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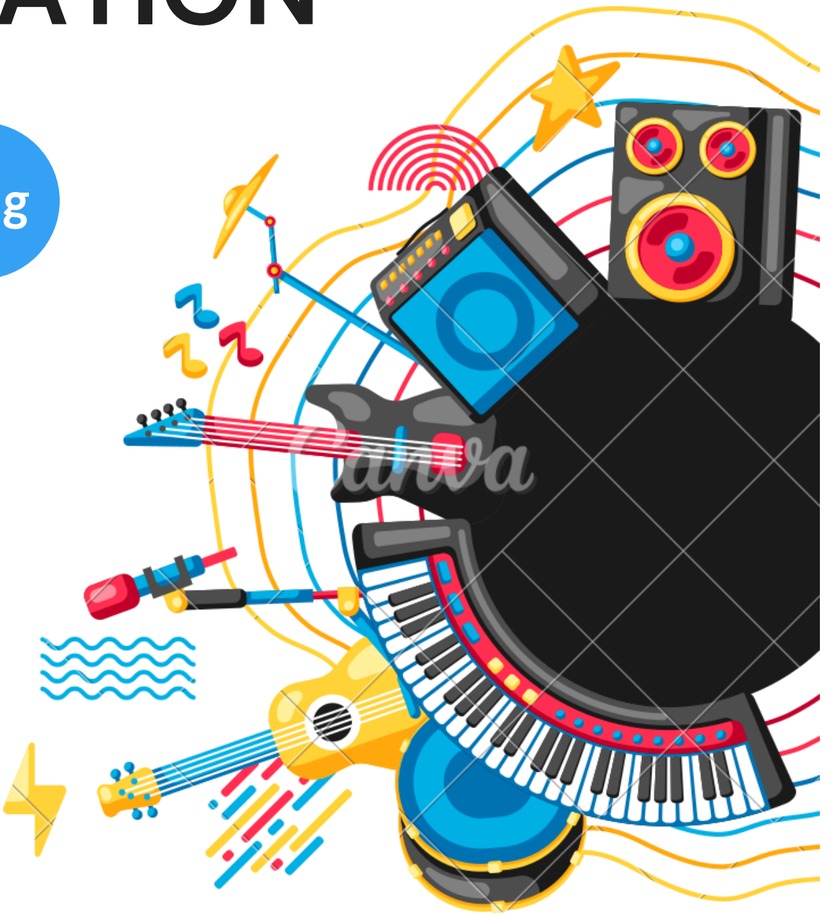
FACULTY GUIDE:
MS. VEENU SINGH

MUSIC GENRE CLASSIFICATION

Using machine learning and deep learning



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Contents

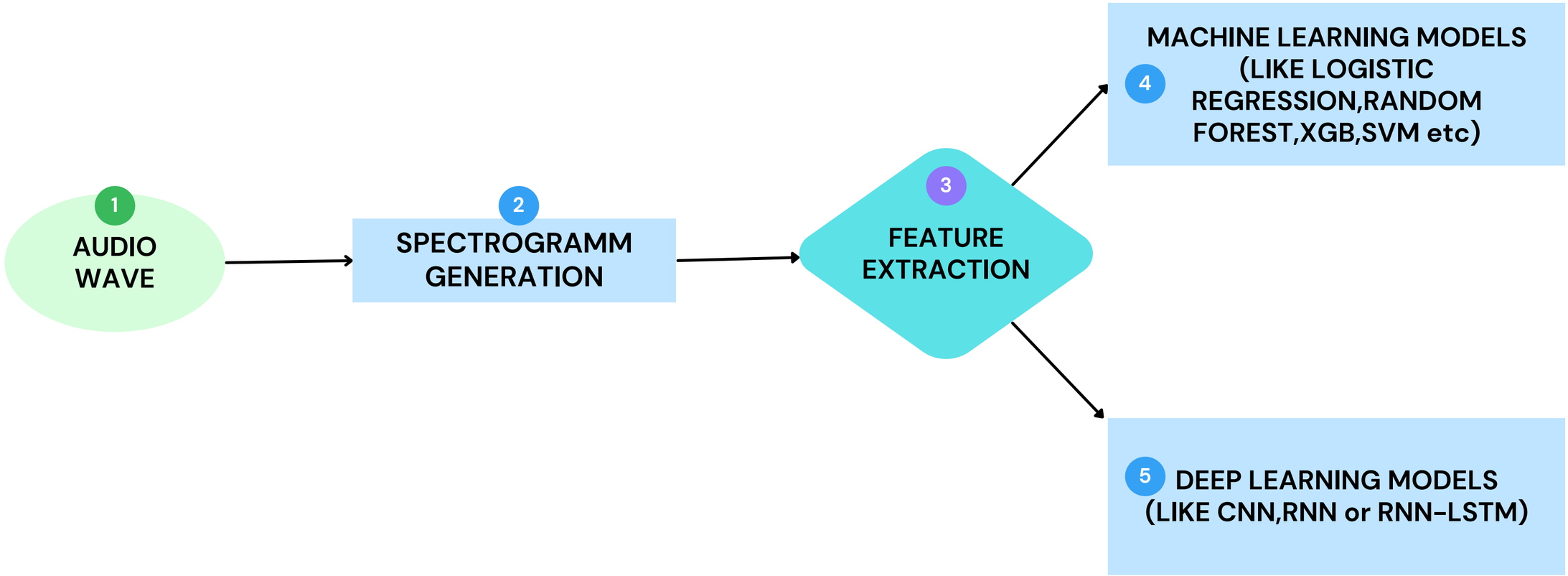
MUSIC GENRE CLASSIFICATION

- Music genres are categorical classifications that are used to distinguish between different types of music.
- Each genre differs from other genres in certain musical features.
- Plays an important in music information retrieval.
- Applications in various fields.

Literature Review

Single Layer Feed-forward neural network	Convolutional recurrent neural network architecture	Transfer Learning	Convolutional Neural Network	Deep learning Convolutional Neural Network
Accuracy-84.3%.	Accuracy-85.36%	0.9799 ROC VALUE	Accuracy-92.69%	Accuracy-66%

METHODOLOGY



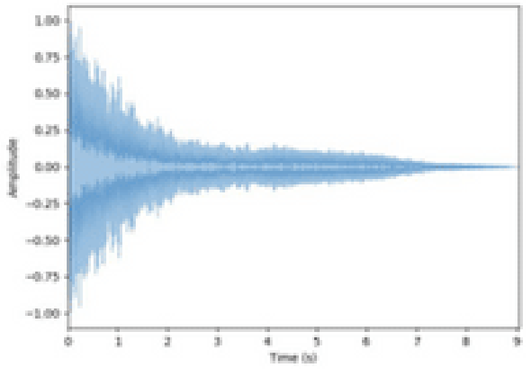
Dataset

The GTZAN dataset has the following folders:

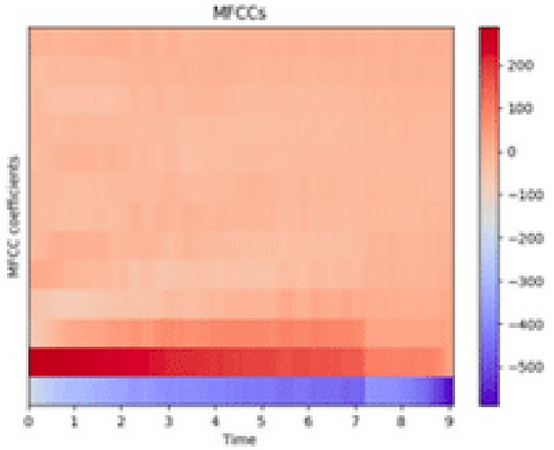
- Genres original — A collection of 10 genres with 100 audio files each, all having a length of 30 seconds.
- Images original — A pictorial representation of each audio file. NNs usually take some sort of image representation way to classify data is to use neural networks.
- 2 CSV files — Contains the characteristics of audio files. The file has a mean and variance premeditated for each song (30 seconds long) over several characteristics that can be extracted from the audio file. The other files have the same structure, but the song is split into 3-second audio files.

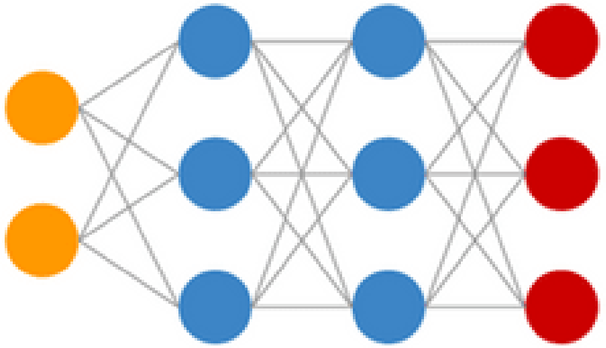
Pre-processing

1.DL pre-processing pipeline for audio data using MFCCs



MFCCs





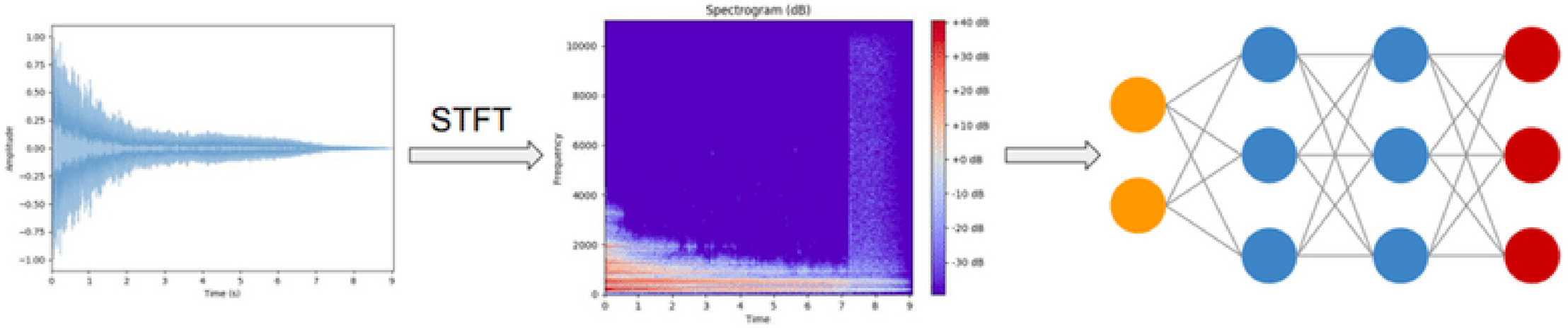
Audio waveform

Spectrogram

Training & testing of the model using Neural Networks

Pre-processing

2.Waveform conversion into a spectrum by applying FFT and STFT.



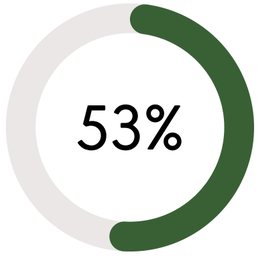
Audio waveform

Spectrogram

Training & testing of the model using Neural Networks

Results and evaluation: Machine learning models

Logistic regression



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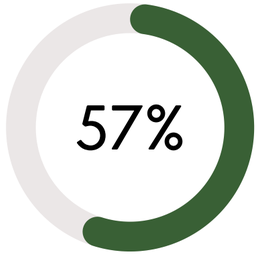
Support Vector machines



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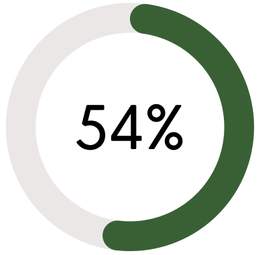
Random Forest Classification



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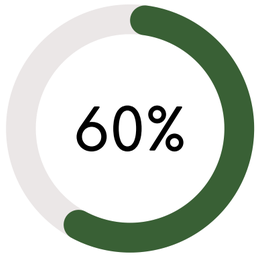
Extreme Gradient boosting



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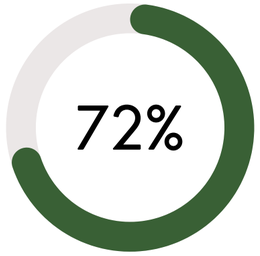
Results and evaluation: Deep learning models

RNN with LSTM



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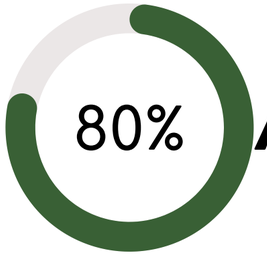
Convolutional Neural Network



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Future scope

- Python speech recognition package.
- Large areas to explore exist.
- helps in music recommendation systems.