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## MUSIC GENRE CLASSIFICATION USING MACHINE LEARNING

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**Abstract:** A music genre is a standard category that identifies some pieces of music as shared tradition or set of assembly. its to be differentiate from musical form and musical style. There can different ways to divide music in different genres. Pop, Hip-Hop, Rock, Jazz, Blues, Country and Metal these are the some popular genres. classifying music files according to their genre is a challenging task in the area of music information retrieval (MIR). Automatic music genre classification is important to obtain music from a large collection. It finds applications in the real world in various fields like automatic tagging of unknown piece of music (its useful for apps like Ganna, Saavn etc.).

**Keywords:** Music genre ,Dataset , Neural network , Feature vector.

### I INTRODUCTION

The famous music sorts are Blues, Classical, Country, Disco, Hip-Hop, Jazz, Metal, Pop, Reggae and Rock.

Music has likewise been isolated into Genres and sub classes on the premise on music as well as on the verses also. This makes music sort order troublesome. Additionally the meaning of music sort has changed over the long haul. For example, pop tunes that were made fifty years prior are not quite the same as the pop melodies we have today. Luckily, the advancement in music information and its stockpiling has improved impressively in the course of recent years.

Since physically grouping each track of an enormous music information base as per their sort is a drawn-out task, Machine Learning Techniques to perform Automatic Music Genre Classification are utilized. Rest of this paper is coordinated as follows. Segment II arrangements with the Literature Review done to compose this paper, this part comprises of the significant takeaways assembled subsequent to considering various works in a similar field. Area III gives an outline about the Dataset that was utilized to complete this examination work. Area IV arrangements with the general plan of the work. Area V arrangements with the design of the Convolutional neural organization which plays out the order. Segment VI contains the trial results. Area VII comprises the

end and future work.

In today's world, an individual's music collection generally contains hundreds of songs, while the professional collection normally contains tens of thousands of music files. Music databases are incessantly gaining reputation in relations to specialized archives

and private sound collections. With improvements in internet services and increase in network bandwidth there is also an increase in number of people accessing the music database. Dealing with extremely large music databases is exhausting and time consuming.

Tzanetakis (gtzan@cs.uvic.ca). Marsyas has been utilized for an assortment of undertakings in both scholarly community and industry.

Dataset comprises of 1000 sound tracks every 30 seconds in length. It contains 10 genres (Blues, Classical, Country, Disco, Hip-Hop, Jazz, Metal, Pop, Reggae and Rock), each addressed by 100 tracks. The tracks are generally 22050Hz Mono 16- digit sound records in .wav design.

### II LITERATURE REVIEW

Music Genre Classification is a territory which has pulled in light of a legitimate concern for some specialists. This segment will give insights concerning a portion of the examination work previously done in this field. Vishnupriya S and K Meenakshi [1]

have proposed a Neural Network Model to play out the arrangement. Tzanetakis and Cook [2] spearheaded their work on music kind characterization utilizing AI calculation. They made the GTZAN dataset which is till date considered as a norm for kind characterization

Changsheng Xu et al [3] have told the best way to utilize support vector machines (SVM) for this assignment. Matthew Creme, Charles Burlin, Raphael Lenain from Stanford University [4] have utilized 4 distinct strategies to play out the order. They have utilized Support Vector Machines, Neural Networks, Decision Trees and K-Nearest Neighbors techniques to perform order. Tao [5] shows the utilization of limited Boltzmann machines and shows up to preferred outcomes over a conventional multi-facet neural organization by producing more information out of the underlying dataset, GTZAN.

In the wake of doing the previously mentioned writing review, Convolutional Neural Network is utilized to perform arrangement and the subtleties of the equivalent are clarified in the accompanying areas.

**III DATASET**

**Table 1. Distribution of the Dataset**

Genre	No of tracks
Blues	100
Classical	100
Country	100
Disco	100
Hip-Hop	100
Jazz	100
Metal	100
Pop	100
Reggae	100
Rock	100
<b>Total</b>	<b>1000</b>

GTZAN Genre Collection dataset was utilized to play out the arrangement. The dataset has been taken from the mainstream programming structure MARSYAS. Marsyas (Music Analysis, Retrieval and Synthesis for Audio Signals) is an open source programming system for sound preparing with

explicit accentuation on Music Information Retrieval applications. It has been planned and composed by George

Information Pre-Processing was done in the accompanying way:

1. Information base of the total assortment was made and put away in a .csv record.
2. Highlight Vector Extraction is finished utilizing the libROSA bundle in python as demonstrated in figure 1. libROSA is a python bundle for music and sound examination which gives the structure blocks important to make music data recovery frameworks.
3. Every sound record is taken and from that, its component vector is separated. The separated component vector is called MFCC (Mel-Frequency Cepstral Coefficients). The MFCCs as demonstrated in figure 3 encode the timbral properties of the music signal by encoding the unpleasant state of the logpower range on the Mel recurrence scale. A Zero-Crossings diagram is plotted as demonstrated in figure 4 for every sound track. This diagram pictures the occasions the sign crosses zero level.

**IV. HIGH LEVEL DESIGN**

1. The dataset is part into two sections, Training information and Test information.
2. Each track from the train dataset is pre-prepared and a component vector is removed for something similar. A Feature Vector Database is produced from the removed element vectors.
3. The Neural Network model is prepared utilizing the acquired component vector data set.
4. Each track from the test dataset is likewise pre-handled and an element vector is separated for something very similar.
5. The prepared Neural Network model works on the element vector got toward the finish of stage 4 to perform order on test information.
6. At long last, yield is sort of the music track. Significant Level Design of the framework is appeared in figure

**V. CONVOLUTIONAL NEURAL NETWORK**

CNN is a Deep Learning calculation which can accept an information picture as info, dole out significance (learnable loads and predispositions) to different angles/objects in the picture and have the option to separate one from the other. A CNN has different layers, for example, Convolutional layers, ReLU layers, Pooling layers and a completely associated layer as demonstrated in figure 6. CNN is generally utilized for picture order since it does programmed include extraction utilizing convolution.

**VI. RESULT**

Following fig shows the result of state of music genre classification



**VI CONCLUSION**

This research work provides the details of an application which performs Music Genre Classification using Machine Learning techniques. The application uses a Convolutional Neural Network model to perform the classification. A Mel Spectrum of each track from the GTZAN dataset is obtained. This is done by using the libROSA package of python. A piece of software is implemented which performs classification of huge database of songs into their respective genres.

The extension of this work would be to consider bigger data sets and also tracks in different formats(mp3, au etc). Also, with time the style represented by each genre will continue to change. So the objective for the future will be to stay updated with the change in styles of genres and extending our software to work on these updated styles. This work can also be

extended to work as a music recommendation system depending on the mood of the person.

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