

Date: 3/27/17

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 past week we worked on trying to reach a level with our project to test our pedal and our pedal mat separately. Jake Asmus worked on the pedal mat and ordered some parts to finish making the prototype of the mat, where it should be able to communicate to the Teensy in the mat simple logic levels. We are going to implement a toggle switch for the on/off states and use impulses with a counter on the Teensy to control volume/other dial options. When the mat prototype is completed we will be able to independently test the logic with the Teensy on the mat, and work out communication to the other Teensy in the pedal. The pedal is reaching a point where we should be able to test some actual guitar signals through it. Daniel Peterjohn has been programming various functions and effects into the Teensy, including reverb and bit crushing. We will work on adapting the circuit to take an instrument cable input and begin testing with a guitar within the next few weeks. Joseph Brown spent some time working on the layout, design, and content of the team website page with Daniel Peterjohn. With a little more time Joe and Daniel will be able to finish the website design and content on Weebly, and Daniel will export the web design to the hosting site.

o **Past week accomplishments**

- Jake Asmus: Worked on the 7-segment display using the CD4511BE driver to display numerical digits 0-20 for volume intensity. Also, worked on the LED display for on/off mat buttons trying to convert from using JK FF to T FF. However, there are issues that has arisen (see "Pending Issues" below). Used an Arduino for the microcontroller since this portion of the mat will rely on software/microcontrollers.
- Joseph Brown: Worked on the website design and content with Daniel, trying to make it look professional and work in some unique qualities showing off our members. Made adjustments for the project plan.
- Daniel Peterjohn:
 - I did a lot of work with the Teensy this week. I spent a lot of time learning how the Audio Library works as well as the Teensy Audio Adapter.
 - Experimenting with standard effects like reverb and bit crushing.
 - Experimenting with mixers to showcase the capability of switching modes

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and/or mixing several effects.

- Discovered that we can use I2S to get audio in and out without using extra hardware to displace the AC audio signal for the Teensy's ADCs and DACs.
 - I also started writing the custom effects to add to the Audio library
 - Creating and testing effect_pitchshift.cpp
 - Creating and testing effect_octaveshift.cpp
 - Researching algorithms and theories on pitch shifting samples
 - Helped Joe with getting the website set up and working with Weebly.
 - Set up the GitHub for the Teensy code I'm writing.
- **Pending issues**
- Jake Asmus: The T FF configuration is causing issues and the outputs are not following the truth tables. Will order JK and T FF chips instead of NAND gates.
 - Joseph Brown: Finish website design with Daniel. Workout a better-looking Gantt chart for the project plan.
 - Daniel Peterjohn: Continuing writing effect_pitchshift.cpp and researching algorithms for it.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Jake Asmus	SSN and LED display	4	30
Joseph Brown	Worked on Website Design, Content, and adjustments to Project Plan	3	21
Daniel Peterjohn	Research and development of Teensy audio and testing with website.	20 (note to reviewers - I put in lots of hours since I don't have many classes)	36
Jiangning Xiong			8.5

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○ Plan for coming week

- Jake Asmus: Resolve the LED on/off displays and have a decision made using either the T or JK FF (desired choice is T FF). Finish the 7-segment display coding and then work towards building a “heat” intensity meter for more visuals as suggest by Professor Geiger.
- Joseph Brown: Try to help finish any random parts of coding for the mat or the pedal. Basically, wherever Daniel or Jake need my help.
- Daniel Peterjohn:
 - Continue writing custom effects to add to the Audio library
 - Writing and testing effect_pitchshift.cpp
 - Writing and testing effect_octaveshift.cpp
 - Researching algorithms and theories on pitch shifting samples

○ Summary of weekly advisor meeting

- No meeting with Professor Geiger, out of town.