Title of Project
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Abstract

Electronic music has been steadily expanding over the past years. Many file formats have come into use, including WAVE, MP3, Ogg Vorbix, and many others. This project hopes to examine the structure of WAV files and read/modify the key information. So far, the program can read in a WAV file and print out important information about it. It has not yet achieved the level of being able to modify the data oft he music file directly, but that should be forthcoming 2nd quarter. **Keywords:** music, analysis, wav, modify

1 Introduction

Problem Statement and Purpose I hope to be able to analyze music, by input of some electronic music file, such as MP3 or WAV. Analyze, in this case, means determine some basic information about the speed of the music (BPM) and the key it's in, etc. I also hope to be able to have the user modify the music file in some fundamental (shifts of key and the like) way. The user will be able to see the different "tracks" of the piece (different instruments and melody lines).

2 Background

I need to have a good understanding of how C++ works. Also, I need to know musical composition, and how virtual music files are put together. The reason for knowing these things is so I can perform the operations stated above in the fastest time. With bigger music files, the analysis portion of this project could take a long time, so I need to be able to optimize the process. I know some previous research has been done in this area, by some TJ students and other researchers.

3 Description

So far, I have a working program that reads in a .WAV file and prints out information

gleaned from the information chunks of the file. It also saves the file, in chunk form, to a buffer, and then writes it out to a copy of the file, just to show that it can, and the structure of a .WAV file can be easily imitated. The structure of a .WAV file is pretty simple; it consists of three main sections, and each has a number of chunks contained within it. The chunks contain information such as the type of file it is, the bitrate, the sample size, the number of channels (mono, stereo, etc.). These are used by music players, mostly. It also contains information about the type of compression the file uses; if there is one, some extra chunks are added to tell more about it. This will probably be one of the hardest parts to complete, as I need to be able to convert from the compresion into actual data.

4 Conclusion

I have a lot of work left to do in this project. The program does not do very much in the way of analysis or modification yet. I still need to figure out how the data part of the file is constructed, as I do not know the structure of this mega-chunk yet (it is most of the file, after all). Once I figure this out, I should be able to complete the rest of the project. I want to be able to read in a file, print information out, and do some analysis involving the different parts of the music, and the composition. At the end, if I have time, I want to make it possible for the user to modify the file, and make a new file with the user's modifications.

5 Bibliography

http://www.sonicspot.com/guide/wavefiles.html
https://ccrma.stanford.edu/courses/422/projects/WaveFormat/