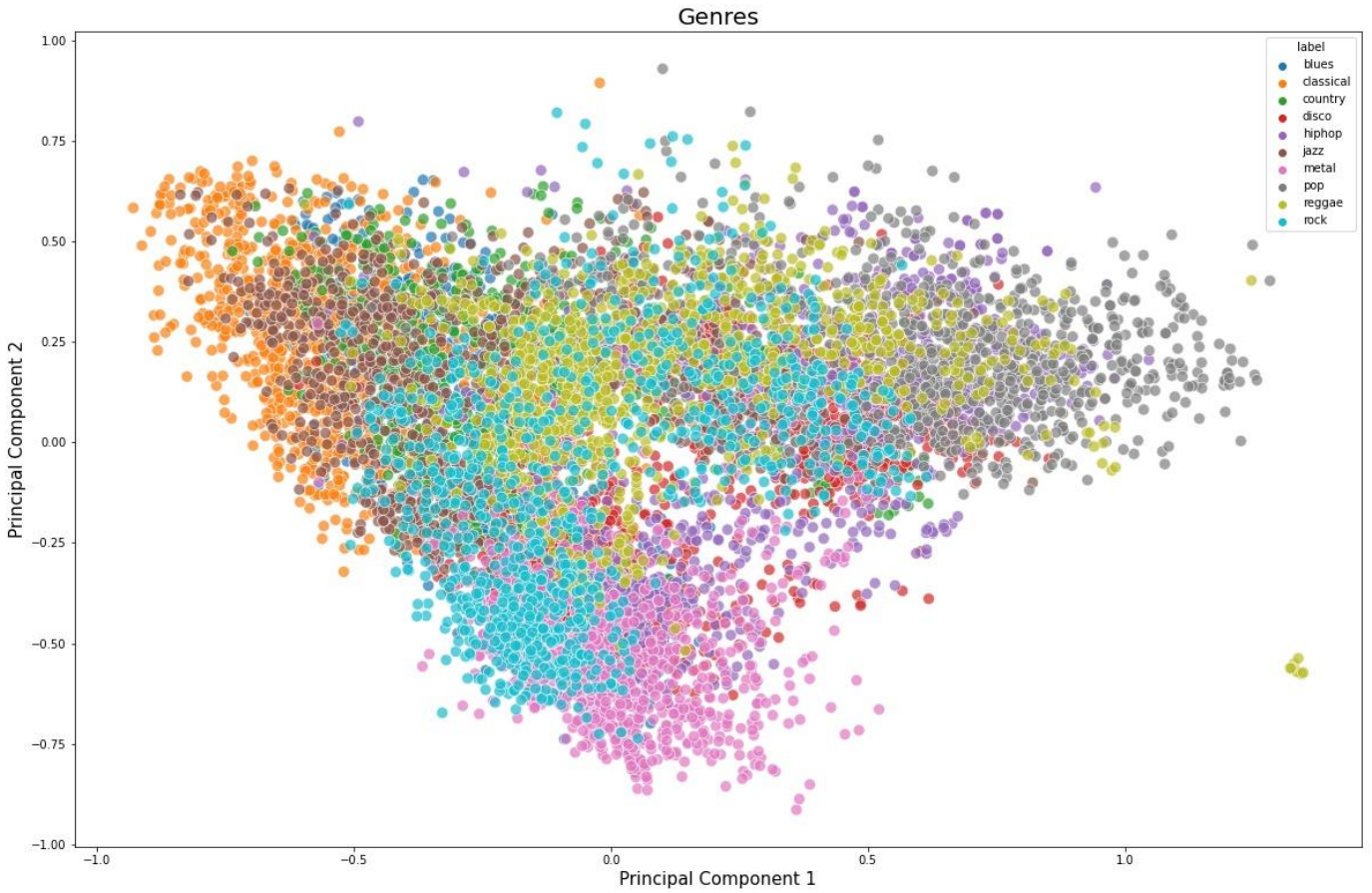


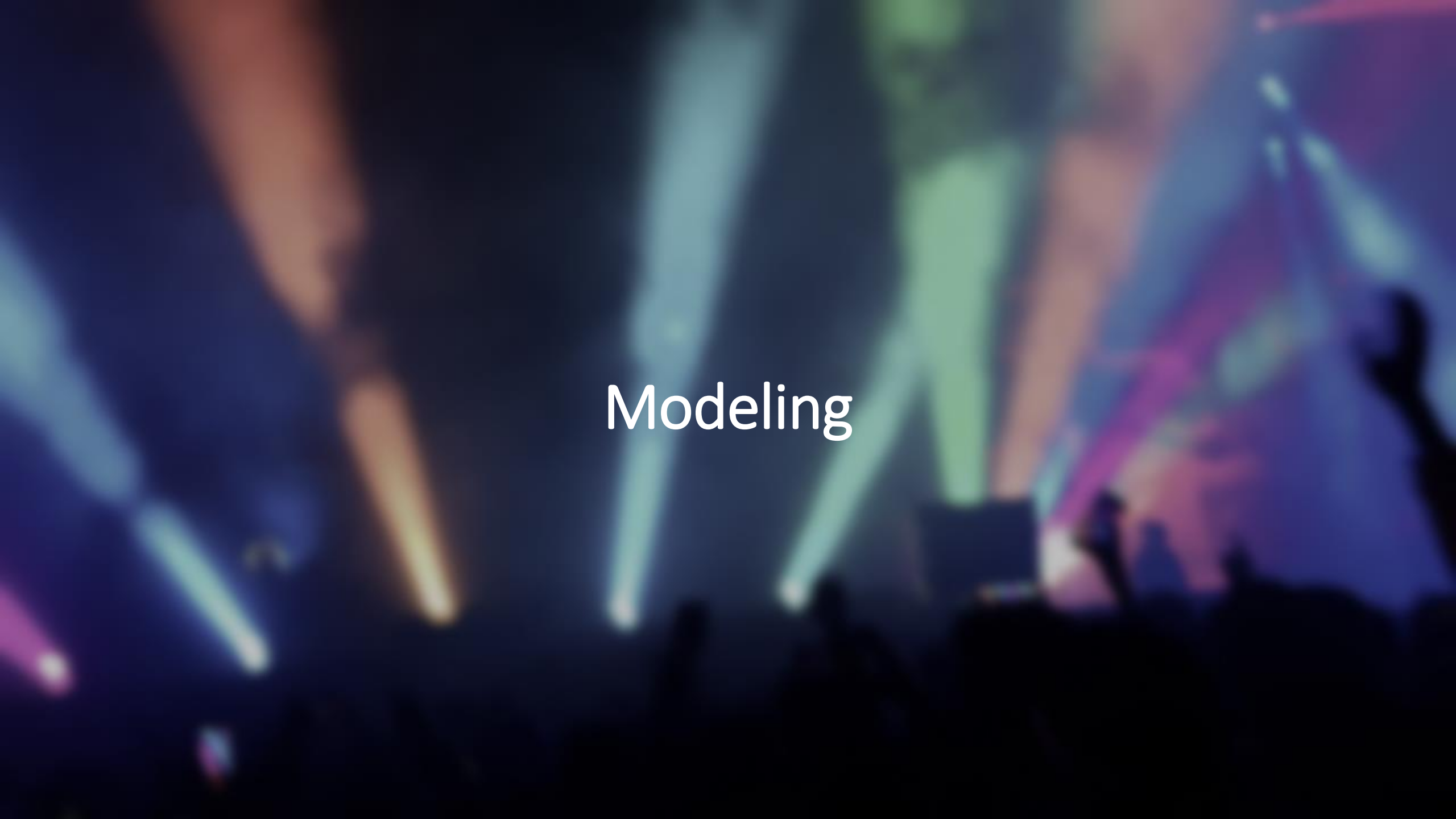
Disco has more spectral centered than Blues

Tempos for different genres



Data scatter plot




Modeling

Random Forest

A random forest model was used to classify the tracks

Metrics used:

- Accuracy: 85%
- F1: 85%
- Precision: 85%
- Recall 85%

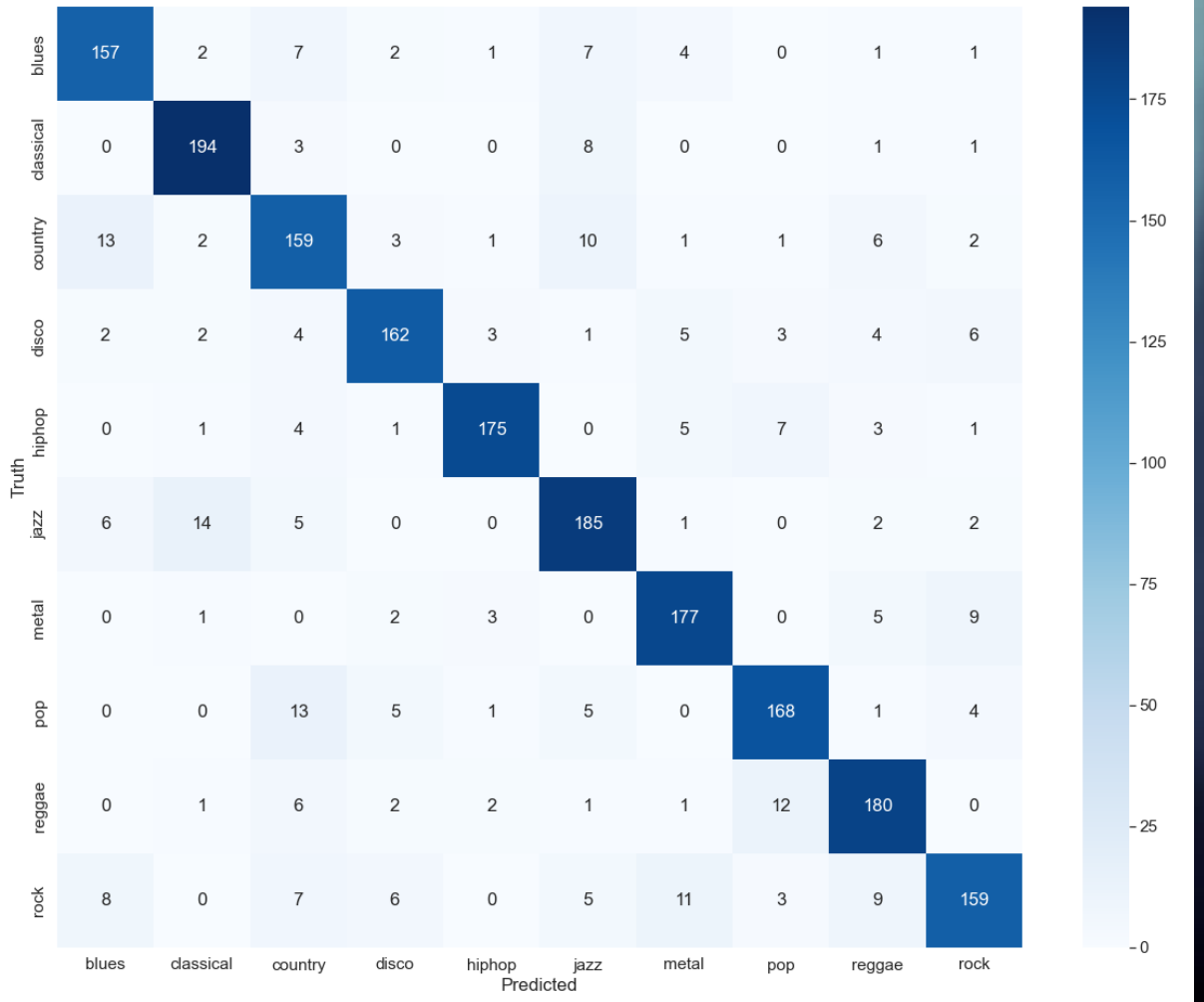
XG boost

XGBoost: gradient boosted decision trees model was used

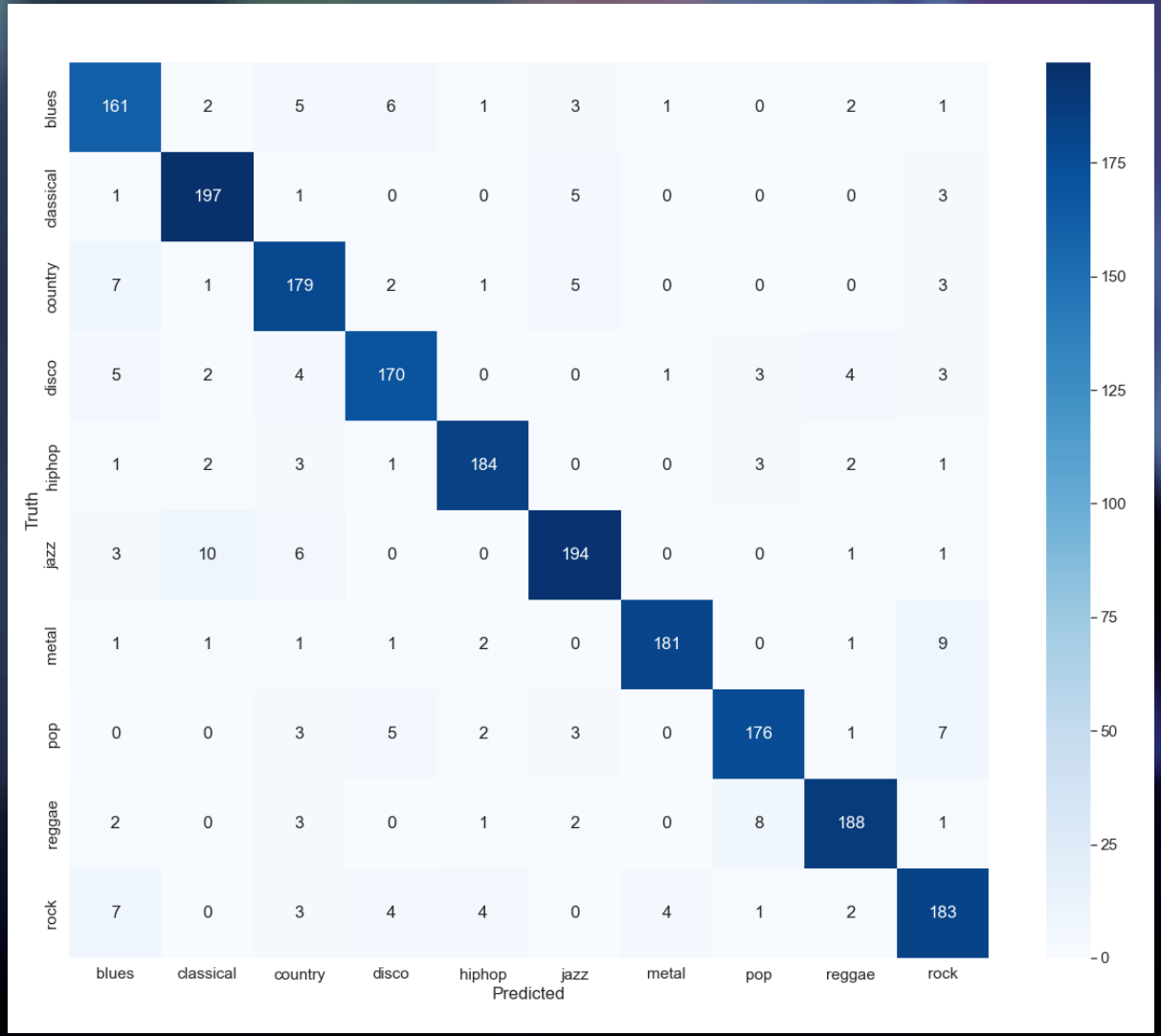
Metrics used:

- Accuracy: 90%
- F1: 90%
- Precision: 90%
- Recall 90%

Random Forest



XGBoost



Conclusion and future upgrades

Conclusion

- XGboost preformed better than random forest.
- The overall performance of the models were good on data that has only 3 seconds long of information.
- Some genres has some similarity like rock and metal.

Future upgrades:

- Use Spotify API to get more music data.
- Recommendation system using Annoy.
- Deploy the model online so that anyone can use it and enjoy .

GitHub ZiyadMoh

Ziyad98.ksa@gmail.com