***Identifying Music genre***

How many times we have wondered, what might have been a songs genre, sometimes it might be easy and sometimes it might make our brains go wild, so this is it, this program allows us to predict the genre of the music using Transfer learning. The flow is as follows first we load the music file, split the songs into chunks, then load the model using load model (), using the loaded model, predict on the music which you ahve loaded earlier and since the output will be in the form of array, we use argmax () to extract the highest probability of the music genre the model has predicted.

***Base Paper***

1. <https://www.researchgate.net/publication/324218667_Music_Genre_Classification_using_Machine_Learning_Techniques>
2. <https://www.researchgate.net/publication/329396097_Music_Genre_Classification_and_Recommendation_by_Using_Machine_Learning_Techniques>

***Algorithm Description***

So, the approach we have taken to run/execute this project is by using Transfer Learning, so basically transfer learning is a method where we train our dataset with a model which was already trained on such type of problem that we are working on i.e. Since we are dealing with a classification problem i.e., classifying which genre the music belongs to so we use a specific transfer learning algorithm which is made of classification problem. So, the model we are using in this project is **VGG16**. VGG16 is basically a 16-layer convolutional neural network which was trained on image net datset which consists of 14 million images, with around 1000 classes. VGG16 is most preferred classification model if we wanted to use transfer learning in our project. This model along with such good accuracy and performance, it also comes with some disadvantages such as exploding gradient descent problem due to more than 100 million parameters for training and due to the size of the model i.e., 528 MB, although it might be a very small size but this will take a lot of time to run and even download in many systems.

***Steps to Run the code.***

**Note:** Make sure you have added path while installing the software’s.

<https://techieyantechnologies.com/2022/06/get-started-with-creating-new-environment-in-anaconda-configuring-jupyter-notebook-and-installing-libraries-using-requirements-txt-2/>

1. Install the prerequisites/software’s required to execute the code from reading the above blog which is provided in the link above.
2. Press windows key and type in anaconda prompt a terminal opens up.
3. Before executing the code, we need to create a specific environment which allows us to install the required libraries necessary for our project.

* Type conda create -name “env\_name”, e.g.: conda create -name project\_1
* Type conda activate “env\_name, e.g.: conda activate project\_1

1. Make sure you are in the correct path in your terminal, where you have saved your executable file/folder. E.g.: cd A:\project\AI\Completed\project\_name, then press enter.
2. Install necessary libraries from requirements.txt file provided.
3. Run pip install -r requirements.txt or conda install requirements.txt (Requirements.txt is a text file consisting of all the necessary libraries required for executing this python file. If it gives any error while installing libraries, you might need to install them individually.)
4. Run classification\_cnn\_vgg.ipynb.ipynb run the final code, and make sure to change the path of the model and image folders.

***Data Description***

The particular dataset was downloaded from Kaggle data repository, which consists of 10 classes and each class consists of around more than 100+ audio files. There are 10 music genres which are included in this dataset such as Blues, Classical, Country, Disco, Hip-Hop, Jazz, Metal, Pop, Reggae and Rock. Each audio file has around 30 second timestamp. Below given link can be accessed to download the dataset from the Kaggle data repository.

***Issues Faced.***

1. We might face an issue while installing specific libraries.

2. Make sure you have the latest version of python, since sometimes it might cause version mismatch.

3. Adding path to environment variables in order to run python files and anaconda environment in code editor, specifically in visual studio code.

4. Refer to the Below link to get more details on installing python and anaconda and how to configure it.

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***Note:***

**All the required data hasn’t been provided over here. Please feel free to contact me for any issues.**

***Let’s Connect***

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***Yes, you now have more knowledge than yesterday, Keep Going.***

***Results***



