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## Sonic Experience Project Report

### Microtonal Flex Resonator

#### Introduction:

I set out to create a tool for creating interesting harmonic movements using dissonance and microtonal tunings in order to facilitate interesting bass movement sound design. I think that the aspects of the semester that most inspired me to go down this path was Dave Dolak's lab 2 that played with different tunings and how they would beat against the original tuning of the string. In this way specific harmonic dissonance inspired me to take that down to a sub harmonic layer and essentially try to get a complex waveform that would maintain its original tonality however have a lot of microtonal elements in the harmonics.

#### Materials:

The materials used was an old book of mine called "The Audio Programming Book" to get the fundamentals for waveform generation. C sound majorly handles all of the interpretation between .csd file and csound file generation, however, the Audio programming book gave me the formatting necessary to see the project through. For all of the demo processing I used Ableton and it's stock pluggins in order to create an aesthetic demo but for all else I used visual studio as my IDE and c/c++ as the main coding languages.

#### Methods:

The method for getting this working was an iterative process as well as essentially working past bottlenecks as they would pop up. I would use in class feedback on the project to help shape it into a strong final product but for the most part I would code up until I couldn't, seek advice or refactor existing code, then continue until I hit another bottleneck. The main bottlenecks for this project were actually interpreting user input into something sonic and being able to take that information and save it to a file that could then be converted into a .csd file (which would then be interpreted by csound). Thankfully I was able to sync the entire process into one fluid .bat file (the run.bat file) otherwise it might be a bit cumbersome on the user end experience.

#### Results:

The results ended up turning out much better than I had expected but some slight adjustments needed to be made from my original idea in order to take the fullest advantage of them. The biggest boon to this project ended up being the built in ability to create a waveform that had slight detuned offsets in as well as original frequency harmonics to beat against each other to create something dynamic and interesting sounding. I didn't initially plan out this project to do so but the implementation was rather simple and the results sounded much better than I anticipated so it became a part of the project. In the future I will try to continue to iterate this project and use it in my own personal productions but I think the next course of action is to turn this into a dynamically fluid vst so that a user doesn't have to load up an external program or have csound in order to use it.