6202 – Machine Learning 1
Final Project Proposal
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Music Genre Classification

PROPOSAL

Picture this: you're sitting at a bar having a great time with your friends and this amazing song starts playing. It is nothing like you've ever heard before. You think to yourself, "I wonder what genre of music this is?" but you're not even sure where to begin searching for that information. Well, worry no further. With the help of our music genre classifier, all you need is the name of the song (.mp3 file in the case of this project demo) and a few moments to spare. With the click of a button, you can find out the genre of any song you come across from here on out.

We chose to work on music genre classification as we feel it is increasingly difficult for music platforms to properly classify all of the unique genre-bending music being released today. We want to help provide a solution for this issue and believe this can be solved with the help of machine learning.

The dataset we will be using is a [music genre classification training dataset](#) found on Kaggle which contains 1,000 observations and 28 features. The features contained in this dataset consist of .wav file features that can be used to identify the genre of music a song would fall in. Our secondary datasets will be created through the conversion of mp3 files into .wav files. The .wav files output an individual dataset with each conversion containing varying observation counts, often ranging from 200-400 observations. Given that we are using a supervised learning algorithm, we believe our network should be able to properly classify the song genres given the substantial training data.

The algorithm we will be using is the MLPClassifier since our target is categorical. To implement the neural network, we will use the python sklearn package due to

its efficiency and the ability to cross validate the results of our models. We will be comparing the MLPClassifier with a traditional Decision Tree model which is also from the sklearn package to see if the neural network can outperform a traditional model. To work with mp3 data, we will also be using the librosa and pydub packages. Additionally, pyqt5 will be used to implement a GUI.

In order to obtain sufficient background on applying the MLPClassification algorithm, we will consult the official sklearn website regarding supervised neural networks as well as the MLPRegressor page. We will also rely on the documentation pages for the librosa and pydub packages for dealing with mp3 data.

The performance will be judged based on the accuracy of the prediction made by the neural network and decision tree models. The metrics we will focus on are the accuracy and F1 scores.

A rough outline of our project schedule is as follows
- ➢ DAY 1 - 2 : Project Topic Selection, Dataset search, Proposal documentation and Github Setup.
- ➢ DAY 3 - 9: Data Preprocessing, Training and Model Predictions.
- ➢ DAY 10 - 14: Project Report Documentation and Presentation