Music Genre Classification Using Machine Learning

Project Overview

Project Title: Music Genre Classification

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College: Guru Nanak Dev Engineering College, Ludhiana

Internship: Summer School Training and Internship Programme

Institute: IIT Jammu

Course: Data Science & Artificial Intelligence

Project Summary:

This project uses Python libraries such as librosa, pandas, and sklearn to classify music files into different genres based on their audio features. A Random Forest Classifier is trained on these features to predict the genre of a new song. Audio features like MFCC, chroma, spectral centroid, and zero-crossing rate are extracted from each file using librosa. The final trained model can predict the genre of unknown audio files with notable accuracy.

Tools & Technologies

Tools and Libraries Used:

- Python
- Librosa (for audio feature extraction)
- Pandas (for data manipulation)
- Scikit-learn (for training the Random Forest classifier)
- Joblib (for saving and loading the trained model)

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Project Workflow

Workflow:

1. Organize audio files into genre-named folders.

2. Extract features using librosa.

3. Store features in a CSV using pandas.

4. Train Random Forest model using sklearn.

5. Save the model.

6. Load the model and predict the genre of new songs.