

sdmay18-39: Sound Effect Devices for Musicians

Week 4 Report

September 27 - October 3

Team MembersBenjamin Reichert — *Experimentation Team Leader*Daniel Kroese — *Software Integration Leader*Garrett Mayer — *Technical Communications Leader*Thomas Kimler — *Technical Project Manager*Virginia Boy — *Communications Leader***Summary of Progress this Report**

- Set up and performed tube amplifier data collection through oscilloscope
- Performed analysis on data collected
- Researched and determined necessary equipment for future experiments

Pending Issues

- Coherent sampling is imperative for proper waveform analysis
- Oscilloscope has too low resolution for audio-quality analysis
- Need a way to split the signal equally, 3-ways
- Need a test bench to automate and standardize testing

Plans for Upcoming Reporting Period

- Look into some preliminary methods of how to manipulate sound waves using a micro controller
- Look at using Fourier and inverse Fourier transforms to manipulate signals on micro controllers
- Reach out to some music or musically inclined physics professors on campus who could help understand what makes certain music sound good vs. bad
- Develop test bench to automate characteristic testing
- Begin automated testing in effort to draw conclusions from experiments

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Benjamin Reichert	Assisted in setting up pipeline to sample tube amplifier output on oscilloscope and capture data, Worked with team members to analyze data in matlab. Compared raw time domain signal to fft waveform for insight into harmonic composition etc.,worked on tailoring post-processing (post-analytics) data for presentation to mentors	8	32
Daniel Kroese	Looked for a 24-bit recorder for sound wave analysis, looked at microphones, overdrive	8	31

