CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
S1405

Project Title
Noisy Music

Abstract

Objectives/Goals
My objective was to determine if certain kinds of music should be classified as music or noise according to physics through a mathematical analysis of the waveforms of samples of music.

Methods/Materials
I used a computer, a software called "Audacity," a total of 90 songs from 9 different genres of music, a recording of a car's engine as a control, and a recording of a chord on the piano as another control. I analyzed the entire waveform of each sample of music, noting in my lab book the times of the song that were "musical" and the times that were "noisy." If the song had a mostly musical waveform, the song was determined to be music, and if it was mostly noisy, the song was determined to be noise. I then gathered my data and looked to see how many songs were considered noise and music, and from which genres those songs were from.

Results
I could not make any definite conclusion from the results I had when I organized the music by genre because some genres only had two or three songs that were music or noise, and I could not say that absolutely every song from that genre is either music or noise. I then organized my data by year that the songs were composed in. The results were definitely more significant, and it was easily seen that older songs were more likely to be musical. There were still some outliers, though, and I wanted to figure out why that was occurring. After doing more research, I then organized my results by how the song was mastered (either for loudness or not for loudness), and the result was extremely significant. Out of the seventy samples of music that were mastered for loudness, absolutely zero of them were musical.

Conclusions/Discussion
Whether the song was mastered for loudness or not plays the main role in deciphering what types of music is considered "musical" and "noisy."

Summary Statement
Through a mathematical analysis of a total of ninety songs, it was determined in my project that there are certain types of music that should be considered "noise" and not music according to math and physics.

Help Received
None