

EE 491 WEEKLY REPORT 6

Date: 3/6/17

Group number: dec1712

Project title: Sound Effect Devices for Musicians

Client &/Advisor: Professors Geiger and Chen

Team Members/Role: Jake Asmus/Team Leader, Joseph Brown/Team Communicator, Daniel Peterjohn/Team Webmaster, and Jiangning Xiong/Team Key Concept Holder

o Weekly Summary

- This week we worked on testing our Teensy to see if we could achieve a frequency measuring function. We tried a few different tests, but could not get the Teensy to read the input frequency values. After spending a decent amount of time trying to make this work we ended up deciding the Teensy 3.6 might better fit our needs. The Teensy 3.6 comes with some more powerful technology and is capable of creating an analog output signal, compared to the Teensy 3.0's digital signal. We are going to split up to work on multiple facets of the design, with Jake Asmus working on a schematic for the pedal mat, Joseph Brown working on how frequencies are heard by the human ear, Daniel Peterjohn figuring out the issue with the Teensy reading in the frequencies, and Jiangning Xiong researching the input voltage that's necessary for a guitar amp/pedal and the voltage coming off of the guitar signal.

o Past week accomplishments

- Jake Asmus: I have the schematic drawn out and will build the individual circuit parts of the mat for each button and verify with an Arduino to test the logic. Once I am able to test the Arduino and get the correct results, we should be able to connect to a teensy; there should not be too many issues switching from Arduino to a teensy since they use the same application.
- Joseph Brown: Researched how various frequencies are heard when played together, so if there is the regular input signal mixed with the octave up they will sound different when played together. Tested the theory out using Matlab.
- Daniel Peterjohn: Researched audio libraries for Teensy. Worked on getting current Teensy 3.0 to work with the audio library, but was not successful. Found new audio hardware that is compatible with Teensy 3.6. Decided on ordering Teensy 3.6 because of better capabilities.
- Jiangning Xiong: research on guitar output voltage which is about 0-1.5v peak to peak according to Wikipedia, and it's about the same voltage range for the guitar amplifier.

o Pending issues

- Joseph Brown: Work on testing the Teensy for octave adjustments and other frequencies. Learn more about programming a Teensy.
- Daniel Peterjohn: Has not worked on the website.

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o Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Jake Asmus		1	14
Joseph Brown	Research on listening to two frequencies at once, what is required to have a nice blend of frequencies.	3	15
Daniel Peterjohn	Teensy audio library and hardware research	3	11
Jiangning Xiong	research on guitar output voltage	0.5	8.5

o Plan for coming week

- Jake Asmus: During this coming week and spring break, I will be working on the full mat logic for the with specific parts and have the whole schematic built and ready to test with an Arduino. For two of the switches/buttons, there will be a latch circuit for the LED's to stay at the on state when the switch is off. Once the testing works, I will order parts for the full schematic and once the mat meets the standards and power needs, I will build a PCB.
- Joseph Brown: Discuss what needs to be implemented/coded with the group members in regard to hearing the right frequencies. Also, working on producing an example/test of the frequency measuring functions on the Teensy, so we can move forward with a guitar test in the near future. Also, learning more about programming/using the Teensy 3.6.
- Daniel Peterjohn: Will work on getting the Teensy 3.6 working the audio libraries in addition to the audio interface hardware. Discuss/teach other members how to program and use the Teensy. Do just ONE thing on the website.

o Summary of weekly advisor meeting

- Our meeting with Professor Geiger was focused on spending our time wisely with the resources we are using. If we are going to spend more than a day using a resource, we need to make sure it is worth the value of our time. We came to the conclusion that we would need a more powerful microcontroller than the one we were currently working with. Instead of wasting time working with a part that may not have the functionality you need, we should have ordered a different microcontroller that would be worth our time. Professor Geiger also wanted us to work on individual presentations for the next meeting, to help us realize who is working on what and if their time is being spent wisely.