

EE 491 Weekly Report **MAY15-23** **Week 3 (9/15/14-9/21/14)**

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

Weekly Summary

Held weekly team meeting on Thursday. We discussed and created our system level block diagram for the entire project to show to our advisors in our meeting on Friday. Attended weekly Advisor meeting on Friday. Spoke with Civil Engineering professors and graduate student about past work with the project and were informed on basic properties of concrete. Group members continued to do individual research on their own time.

Meeting notes:

Temperature range of concrete in Iowa – Roughly -20 – 120 degrees F

Potential Malfunction Causes:

 High alkaline environment within the concrete

 Corrosion of wires due to contact with concrete

Humidity level will go between 0-100%, but past sensor malfunctioned after the value reached 100

Rebar might mess with readings if the sensor is attached to it, so attaching to the rebar is probably not feasible.

Strains: 500 u Strains maximum on sensor

Size Restrictions: Roughly 4in x 2in x 0.5in

Edge and Corner values are most important

Slab Size: 20ft x 12ft x 10in

9/19/14 Group Meeting with Advisors

Duration: 1 hour

Members Present: *Brandon Wachtel, Tyler Fish, Mitch Balke, Brandon Maier, Trieu Nguyen, Christofer Sheafe*

Purpose and Goals:

The purpose of the weekly meeting was to talk with the Civil Engineers about previous work on the project and to be informed about basic properties of concrete. We also spoke with our advisors about our research throughout the week and received feedback on our research and given direction for next week.

Pending issues

No pending issues currently.

Plans for next week

Add team information on website – Member Name – Major – Area of Focus (if available)

Add client information on website

Look into locating techniques to find sensors once they are embedded into the road

Look into possibly PVC housing for the unit and some kind of sealant to protect the sensor and circuitry.

System Level Design – Add communication data information for each connecting line

Check if we need a real time clock calendar for the microcontroller

Individual Contributions(this week)

 Johnnie Weaver: Attended group meeting (1hr), researched

 Ideal frequencies in concrete with minimal dB loss

(1hr), fine tuning website and adding weekly reports
(1hr)

Brandon Wachtel: Attended Advisor Meeting (1hr)
attended group meeting (1hr), researched different
types of batteries (0.5hr)

Tyler Fish: Attended Advisor Meeting (1hr), attended
group meeting (1hr), researched signal attenuation
and wave propagation in concrete (1hr)

Mitch Balke: Attended Advisor Meeting (1hr), attended
group meeting (1hr), wrote and tested code for
SHT71 sensor (1hr), researched low-power MCs
and software optimization for low power
applications (2hr)

Brandon Maier: Attended Advisor Meeting (1hr),
attended group meeting (1hr), researched different
wireless mesh network algorithms (3hr)

Trieu Nguyen: Attended Advisor Meeting (1hr), attended
group meeting (1hr)

Christopher Sheafe: Attended Advisor Meeting (1hr), attended
group meeting (1hr), researched signals in concrete
and frequency comparisons (1hr)

Total contributions for the project

Johnnie Weaver: 7.75 Hours

Brandon Wachtel: 7.25 Hours

Tyler Fish: 7.75 Hours

Mitch Balke: 11.75 Hour

Brandon Maier: 7.75 Hour

Trieu Nguyen: 5.75 Hour

Christopher Sheafe: 5.75 Hour