Computer Science Final Project Proposal Plan

* Main Project
  + Classifying Music into Genres using machine learning
* Initial Brief Description of the final deliverable
  + Select folder containing copyright free music of different genres
  + Program will classify music and display it in a list
  + Or select a genre radio and program will only play music from that specific genre found in folder
* Method of approach
  + Incremental process of development. Work on smaller aspects of the programs modules and slowly add together
    - Get program guessing genre
    - Train machine to Identify genre
    - Allow user to select which genres it wants music grouped into
    - Allow user to select folder/add music
    - Use program to create a radio feature
  + Use Python and SciPy for Machine learning
  + Use PySimpleGUI to create a user GUI rather than using CLI
* Requirements for Hardware, Software. (List here anything that is not yet available and will need financial support for and or other resources
* What learning will need to be undertaken to carry out this project
  + Will need to learn to use Python/SciPy/PySimpleGUI
* Risk Factors: What could go wrong and how likely is it?
  + I may not be able to create a GUI in time, High Risk
  + May not be able to create a neural network to identify music genres, Low Risk
  + May not be able to create a radio feature, Medium Risk

This project will focus on developing a system that can automatically classify what genre a song is in using a .WAV File type. If the chosen, copyright free, song is in another format the program will convert it automatically. Using a training set, the size of which is currently undetermined, I will teach a multi-layer network to recognise and identify the patterns in waveforms from songs of the same genre.

I’ll be using Python and SciPy for the main function of the program, specifically SciPy for the machine learning side of this project. PySimpleGUI will be used towards the latter stages to move the project from a CLI to a GUI providing a usable interface. The program will be designed incrementally, building up from the core elements. These core elements include but are not limited to; Multi-Layer Network, Test Data, .WAV selection.

Because I am working with Python I will have to spend some time building up my knowledge of Python however this can be done before the project work begins.

With this project comes a few risk, It’s going to be important to be aware of and manage these risks in order for the project to be completed to an acceptable standard. The lowest of these risks is the Multi-layer network and training it. Given that this is the main focus of the project it will have the most time allotted to which will help lower the risk of incompletion. Generally, the risk of tasks being incomplete will increase as time moves on. Tasks that are nice to have features, such as a GUI are much more likely to be incomplete.