

sddec18-21: Multi-Effect Sound Pedal Sequencer for Performing Musicians

Week 8 Report

April 1 - April 7

Team Members

Calyn Gimse — *Test Engineer*

Tyler McAnally — *App Developer*

Karla Beas — *Facilitator / Hardware Assistance*

Charles Rigsby — *Hardware Assembly*

Derrick Lawrence — *Report Manager / Hardware Assistance*

Professor Randall Geiger — *Advisor / Client*

Professor Joseph Zambreno — *Course Instructor*

Summary of Progress this Report

During this week, progress was made in bluetooth communication between the android device and the Pi, as well as chaining digital effects in parallel. We had parts come in this week, but ran into a set back, as ETG was unable to assist with surface-mount soldering a part we needed (~3 week lead time), so we decided to change the ADC to be used in the in the first prototype to a 12-bit, through hole chip to focus on functionality. Progress with the digital signal processing included weighting of parallel effects and creating a template file to store effect configurations received from the app. Progress was also made in transferring data to the pi from the app to select which configuration to use.

Pending Issues

We are waiting on the through hole components to come in to begin testing, and will also need to spec a DAC chip to replace the PWM functionality at the output stage of the hardware at some point, as research suggests that a separate DAC chip would provide a better quality signal than using PWM output pins with a low-pass filter.

Plans for Upcoming Reporting Period

The plan for the upcoming period is to implement parsing of files sent from the android device. Also, with most of the circuit finalized, we will begin creating a prototype of the hardware on a breadboard, while waiting for the new ADC to come in. In addition, we will draft a script to process the analog signal with no digital effects and convert it back to the analog domain to prepare for primitive testing once the circuit is complete.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Calyn Gimse	Completed implementation of parallel effect processing, and finalized preset storage file template	5	40
Tyler McAnally	App is able to append commands to a file to be sent over RFCOMM and parsed in C	5	32
Karla Beas	Finalized resistor and capacitor values for LPF connected to the PWM pins	4	30
Charles Rigsby	Specced 12-bit, through hole ADC for testing purposes	3	31.5
Derrick Lawrence	Drafted script to read the binary bitstream from ADC and process the clean signal through pins connected to PWM peripheral	4	31