

sdmay19-11: MIDI Zeusaphone (Singing Tesla Coil)

Week Report 18

February 28 - March 7

Client/Advisor

Joseph Zambreno

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

- Completed more finished versions of PCB layout
 - Started work on User/Safety manuals
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Past Period Accomplishments

- Submitted Parts Order 2
 - Should be all the electronic components we need for the rest of the project
- Implemented front end of Web API
 - Tried implementing libraries and ran into issues with HTTP calls
 - Wrote my own CSS to try and make the frontend myself, but it needs more work
- Perfboarded the input logic circuit
- Completed more finished versions of PCB layout
 - Considered case design in layout
 - Created custom PCB footprints for non-standard circuit elements
 - Completed a more feasible draft of the PP/IL PCB layout
 - Lee Harker will take a look at our work so the layouts can be finalized
- Started work on manuals
 - Started creating the user and safety manuals, mainly just to have at least a start on them. Then, when we accelerate work on the manuals, we have a starting point.

Pending Issues

Nothing to report

Plans for Upcoming Reporting Period

- William-Investigate static charge acrylic, continue work on safety document. Check IEEE standards
 - Speak with Lee Harker to look over our current PCB designs
 - Design bridge circuit PCB layout
 - Integrate keyboard and implement pitch modulation
 - Continue Web API design
 - Continue perfboarding the circuit so we can test our own secondary coil on it eventually
 - Decide on secondary coil fabrication with Lee Harker and begin construction
 - Research potential problems due to static buildup on acrylic case.
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Individual Contributions

Team Member	Contribution	Reporting Period Hours	Total Hours
Gunnar Andrews	<ul style="list-style-type: none"> ● Updated Website ● Worked with front end design <ul style="list-style-type: none"> ○ Tried libraries ○ Wrote a lot of my own CSS to try and style the API myself ○ More work needed 	9	132
Leo Freier	<ul style="list-style-type: none"> ● Completed second draft of PCB layout ● Made custom footprints for specific components ● Began work on user manual 	9	132
Luke Heilman	<ul style="list-style-type: none"> ● Perfboarded the input logic circuit for higher power coil ● Created initial designs for transmitter case 	8.75	165.5
William Brandt	<ul style="list-style-type: none"> ● Designed initial safety document 	8	121
Greg Harmon	<ul style="list-style-type: none"> ● Secondary Coil dimension calculations <ul style="list-style-type: none"> ○ Number of turns on primary and secondary ○ Length of wire needed ○ Given: Turn ratio, PVC diameter, Height of Secondary, and gauge of wire. ● Verified 2nd parts order 	8	143
Jacob Feddersen	<ul style="list-style-type: none"> ● PCB component footprints and layouts (w/Leo) 	9	187.75

Gitlab Activity Summary

commit 5f973b8d9a00eddfa51c10d65cabdf80ddb47c6d (origin/pi_generate_wave)

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:43:33 2019 -0600

php script to upload a song onto the PI

commit 66b3816e040a895de4f3c1f3cefe96b32749e237

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:43:03 2019 -0600

php script to populate the song list

commit a926fa8c5d67c5651c4f63df3270fa20cae9ce54

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:42:36 2019 -0600

php script to play keyboard

commit 433a5ef47c07bff8f9fe515ceecd7f4b5d380b33

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:42:15 2019 -0600

php script to play song

commit 43e8b669f85cea6f5070b20c95d5ec8ebfdee4c2

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:41:49 2019 -0600

WebAPI html

commit 4083af242f3ca8cb525894e3b9dfb1b39640e6a9

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:40:18 2019 -0600

Add new directory

commit 3582f0a4aa30c61332cbd72426d6a7f70671f93a (origin/patch-1)

Author: gunnara <gunnara@iastate.edu>

Date: Mon Mar 4 17:38:34 2019 -0600

adding the WebAPI code to git

commit 3f4af22c14f08b8bac7661a8b3b9e5e60565a9e4

Author: Leo Freier <lmfreier@iastate.edu>

Date: Mon Mar 4 17:37:11 2019 -0600

updating leos PI