Classification of genres in music

OBJECTIVE:

The objective of the project is to classify the given music signal into different genres using deep learning techniques.

PROPOSED METHOD:

- Music feature extraction is a critical process that will directly affect the final classified result.
- To overcome this dependency with the feature extraction process and also to make it possible for people without prior expertise in music and signal processing to perform classification of music genre efficiently we have considered using DEEP LEARNING.
- One of the architectures in Deep learning is CONVOLUTIONAL NEURAL NETWORKS(CNN), which has been predominantly used in image retrieval tasks.
- We propose to explore the use of CNN in the signal processing domain to perform music genre classification.
- Deep learning provides us the advantage of automatically learning the features that can be used for classification. We also don't have to manually provide these features to the model.

DATASET

- The dataset for western music is the GTZAN dataset.
- GTZAN is composed of 1,000 half-minute music audio excerpts singly labeled into ten categories.
- The 10 different categories include Rock, Blues, Classical, Metal, Pop, Jazz, Hip Hop, Reggae, Disco, and Country having 100 audio files each.
- The dataset has been used from the well-known paper in genre classification " Musical genre classification of audio signals " by G. Tzanetakis and P.Cook.

OUTPUT

- A total of 19000 image samples were obtained for the GTZAN dataset.
- The experiment was carried out for a test-train split of 80 - 20
- This gives 15200 samples for training and 3800 samples for testing
- The number of epochs used for training is 75.
- The accuracy obtained was **93.42%**

CONCLUSION

- Convolutional neural networks provide a new and intuitive approach to music genre classification and eliminate the feature extraction process.
- Our experiments show that CNN is a viable alternative for a feature extraction-based approach.
- Our experiments reveal that our current model is not robust enough to categorize unseen musical data.
- Enlarging the dataset with more relevant songs can be considered a solution to the above-stated problem.