

EE/CprE/SE 491 WEEKLY REPORT 02

9/11/17 – 9/15/17

Group number: 11

Project title: RFRD Phase II

Client &/Advisor: Dr. Daji Qiao and Dr. Nathan Niehart

Team Members/Role:

Bailey Akers - Facilitator/RFRD Tag Design/Fabrication Engineer

Colin Sunderman - RFRD Tag Design/Fabrication Engineer

Lyle Bishop - Principal Antenna Engineer

Pengyu Que – Antenna/Power Harvesting Engineer

Nathan Mulbrook - RFRD Wireless Communications Engineer

o Past week accomplishments

Team Member 1: Bailey Akers

Facilitated initial team and advisor meetings. Attended team and advisor meetings. Wrote weekly report

Team Member 2: Colin Sunderman

Attended team and advisor meetings. Edited weekly report.

Team Member 3: Pengyu Qu

Attended advisor meeting.

Team Member 4: Lyle Bishop

Attended advisor meeting.

Team Member 5: Nathan Mulbrook

Attended advisor meeting. Set up team Slack account and calendar.

o Weekly Summary

9/11 – Created elevator speeches.

9/13 – Didn't get chosen to give elevator speeches. Group attended class.

9/15 - Met with advisors Dr. Daji Qiao and Dr. Nathan Niehart.

- Discuss possible Rx/Tx module that is commercially available.
 - o Determined that we need more research in the antenna power harvesting design to determine how much power we can utilize in our design.
- Discussed capacitive sensing.
 - o Discussed three ways to measure capacitance:
 - Integrator
 - Wein Bridge Oscillator
 - Relaxation Oscillator

- Discussed capacitance reading for 1 – 50 pF.
- Assigned goals for next week.
- Discussed RFRD readers.
 - Assigned goals for next week.

This Week:

NAME	Individual Contributions	Hours This Week	Hours Cumulative
Bailey Akers	Developed 3-minute elevator speech Researched ways to measure capacitance. Attended team and advisor meetings. Wrote weekly report.	5	11
Colin Sunderman	Developed 1-minute elevator speech Researched ways to measure capacitance. Attended team and advisor meetings. Edited weekly report.	5	10
Pengyu Qu	Attended advisor meeting.	3	6
Lyle Bishop	Developed 30-second elevator speech. Researched ways to measure capacitance. Attended advisor meeting.	4	7
Nathan Mulbrook	Researched ways to measure capacitance. Attended advisor meeting.	5	9

o Comments and extended discussion

o Plan for coming week

Goals for next week's advisor meeting (9/22):

Capacitive Sensing Circuit Design: Colin Sunderman and Bailey Akers

Meet with grad student, Scott Melvin, to discuss designs for capacitive sensor.

- Evaluate design options for capacitive sensing. Determine pros and cons for designs.
- Determine best fit design option for capacitive sensing.
- Present to advisors.

Antenna Design: Pengyu Qu and Lyle Bishop

- Determine how much power we can transfer through an antenna network to the tag using Friis Equation.

- Graph results and sweep through all distances to see how the power changes with increased distance.
- Present to advisors.

RFRD Reader Communications: Nathan Mulbrook

- Research commercially available RFRD readers.
- Research standards regarding RFRD Tx/Rx protocols.
- Present to advisors.

o Summary of weekly advisor meeting

Description of weekly advisor meeting is above within the weekly summary section.

o Team Difficulties

Not much to report as of today.

Grading criteria

Each weekly report is worth 10 points. Scores will be awarded as follows:

- 8 – 10: Progress for your project seems to be suitable. Documentation and hours reported by team members are adequate.
- 6 – 8: There is scope of improvement both in your report and your project progress. Can consult with instructor/TA after class for further inputs.
- < 6: Please talk to instructors/TA after class hours about any difficulties that you/your team is facing.