

EE 492 Progress Report MAY15-23 Period 4 (3/2/15-3/22/15)

Advisors: Daji Qiao

Client: Halil Ceylan

Members (roles): Brandon Wachtel, Tyler Fish (Team Communicators)

Mitch Balke (Team Leader)

Brandon Maier, Johnnie Weaver (Web Masters)

Trieu Nguyen, Christofer Sheafe (Key Concept Holders)

Project Title: Wireless Embedded Roadway Health Monitoring

Period Summary

During the fourth period we decided on parts and ordered them to build our initial prototypes. Unfortunately, the parts were late on the shipping and arrived while we were all gone during spring break. We changed the design of the induction coils as well as the charging chip that we are using to regulate the charging current for the battery. We finished the enclosure design for the nodes that do not use the wireless charging.

3/2 Group Meeting with Advisors

Duration: 1 Hour

Members Present: Tyler Fish, Brandon Wachtel, Mitch Balke, Johnnie Weaver,
Chris Sheafe

Purpose and Goals:

Discussed our current progress with the design for the charging circuitry. We talked to our advisers about contacting the people in the Civil Engineering department to see if we can get some concrete to use for testing the wireless charging as well as the node to node communications. Asked about the antenna and how bending it within the enclosure will affect the communications bit error rate. Should hear more about the new inductive coil design from Trieu during the next meeting.

Meeting Notes:

Finalize enclosure design and submit for printing
Work on multimode system calculations and programming
Discussed transmission packages
Try lowering transmission power
Contact Civil people for large concrete enclosures for testing
Sent out order for PCBs last week
Sent out order for electronics components Monday
Will be putting boards together as parts come in
Decide on communications antenna size
Flexible transmission power interface
Test baud rates for data loss in concrete
Going to talk to Linear Technology representative this week
2205 has a conference phone or 1212 Student Services call room
Order SMA female connectors for the network analyzer
Should hear more from Trieu about charging next meeting
Enclosure To Do
- resize model for new PCB design
- add pegs for mounting the PCB
- ½ the gap currently between the two walls

3/9 Group Meeting with Advisors

Duration: 1 Hour

Members Present: All

Purpose and Goals:

Discussed the new inductive coil design that Trieu and Johnnie found. Talked about the phone conversation with the representative from Linear Technology about the new chip that we will be implementing for charging. The

Linear Technology rep. gave us 5 extra chips as well as a demo board to help us out. At this point, we are waiting on the new PCBs to come in as well as the electronic parts.

Meeting Notes:

MOSFET switching to create frequency on charging transmitter
Better power output
Parts should come in this week
Johnnie and Trieu are working on inductive coil charging over break
Switching charging chips
Selected an antenna to use
Emailed civil guys about concrete for testing
Boards should come in this week as well
Enclosure will be finalized this week
Enclosure cost estimates and order after break

Pending issues

Testing of charging circuit and new inductive coils
Constructing circuits
Print the enclosure

Plans for Fifth Period

Brandon Wachtel – Testing new LT charging chip, assisting with inductive coils
Trieu Nguyen – Work on charging coils and their circuitry.
Johnnie Weaver – Work with Trieu and Brandon Wachtel on the charging coils and chip respectively
Tyler Fish – Send enclosure design off for printing, assist Brandon Wachtel on charging chip testing
Christopher Sheafe – Working with Brandon Maier on the Raspberry Pi base station.
Mitch Balke – Work on multiple node communications
Brandon Maier – Assist Mitch with the communications, work on the base station
Everyone – Work on presentation for George, work on finalizing documentation, put boards together now that parts have finally come in.

Individual Contributions (This Period)

Johnnie Weaver: Attended advisor meetings (2hr), attended group meeting (1.25hr), phone call with LT rep (1.5hr), charging coils with Trieu (3hr), part order for inductive coil circuit (1hr)

Brandon Wachtel: Attended advisor meetings (2hr), attended group meeting (1hr), conference call with Linear Technology (1.5hr), charging chip circuit documentation (1hr), writing progress report (0.75hr)

Tyler Fish: Attended advisor meetings (2hr), attended group meeting (1.25hr), worked on enclosure design (2hr), coil testing with Johnnie and Trieu (0.5hr), phone meeting with LT rep (0.25hr), writing progress report (0.75hr)

Mitch Balke: Attended advisor meetings (2hr), attended group meeting (1.25hr), made final order for parts (1hr), finalized and ordered PCB (1hr), worked on converting code for new microcontroller (2hr)

Brandon Maier: Attended advisor meetings (1hr), attended group meeting (1hr)

Trieu Nguyen: Attended advisor meetings (1hr), attended group meeting (1hr), inductive coil design (4hr)

Christofer Sheafe: Attended advisor meetings (2hr)

Total Contributions (This Period)

Johnnie Weaver: 8.75 Hours
Brandon Wachtel: 6.25 Hours
Tyler Fish: 6.75 Hours
Mitch Balke: 7.25 Hours
Brandon Maier: 2 Hours
Trieu Nguyen: 6 Hours
Christofer Sheafe: 2 Hours

Total Contributions to Project

Johnnie Weaver: 96.5 Hours
Brandon Wachtel: 93.75 Hours
Tyler Fish: 95 Hours
Mitch Balke: 95 Hours
Brandon Maier: 84.75 Hours
Trieu Nguyen: 81.5 Hours
Christofer Sheafe: 60.5 Hours