sdmay19-11: MIDI Zuesaphone (Singing Tesla Coil)
Week 4 Report
September 19 - September 26
Client
Joseph Zambreno
Advisor
Craig Rupp
Team Members
Gunnar Andrews — *Webmaster*
Leo Freier — *Interrupter and Micro Controller Lead*
Luke Heilman — *Technical Architect*
William Brandt — *Pulse Width Modulation Expert*
Greg Harmon — *Tesla Coil Construction Expert*
Jacob Feddersen — *Communications Specialist*

Summary of Progress this Report
- Discussed keyboard to Pi connections
- Discussed wireless connections and possibility of a web client
- Researched spark gap circuit
- Decided on a tesla coil design that will be a basis for the semester's prototype

Pending Issues
- Unsure of how to protect the Pi from the coil's magnetism while also having wireless connections to the keyboard.

Plans for Upcoming Reporting Period
- Gunnar Andrews
    - Work with Jacob on wave generating code
    - Make my own MIDI track
    - Possibly create access point on PI
    - Update website with profiles and description
- Leo Freier
    - Work on frequency to voltage pulse converter on the Pi
    - Possibly create access point on Pi
- Greg Harmon
    - Find purpose and placement of the OCD and Feedback circuits on the Driver
    - Research if a separate interrupter circuit is necessary when the music-modulating circuit is being used
    - Research specifications on primary and secondary coils
    - Refine and update parts list
- Will Brandt
    - Finalize parts list
    - Work on spark gap circuit design
- Jacob Feddersen
    - Work with Gunnar to refine MIDI file reader

- ○ Work Luke on live MIDI keyboard input
  - ○ Research implementing CI for Gitlab and unit testing options for c and c++ code
- Luke Heilman
  - ○ Test MIDI keyboard connections with Jake
  - ○ Create program to inspect MIDI packets from keyboard

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Gunnar Andrews	- Experimented with converting other file types to MIDI - Experimented with creating my own MIDI tracks - Researched C code / operating systems on Micro controllers	4.5	15.5
Leo Freier	- Researched MIDI outputs and formats - Worked on prototyping MIDI to GPIO program on the Pi	5	16
Luke Heilman	- Researched specific keyboards - Researched option of web browser on Pi - Continued work on overall project design	7	19.5
William Brandt	- Research spark gap circuits - Researched general coil design	2.5	9.5
Greg Harmon	- Researched: - Schematics for Tesla Coil Driver, Bridge, & Music Modulator - Parts for respective drawings - Chose a Tesla Coil design to base Zeusaphone on	5	18
Jacob Feddersen	- Refined code for the Driver Emulator - Researched wireless keyboards - Researched MIDI over Bluetooth	6	23

Gitlab Activity Summary

commit 97ce3a2f9b3cbe31e927a6c5444a7835dec9d0b5 (origin/driver_emulator)
Author: Jake <jtfedd@iastate.edu>
Date: Wed Sep 26 17:04:20 2018 -0500

  Add readme for driver emulator

commit 1f3058a06421c3c1edfab1d78b7a7c3a4613870b
Author: Jake <jtfedd@iastate.edu>

Date: Wed Sep 26 16:56:46 2018 -0500

Clean up and document driver emulator source file

commit 5a322fc9aa6d7650321159c5e90078737cd87eeb
Author: Jake <jtfedd@iastate.edu>
Date: Wed Sep 26 16:29:27 2018 -0500

Add driver emulator from experiments branch

commit 1e0106fbc1cccb494f3e3cc7b84c4a990a14b707
Author: Jake <jtfedd@iastate.edu>
Date: Wed Sep 26 16:22:12 2018 -0500

Add gitignore for c and cpp

commit 3482870ee1869f41c9f45144ef48cb6bb11ebbf8 (origin/generate-tones)
Author: Jake <jtfedd@iastate.edu>
Date: Wed Sep 26 16:13:55 2018 -0500

Delete old 'sound_server' folder

commit 38af7d397d2e27eac4ba325039eadc4e42079774
Author: Jake <jtfedd@iastate.edu>
Date: Wed Sep 26 16:12:47 2018 -0500

Add gitignore for c and c++

commit a9cbe4dd3c858c005bf500efa69b8f5a2a46508b
Author: Jake <jtfedd@iastate.edu>
Date: Wed Sep 26 16:11:58 2018 -0500

Rename driver emulator folder

commit b8a3a4fc068160afbf84557c3eb2466e46574830 (origin/documentation)
Author: lheilman <lheilman@iastate.edu>
Date: Tue Sep 25 15:58:31 2018 -0500

Add Project Diagram