sdmay19-32: Sound Effect Devices for Musicians

Week 2 Report

January 31 – February 7

Advisors: Dr. Geiger & Dr. Chen

Team Members

Tim Day — *Analog Engineer*
Eric Fischer — *Test Engineer*
Francisco Alegria — *Chief/ Musical Engineer*
Blake Beyer — *Digital Engineer*
Travis Gillham — *Integration Engineer*

Summary of Progress this Report

During this week, we learned more on the i2c communication works so that we can communicate between the Arduino and the digi-pods. We created a circuit that tested the sweeping range of the digi-pod. WE have started to create the Bode-plots for the filter and gained a better understanding of how they work. We are still trying to figure out the wifi-communication, which is still in the debugging state. The circuits for the oscillator voltage supply and the filter mode selector are in progress. The oscillator is still running into problems with the temperature reading. The ADSR code has started that will interface will the other modules to create an envelope for the sound.

Pending Issues

- Need to finish testing the mixer, noise, amplifier, filters, oscillators, and low frequency oscillators.
- Need to learn how to use the digi-pods.
- Need to finish code for ADSR.
- Need to make working algorithm for the mixer and filters.

Plans for Upcoming Reporting Period

- Finish WiFi debug. Port Arduino uno code to mega.
- Everyone will present their fully tested circuit to Dr. Geiger and Dr. Chen on Thursday next week.
- Algorithm for mixer should be complete.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Tim Day	Learned how to code onto an Arduino. Refreshed how to code in C. Changed the algorithm from MATLAB to C. Learned how the i2c works. Tested how to send a changing bit to the digipod to change its resistance. Created a test circuit to see the sweeping range of the digipod.	9	15
Eric Fischer	Helped Travis get the ADSR code started. Continued to test filter circuits. Learned from Tim and Geiger how to accurately test the functionality of a filter to confirm it works properly. Decided gathering peak-to-peak voltage data points and plotting them in excel is the best way.	7	13
Francisco Alegria	Debugging code for wifi communication. Connection can be established, but either no data is transmitted or it is not being interpreted correctly. Working on two schematics: osc control voltage supply and filter mode selector.	7	13
Blake Beyer	Helped Travis develop early version of ADSR code. Met with Geiger to determine testing criteria for ADSR. Found out sweeping with digipot could cause unintended noise. Implemented fine tuning controls on oscillator. Broke oscillator. Began revising oscillator circuit for final implementation.	7.5	13.5
Travis Gillham	Designed the circuit for the amplifier. Talked with Geiger about how to go about testing the amplifier and possible problems we could run into with digipots. Started the code for the ADSR. Researched how the Arduino Mega will be used to implement the ADSR code	7.5	13.5