

Music Genre Classification

Machine learning module

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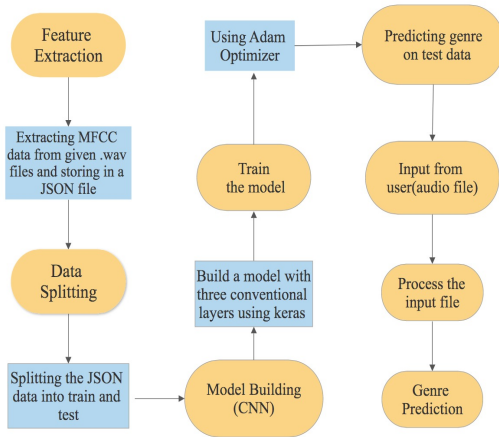
Problem Statement

Create a CNN model which classifies music samples into different genres and predict the genre of an input audio file

Dataset

- **.wav files per genre:** 100
- **Number of Genres:** 10
- **Genres:** Blues, Classical, Country, Disco, Hiphop, Jazz, Metal, Pop, Reggae, Rock

Approach



Technical Stack

Libraries:

- Librosa
- Pandas
- Numpy
- Keras
- Json
- Sklearn
- OS
- Flask

Tools:

- Google Colab
- Latex

Learnings

- Understanding Librosa library
- Storing data into a JSON file
- Building a CNN Model

Challenges

- Extracting Features
- Connecting UI to a python notebook
- Adding images to GUI

Git Repo

Git Repo link: https://github.com/satyakamuju72/Music_Genre_Classification

The screenshot displays the commit history of a GitHub repository. It is organized into three sections based on the date of the commits: May 29, 2021; May 28, 2021; and May 27, 2021. Each section lists individual commits with their titles, authors, and timestamps. For each commit, there is a green 'Verified' badge, a file icon, a commit hash, and a code icon. The commits include updates to presentation code, merging pull requests, UI changes, Flask UI updates, CNN model updates, merging pull requests, displaying genre names, predicting genres, and building CNN models.

Date	Commit Title	Author	Time Ago	Verified	Hash	Code Icon
May 29, 2021	Latex code for presentation	praharsha25	1 minute ago	Yes	eb27b16	Yes
	Merge pull request #2 from haripriyanandula/patch-1	satyakamuju72	16 minutes ago	Yes	1c4c385	Yes
	UI using HTML	haripriyanandula	17 minutes ago	Yes	810627b	Yes
	Flask (UI)	satyakamuju72	9 hours ago	Yes	c7f857c	Yes
	CNN Model	satyakamuju72	9 hours ago	Yes	db18262	Yes
May 28, 2021	Merge pull request #1 from haripriyanandula/main	satyakamuju72	21 hours ago	Yes	3a8c33d	Yes
	display genre name in o/p	haripriyanandula	22 hours ago	Yes	5d5887e	Yes
May 27, 2021	Predict the genre	satyakamuju72	2 days ago	Yes	5f26e85	Yes
	Building model (CNN)	satyakamuju72	2 days ago	Yes	09629f8	Yes

Demo Code

```
for n in range(10):

    i = random.randint(0,len(X_test))
    # pick a sample to predict from the test set
    X_to_predict = X_test[i]
    y_to_predict = y_test[i]

    print("\nReal Genre:",genre_dict[y_to_predict])

    X_to_predict = X_to_predict[np.newaxis, ...]

    prediction = model_cnn.predict(X_to_predict)

    # get index with max value
    predicted_index = np.argmax(prediction, axis=1)

    print("Predicted Genre:",genre_dict[int(predicted_index)])
```

```
Real Genre: rock
Predicted Genre: classical

Real Genre: hiphop
Predicted Genre: hiphop

Real Genre: jazz
Predicted Genre: jazz

Real Genre: jazz
Predicted Genre: jazz

Real Genre: hiphop
Predicted Genre: hiphop

Real Genre: disco
Predicted Genre: disco

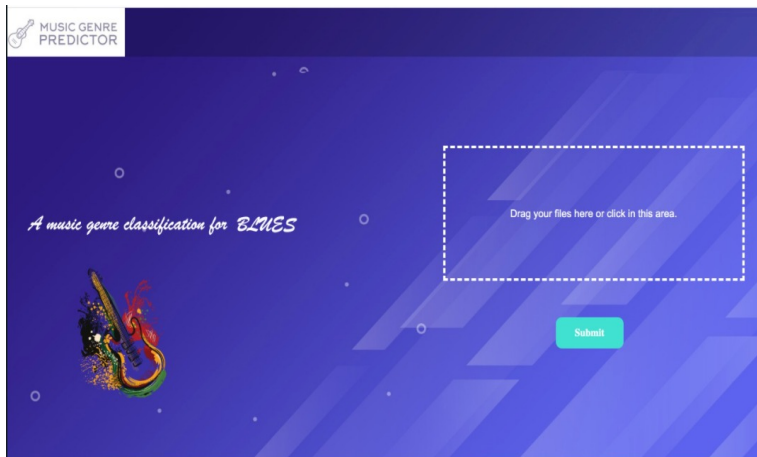
Real Genre: reggae
Predicted Genre: reggae

Real Genre: metal
Predicted Genre: metal

Real Genre: jazz
Predicted Genre: jazz

Real Genre: classical
Predicted Genre: classical
```

User Interface



References

Dataset:

- <https://www.kaggle.com/andradaolteanu/gtzan-dataset-music-genre-classification>

Research Papers:

- <https://www.irjet.net/archives/V6/i5/IRJET-V6I5174.pdf>
- <http://www.cs.cmu.edu/~yh/files/GCfA.pdf>
- https://www.researchgate.net/publication/329396097_Music_Genre_Classification_and_Recommendation_by_Using_Machine_Learning_Techniques

THANK YOU!!