

EE/CprE/SE 491 Weekly Status Report 11

Dates: 4/9/18 – 4/13/18

Group #: 5

Project: Micro-Electro-Mechanical Systems (MEMS) Based Sensing System for Soil Conditions Monitoring

Client: Dr. Halil Ceylan

Advisor(s): Shuo Yang and Dr. Yang Zhang

Team Members:

Nathan Coonrod (Report Manager)

Kyle Kehoe (Communications Manager)

Jacob Verheyen (Meeting Facilitator)

David Severson (Web Master)

Sok-Yan Poon (Timeline Manager)

Weekly Summary

The software team got together to discuss how to efficiently have the Arduino take measurements every 15 minutes and in the time interval in between be in low-power mode where the ADC is turned off. Further divided that goal into two different tasks: 1) Understand how to write the actual code to enable an interrupt and write the interrupt service routine within Arduino. 2) How to generate an interrupt signal on a dedicated pin with the appropriate frequency.

The hardware team worked on improving the board design. Specifically consulted with Lee Harker in ETG for advice on improvements to be made to the board.

Past Week Accomplishments

- Kyle: Continued work on software development. Logged csv data values to an SD card. Imported csv values into Excel. Worked on verifying the functionality of interrupts with our microcontroller.
- Nathan: BOM submitted, further simulation of analog front end
- Jacob: Researched how to put microcontroller into sleep mode to ensure our battery life is 1 month. Planning on using real time clock to trigger an interrupt to wake up the microcontroller.
- David: Reviewed board with Lee Harker in ETG, made changes and improvements to layout of board.
- Sok-Yan: Researched on real time clock.

Pending Issues

Still waiting for the parts and our PCB board to come in for our refined solution. Voltage reference on resistance measurement channels for our current prototype is preventing accurate resistance measurement readings from being taken. Need to write appropriate Arduino code to calculate capacitance readings from channels.

Individual Contributions

Name	Contribution	Hours This Week	Hours Cumulative
Kyle	Continued work on software development. Logged csv data values to an SD card. Imported csv values into Excel. Worked on verifying the functionality of interrupts with our microcontroller.	3	41
Nathan	BOM submitted, further simulation of analog front end	4	40
Jacob	Researched how to put microcontroller into sleep mode to ensure our battery life is 1 month. Planning on using real time clock to trigger an interrupt to wake up the microcontroller.	3	37
David	Reviewed layout of board and made changes/improvements. Board has been ordered.	3	43
Sok-Yan	Researched on real time clock.	2	39

Plan for Coming Week (4/16/18 - 4/20/18)

Fix voltage reference issue on our prototype and conduct measurement tests to verify accuracy of resistance measurement channels. Update project documentation and prepare final presentation materials.