sddec18-21: Multi-Effect Sound Pedal Sequencer for Performing Musicians
Week 10 Report
April 15 - April 20

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 — *Adviser / Client*
Professor Joseph Zambreno — *Course Instructor*

Summary of Progress this Report

We finalized the communication process between the android app and Pi in preparation for the demonstration. The Pi is successfully taking commands from the android app. For the demo, the Pi will use an open-sourced WAV file of a guitar recording, and uses PortAudio to send the resulting signal after processing through the audio jack. We also decided to order a 12-bit DAC in order to achieve functionality again and assist in narrowing down causes of the PWM peripheral not working. We have highly convincing evidence that the ADC is sending a binary bitstream to the Pi as expected, as an oscilloscope shows the waveform changing with a change in a DC input to the ADC. Without calculating the exact binary sequence the chip is sending, the fact that the bitstream changes with a change in DC input and remains constant when the input remains constant is enough evidence to move on to testing other parts of the circuit, for the time being.

Pending Issues

The PWM function of the four designated pins in the BCM2835 library does not output a waveform of any kind, even with examples that come ready for upload with the installation of the BCM library. These examples are supposed to be ready to run and should output a square wave of which the duty cycle can be hard-coded in the example by changing one parameter of a function. This would heavily suggest that a component or multiple components on the Pi are nonfunctional.

Plans for Upcoming Reporting Period

As we head into summer, the plan is to achieve analog signal processing once again, to verify filter cut-off frequencies will not affect the primary audible range of a guitar and verify the implementation of the toggling between effects to be done with hardware. After that, the team will prepare for moving to 16 or 20-bit chips and begin PCB layout starting early next semester. Our hope is to request soldering assistance at the beginning of next semester and complete the integration of each working part for final testing.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Calyn Gimse	Replaced section of code previously using keyboard implementation to change effects with bluetooth implementation	5	51
Tyler McAnally	Assisted with transfer of previous implementation with new app-based functionality in prep for demo	3	40
Karla Beas	Hardware testing / debugging	5	39
Charles Rigsby	Hardware testing / debugging	5	38.5
Derrick Lawrence	Hardware testing / debugging and DAC spec	4	43