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MAIS 202 - PROJECT DELIVERABLE 1

1. Dataset

Inspired by music genre classification projects that allows music providing services (e.g. Spotify, SoundCloud) to suggest recommendations for users, I was tempted to design and build my own music genre classification model. To proceed, I will be using the GTZAN Genre Collection dataset consisting of 1000 audio tracks each 30 seconds long. It contains 10 genres, each represented by 100 tracks. The tracks are all 22050Hz Mono 16-bit audio files in .wav format. The dataset consists of 10 genres: Blues, Classical, Country, Disco, Hip-hop, Jazz, Metal, Pop, Reggae, Rock. Each genre contains 100 audio tracks.

2. Methodology

a. Data Preprocessing

We use the Librosa Python library to extract features from the wave files. The library allows us to extract numerous features including beat tracking, mel scale, chromograms relating to pitch class information, and the ability to pull apart the harmonic and percussive components of the audio. Several features such as the Mel-Frequency Cepstral Coefficients, Spectral Centroid, Zero Crossing Rate, etc. are then appended into a .csv file so that classification algorithms can be used.

b. Machine Learning Model

Potential machine learning model include the K-Nearest Neighbors classification model, Logistic Regression, and Support Vector Classification or even a Convolutional Neural Network can be used to experiment on the features in order to obtain a better accuracy.

c. Final Conceptualizations

For the project demonstration, I want to integrate my model in a simple landing-page web-app through a Flask backend, where the user can either upload an audio file in .wav format or choose from suggested audio tracks. The model will then be used to estimate and return the corresponding genre of the submitted audio track.

BAHULEYAN, Hareesh. (2018). Music Genre Classification using Machine Learning Techniques. eprint arXiv:1804.01149.