



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:



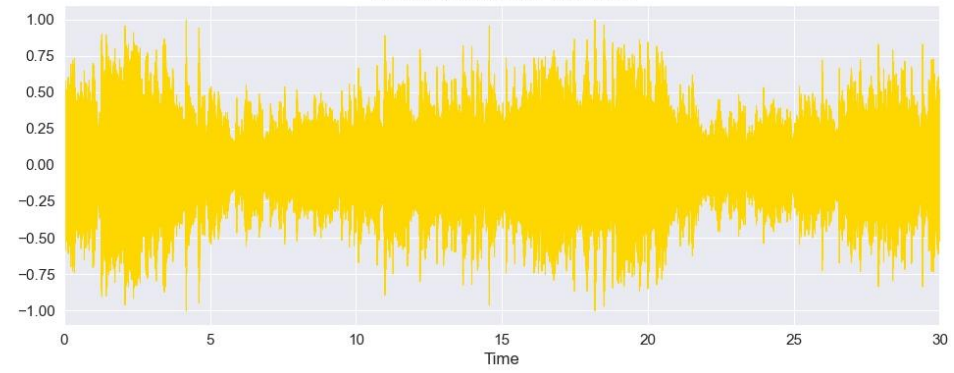


# Understanding the Audio Data

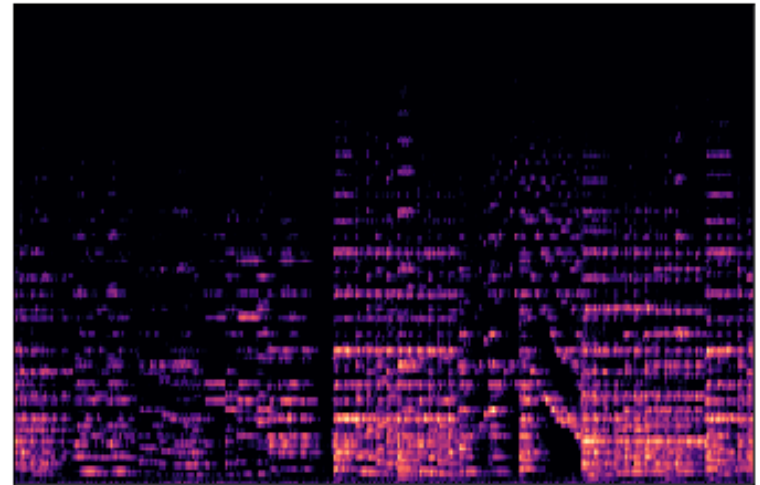
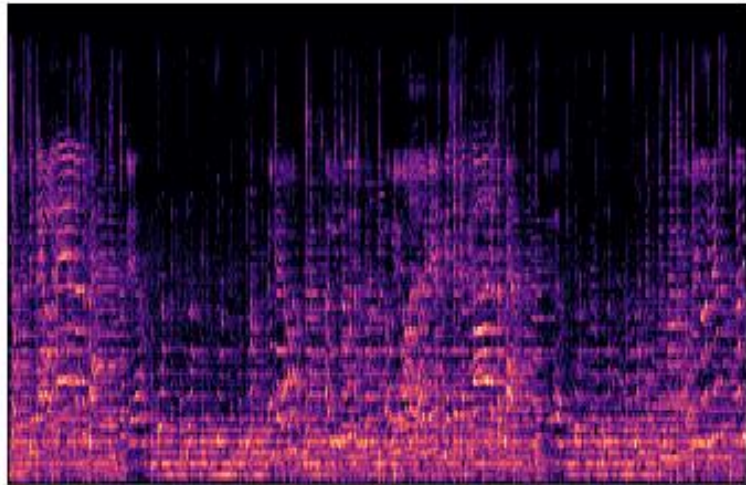
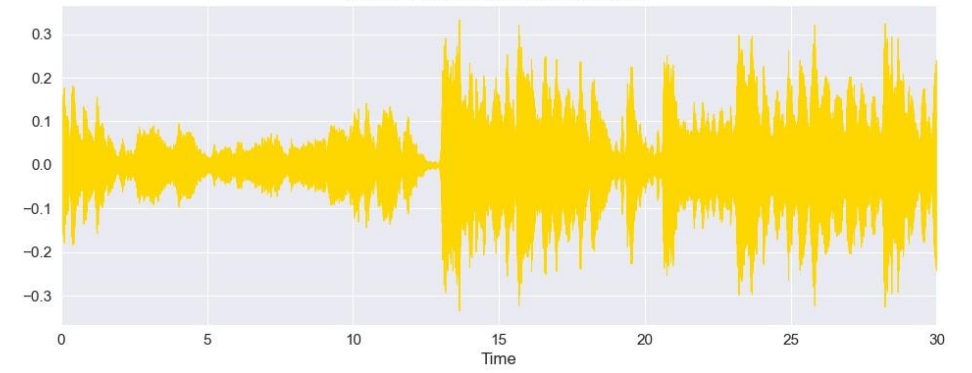
- Librosa: Mother of Audio files
- Songs were translated to Wave forme
- using Librosa we can see what the audio file look like



Sound Waves for Rock 20



Sound Waves for Classical 20



A hand is pointing at a tablet screen. The screen displays a colorful, abstract data visualization with various shapes and colors like blue, green, yellow, and red. The background is dark.

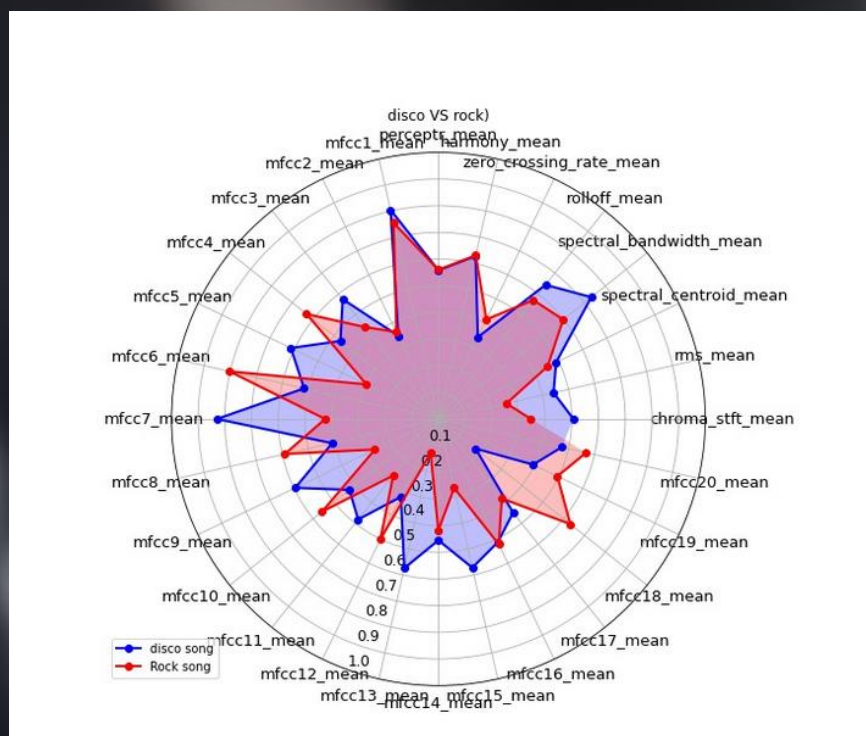
# Workflow

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

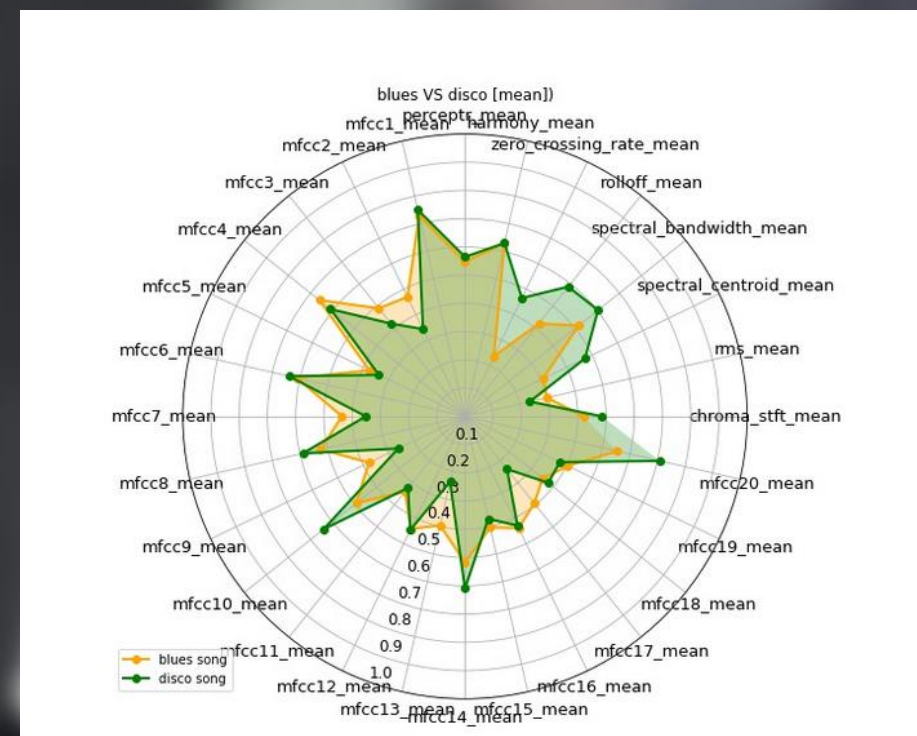


Visualizing data

# Two songs comparison



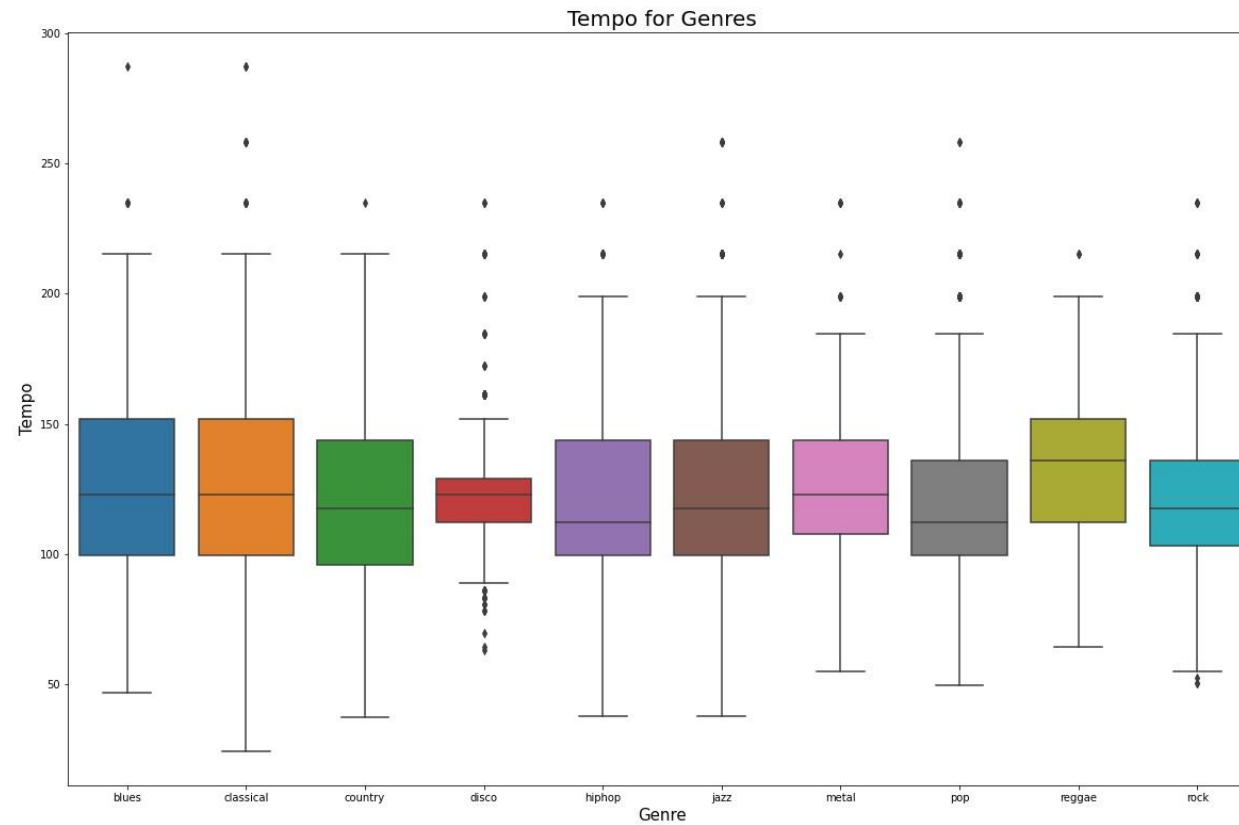
Disco has more rolloff than Rock has



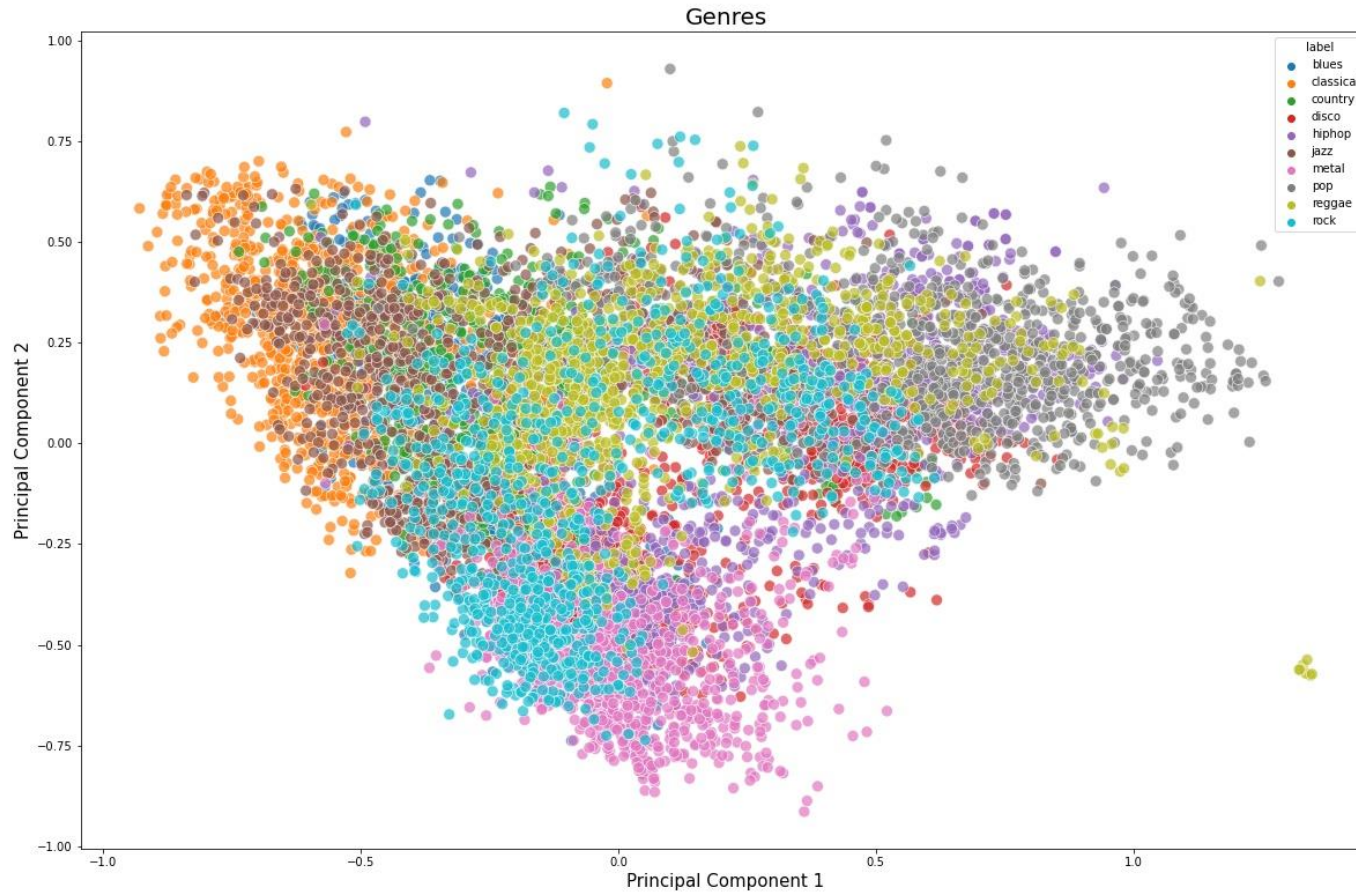
Disco has more spectral centered than Blues



# Tempos for different genres



# Data scatter plot



The background of the slide is a blurred photograph of a concert stage. Several bright, colorful spotlights (blue, green, orange, and purple) are visible, creating a bokeh effect. In the foreground, the dark silhouettes of an audience are visible, with some people raising their hands. The word "Modeling" is centered in the middle of the image in a white, sans-serif font.

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

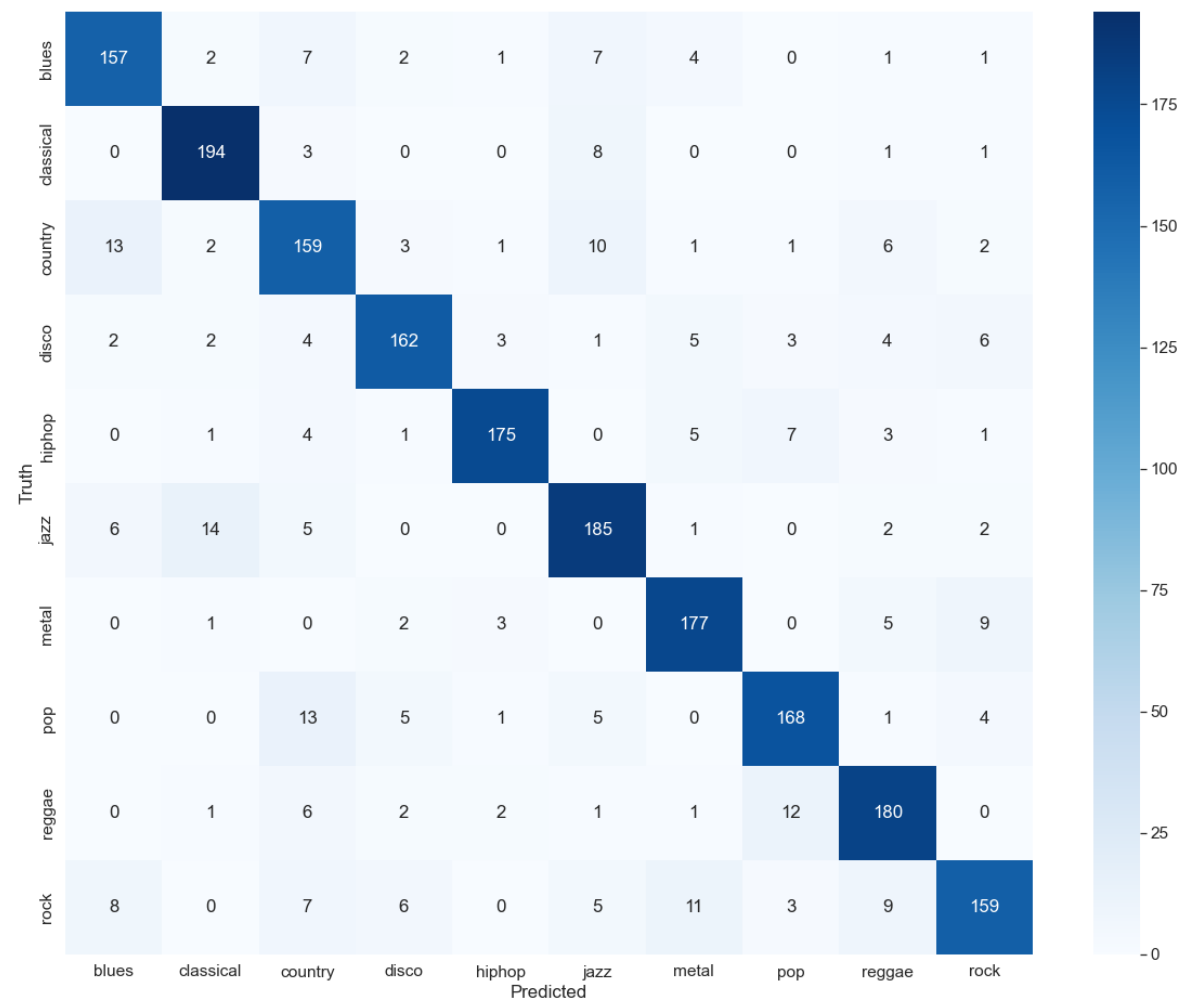
**XGBoost: gradient boosted decision trees model was used**

Metrics used:

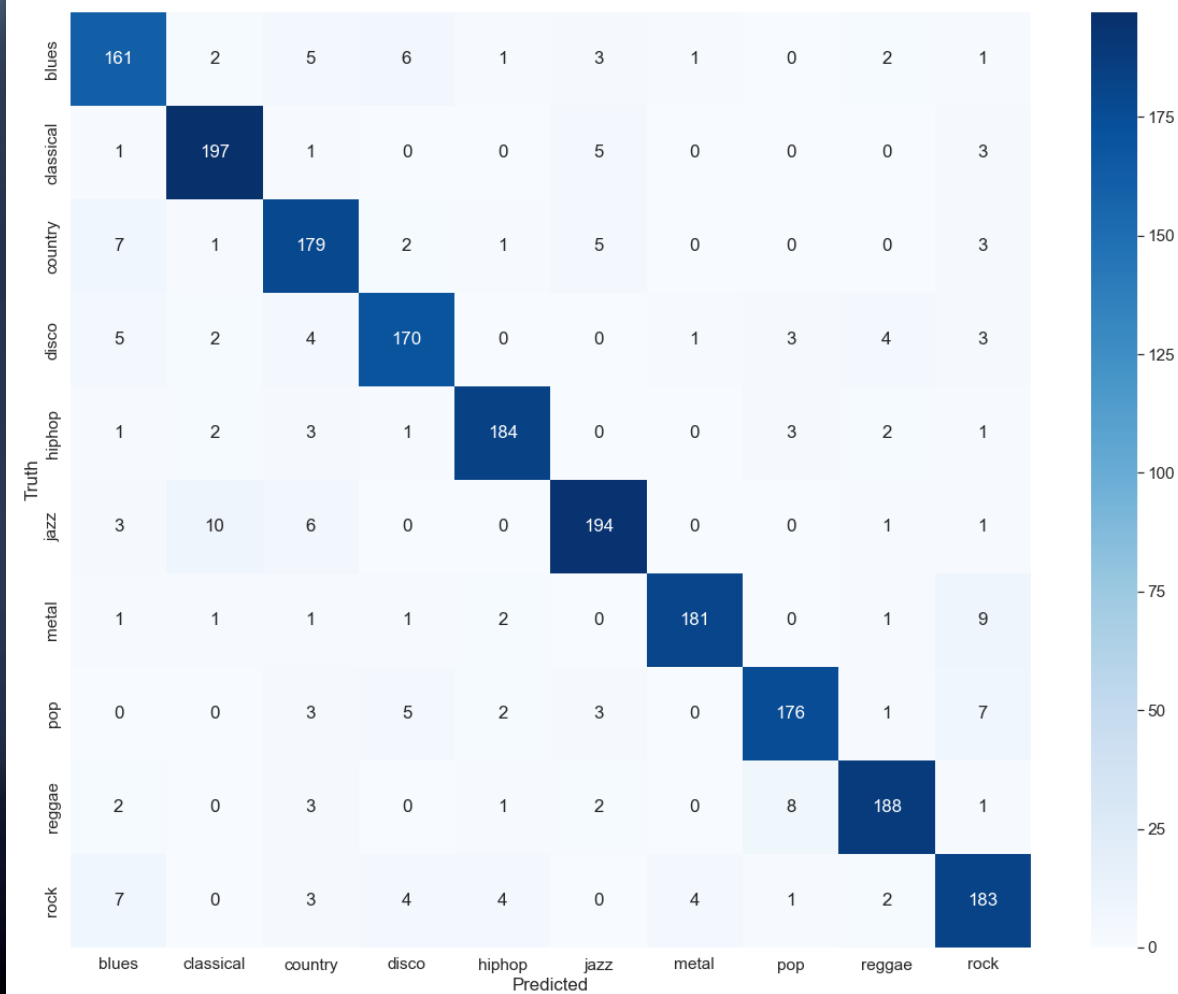
- Accuracy: 90%
- F1: 90%
- Precision: 90%
- Recall 90%



Random Forest



XGBoost





# Conclusion and future upgrades

## Conclusion

- XGboost performed 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 .

Thank you all

Any Questions?