**Mini project- Sound Visualization with synthesizer and song**

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My sketch can visualize sound of a synthesizer and a song. There are two buttons, one is to play on/off a song, the other one is to change sound of a synthesizer. I preloaded one song. When I click the play button, amplitudes and frequencies generated from the song will be displayed on the bottom. Either at the same time or after turning off the song, you can play anything that you like with synthesizer. There are seven notes, and two sound choices, triangle oscillator and saw oscillator. You can toggle the two sounds with the other button. You can also see the amplitudes and frequencies of the synthesizer.

I coded it with p5.js. I could make synthesizer sound by using ‘osc’ in p5.sound.js file. And I connected the sound with amplitude by using p5.Amplitude() and also getLevel(). In the case of frequencies, I used p5.FFT() and also analyze(). I drew the amplitudes by vertexes, and the frequencies by lines. I’ve added dynamic colour changes at the amplitude graph.

I think this program can help to understand basic concept of amplitude and frequency, let users play music. In addition, it basically gives fun to play a song that they want with various sounds as an interactive program. However, I couldn’t fix that synthesizer still can be played even though I pressed other part of the keyboard where I meant to be played. Other than this point, it pretty much works well.

When I showed this program to my peers, they wanted more graphically improved thing. It consisted of black and white at first. So, I’ve added more colour changes to the graph. Also, they wanted more fun to play that actual piano don’t do. In other words, they wanted more technical function as a computer program. So I’ve added different sound for the piano and I’ve changed the concept from piano to synthesizer, just using different function of waveform.

References –

<https://p5js.org/examples/sound-measuring-amplitude.html>

<https://p5js.org/examples/hello-p5-song.html>

<https://p5js.org/examples/sound-frequency-spectrum.html>