

# EE 491 Weekly Report    **MAY15-23**    **Week 6 (10/6/14-10/12/14)**

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**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**

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## Weekly Summary

Previously ordered parts are slowly coming in. We have pretty much wrapped up the research portion of the project. We are going to look further into electromagnetic charging as a possibility for charging the system if the RF charging is not possible. We scheduled weekly subgroup meetings to better progress through the project. The CprE members have been testing the microcontrollers as they have come in. Currently, they are having issues receiving data from the sensors and we may need to find a new sensor for the project. The power group has ordered samples of a charging circuit that will fit our needs. The communications group has been working on identifying antennas to use for receiving the RF signal for power as well as looking into LC circuits for the transmitter. Our advisors are letting us borrow an antenna kit that has been currently stored in their lab for testing purposes.

## Meeting notes:

Look into EM some more in case RF does not work

Talk to Lee to purchase transmitters and parts

EM for charging (cone or disc shape)

    could place before pouring concrete to make sure of correct orientation

Look into finding even lower power consumption for microcontrollers

Look into low power sensors to possibly replace the one we have

Send concrete 915 MHz document to professor Song

If we do EM charging, we would need to make our own circuits and coils

Verify actual dimensions allowed for the node

Overall design of project may change if we change to EM charging

Possibly look into sensors with strain capabilities

## 9/19/14    Group Meeting with Advisors

**Duration:** 1 hour    **Members Present:** All

### Purpose and Goals:

Took group photos for the website of group members and advisors. Discussed the project plan and took note of additions to it. Advisors are pleased with our overall progress that the group has made on the project. Discussed ideas about RF charging and if we need to possibly change to EM in case the RF is not possible.

## Pending issues

Having trouble reading information being sent from sensor to microcontroller

## Plans for next week

Mitch and Brandon M: Continue working on the program for the microcontroller as well as reading information from the sensor, order more samples of microcontrollers and transceivers as well as components for transceiver LC circuitry.

Brandon W, Johnny, Trieu: Continue looking into the charging circuitry, work on learning Multisim and Ultiboard.

Tyler and Chris: Work on antenna and power conversion for the power circuit, build and test LC transceiver circuit, begin testing with RF kit.

## **Individual Contributions (this week)**

Johnnie Weaver: Attended group meeting (0.5hr), attended advisor meeting (1hr), researched battery charging/transceiver (1hr), website updates (0.5hr), picking up antenna and talking with advisor about antenna (0.75hr)

Brandon Wachtel: Attended group meeting (0.5hr), attended advisor meeting (1hr), working with Multisim and Ultiboard (2.5hr), picking up antenna and talking with advisor about antenna (0.75hr), writing weekly report (0.5hr)

Tyler Fish: Attended group meeting (0.5hr), attended advisor meeting (1hr), looked into antenna and RF charging design (1.5hr), worked on transceiver LC circuit part lookup (0.5hr), writing weekly report (0.5hr)

Mitch Balke: Attended group meeting (0.5hr), attended advisor meeting (1hr), worked on low-power code testing (1hr), researched and ordered sample parts for RF transceiver and RTC (0.5hr)

Brandon Maier: Attended group meeting (0.5hr), attended advisor meeting (1hr)

Trieu Nguyen: attended advisor meeting (1hr), researched on alternative power harvesting and charging method (1hr), picking up antenna and talking with advisor about antenna (0.75hr)

Christofer Sheafe: attended advisor meeting (1hr), antenna part research (1hr)

## **Total weekly contributions (this week) for the project**

Johnnie Weaver: 3.75 Hours

Brandon Wachtel: 5.25 Hours

Tyler Fish: 4 Hours

Mitch Balke: 3 Hour

Brandon Maier: 1.5 Hour

Trieu Nguyen: 2.75 Hour

Christofer Sheafe: 2 Hour

## **Total contributions for the project**

Johnnie Weaver: 19.5 Hours

Brandon Wachtel: 21 Hours

Tyler Fish: 19.75 Hours

Mitch Balke: 23.25 Hours

Brandon Maier: 16.5 Hours

Trieu Nguyen: 16.5 Hours

Christofer Sheafe: 13 Hours