

Music Genre Classification

Personally, I am a long time mac user and one of my favorite desktop app is called "Music". It is fairly easy to use for organizing my locally stored music, as well as for transferring my music files into my iPhone. However, I think that the application can be a bit limiting when you are trying to organize your music in the app, so let me explain through an example.

Suppose that I downloaded a collection of music files, each with no metadata, that come from different sources, and I want to put them into the app. To do that, I would first select the files, then drag and drop them into the music application. Because of the fact that each music file has no metadata, the app will not store or display the genre of each new song that was moved into the app. I would assign each song a genre manually and this can be incredibly time consuming if I moved a large number of music files.

Instead of doing things manually, why not let the app automate the process automatically.

Solution:

After doing a bit of research, I stumbled upon a machine learning paper where the authors investigated five different models to see which of them perform best based on the accuracy metric.

Three of the models in this study were based on the convolutional neural network architecture (CNN, CRNN, and CNN-RNN) that takes in a spectrogram of an audio file, while the last two models (logistic regression, and simple artificial neural network) used extracted features from an audio file, e.g tempo, zero cross rate, root mean squared energy etc.

The paper indicated that the CNN model performed best with an accuracy of 88% so based on those results, I would probably use that model to classify my list of songs. However, I have considered another approach where I build a CNN model that takes in both the spectrogram, and the extracted features from an audio file. If the latter performs better, that model will be used instead.

Once the model is built, I will use it to create a web application that takes in a list of music files and outputs a simple table where each row has the name of the file, as well as the assigned genre.

Dataset:

Instead of using the readily available music datasets for training the models for genre classification, I will use my own dataset because I want the machine learning model to learn

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how I would organize a list of downloaded songs by genre (see <https://github.com/xnell90/Music-Genre-Classifier/tree/master/data> for more details).