sdmay19-11: MIDI Zeusaphone (Singing Tesla Coil)
Week 3 Report
September 12 - September 19
Client
Joseph Zambreno
Advisor
Craig Rupp
Team Members
Gunnar Andrews — *Webmaster*
Leo Freier — *Interrupter/Micro Controller Lead*
Greg Harmon — *Tesla Coil Construction Expert*
William Brandt — *Pulse Width Modulation Expert*
Jacob Feddersen — *Communications Specialist*
Luke Heilman — *Technical Architect*

Summary of Progress this Report

- We made progress with MIDI software
- Researched circuit designs for tesla coils
- Continued to experiment with Raspberry Pi
- Decided not to purchase a kit to study

Pending Issues

None to report

Plans for Upcoming Reporting Period

- Gunnar Andrews
  - Continue working with backend MIDI code
  - Research Microcontroller capabilities
- Leo Freier
  - Have pi be able to receive square wave from Jake's code
  - Continue working on outputting wave
- Greg Harmon
  - Turn ratio for primary coil : secondary coil
  - Parts list for rectifier and switching circuit
  - Ways to mitigate adverse effects on nearby electronics
- William Brandt
  - Research workings of circuits
  - Continue work on parts list
- Jacob Feddersen
  - Format and document code from last week
  - Research input from live MIDI devices
- Luke Heilman
  - Continue work on schematics
  - Place schematics in Git
  - Determine which MIDI keyboard to use

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Gunnar Andrews	- Wrote PoC code for playing/creating MIDI files - Researched circuit diagrams of tesla coil - Updated website	4	11
Leo Freier	- Chose to use C for GPIO with the WiringPi library - Experimented with GPIO output	4	11
Greg Harmon	- Researched: - Cost in relation to size - Part numbers for the switching circuit - Safety precautions to be taken - Made a block diagram for the project	5	13
William Brandt	Researched tesla coil construction and parts required	2	7
Jacob Feddersen	- MIDI File Player Application - Read MIDI file input - Output event stream to socket - Tesla Coil Driver Emulator - Read channel and frequency events - Output result to file	8	19
Luke Heilman	- Created sample MIDI files - Began overall parts list - Began overall schematic	5	12.5

Gitlab Activity Summary

```
commit e40f77baad1cdbe5332b656a97d38907edf3f5f5
Author: lheilman <lheilman@iastate.edu>
Date:   Mon Sep 17 23:54:32 2018 -0500

    Add midi files folder with school rah-rah music

commit 2d03536ed1e2a6b150b49b2a78bc41482f64f093
Author: Jake <jtfedd@iastate.edu>
Date:   Mon Sep 17 19:39:47 2018 -0500

    Add readme with build instructions

commit 5fbad937ca7a0a30fca96c3fd496d9bcd4a5aa24
Author: Jake <jtfedd@iastate.edu>
Date:   Mon Sep 17 19:22:51 2018 -0500

    Add Luke's fight song version

commit f98782f8cee87f83df29596d002e0b7645fffc25
Author: Jake <jtfedd@iastate.edu>
Date:   Sun Sep 16 18:03:42 2018 -0500

    Add Fight Song

commit e6411c619247435b7b0f243d62d5efb248b21fe6
Author: Jake <jtfedd@gmail.com>
Date:   Sun Sep 16 17:34:14 2018 -0500

    Add midi app and driver emulator
```