Music Genre Classifier

Automatically classify different musical genres

Name : Aditi Rajendra Medhane
MIS : 111803177
Div : 2
Batch : S4

Introduction

- In this project to automatically classify different musical genres from audio files. I have classified these audio files using their low-level features of frequency and time domain.
- For this project I have used a dataset of audio tracks having similar size and similar frequency range.
- DATASET USED : **GTZAN genre collection dataset**

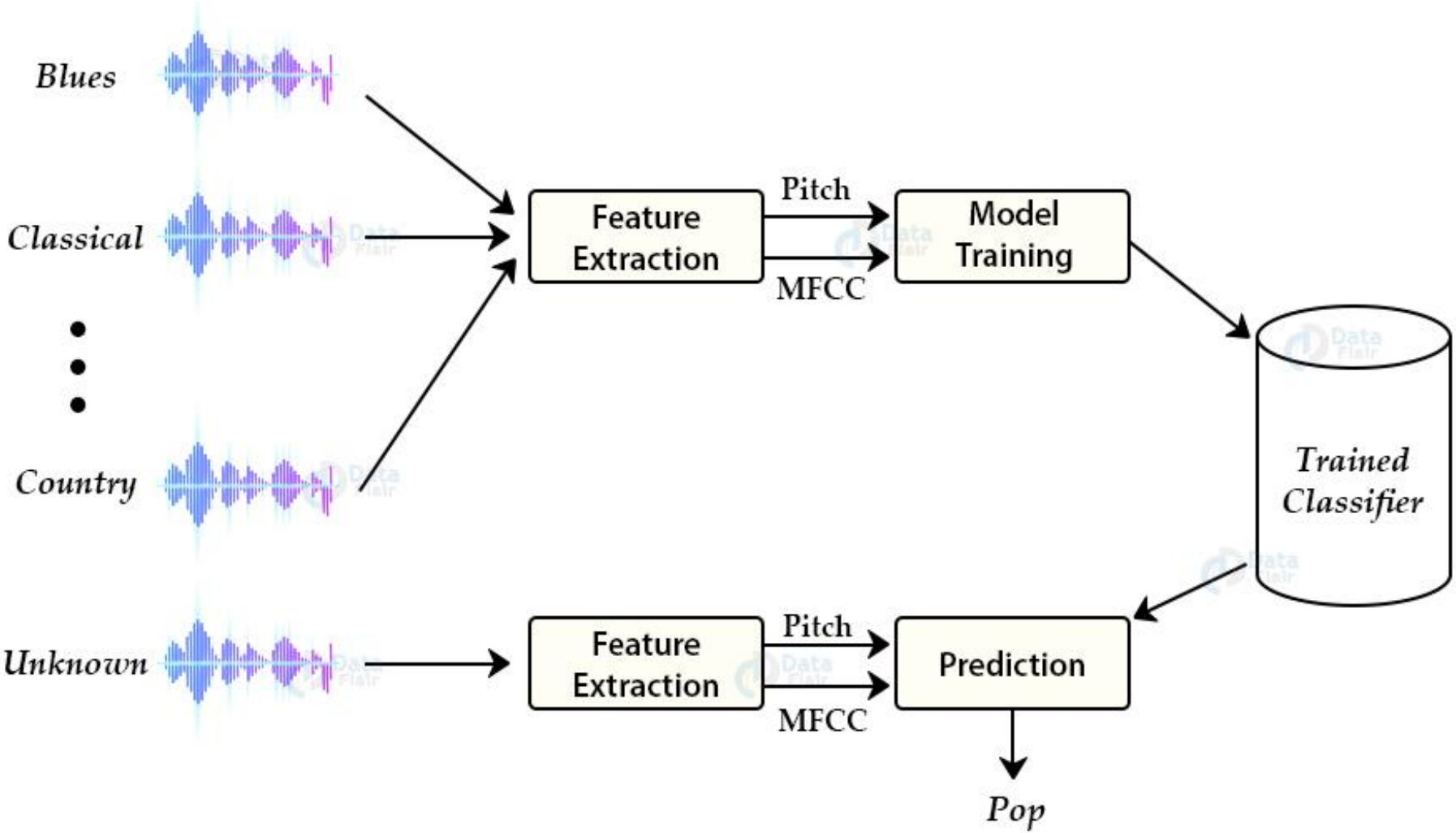
About the dataset:

The GTZAN genre collection dataset consists of 1000 audio files each having 30 seconds duration. There are 10 classes (10 music genres) each containing 100 audio tracks. Each track is in .wav format. It contains audio files of the following 10 genres:

- Blues
- Classical
- Country
- Disco
- Hiphop
- Jazz
- Metal
- Pop
- Reggae
- Rock

Music Genre Classification approach:

- K-Nearest Neighbors is a popular machine learning algorithm for regression and classification. It makes predictions on data points based on their similarity measures i.e distance between them.
- **Feature Extraction** : to extract features and components from the audio files. It includes identifying the linguistic content and discarding noise.


Blues
Classical
Country
Unknown
Feature Extraction
Pitch
MFCC
Model Training
Trained Classifier
Feature Extraction
Pitch
MFCC
Prediction
Pop

Mel Frequency Cepstral Coefficients:

Set of steps for generation of these features

- Since the audio signals are constantly changing, first we divide these signals into smaller frames. Each frame is around 20-40 ms long
- Then we try to identify different frequencies present in each frame
- Now, separate linguistic frequencies from the noise
- To discard the noise, it then takes discrete cosine transform (DCT) of these frequencies. Using DCT we keep only a specific sequence of frequencies that have a high probability of information.

Thank You!