

EE / CprE / SE 492 – sdddec19-19

Printed Miniature Nutrient Sensors

Bi-Weekly Report 9

9/2/19 - 9/13/19

Client : Dr. Liang Dong

Faculty Advisor : Dr. Liang Dong

Team Members

Jonathan Hugen - Manufacturing and Testing
Samuel Keely - Software and App Development
Jeremy-Min-Yih Chee - Software and App Development
Clayton Flynn - Manufacturing and Testing
Ritika Chakravarty - Circuit Design

Weekly Advisor Meeting 9/12/19

In the meetings over the last two weeks, Dr. Dong discussed the expectations for every team working on the project. Some plans have changed since last semester, so a slight shift in priorities has happened. He also discussed the improvements he would like to see in the nutrient sensors by the end of this semester.

Weekly Group Meeting 9/12/19

The last two weeks we discussed what changed since last summer and we assessed how the group was split up to even out the amount of responsibilities among the group members. We also discussed where we left off last semester so we all started on the same page. We settled on a weekly meeting time and place and discussed the PIRM meetings coming up and split up responsibilities for our presentation.

Past Week Accomplishments

Jonathan Hugen:

- Met with Dr. Dong and a few of the graduate assistants helping with the project
- Discussed the progress made over the summer
- Received sample sensors to test out the application of coatings
- Set up meeting times with the graduate students I will be working with
- Attended weekly meetings

Samuel Keely:

- Application Optimization
- Server design work
- Database design and interface specification
- Verification of code used for Arduino system

Jeremy-Min-Yih Chee:

- Attended weekly meetings
- Researched on the integration of the cellular module onto the Microcontroller Unit.

Clayton Flynn:

- Attended weekly meetings and arranged time for future meetings
- Met with group after the break

- Received sensors to deposit material
- Started on slides for the presentation

Ritika Chakravarty:

- Met with advisor.
- Met with group for weekly meeting.
- Researched methods to improve the Bluetooth capabilities of Arduino.

Pending Issues

As of now, we are waiting on a cellular network plan to start implementing cellular communications into our project. This will need to be arranged with Dr. Daniels and the paperwork for how this is budgeted will have to be completed before that stage of the design can proceed. We are also still waiting for a batch of water resistant coatings that will be applied to the sensors that protect the ISM layer from getting damaged. We are also waiting for the sensors that we can use to practice coating with to be stripped of the current coating that is on them. The chemicals used to strip the coatings are semi-dangerous so the graduate assistants will be doing that part for us.

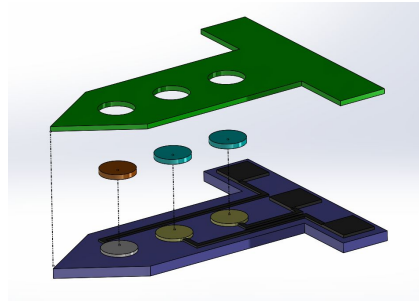
Individual Contributions

Member	Projects	Hours	Total Hours
Jonathan Hugen	<ul style="list-style-type: none"> - Practice dispensing fluid on silicon wafer sensors - Practice dispensing fluid on PCB sensors - Practice machine calibration - Learn how to scale and rotate programs - Learn some simple problem troubleshooting for dispensing robot 	3	23
Samuel Keely	<ul style="list-style-type: none"> - Develop Server prototypes - Create Server side interface for database - Implement Database design - Discussed questions to ask Dr. Dong 	3	15
Jeremy-Min-Yih Chee	<ul style="list-style-type: none"> - Attended weekly team and advisor meetings. - Research on source code cellular module - Research on possible changes to the app UI 	3	26
Clayton Flynn	<ul style="list-style-type: none"> - Worked with adjusting program to multiple sensors - Looking to avoid uneven material when dispensing trying to slowly bring the needle away. 	2	16
Ritika Chakravarty	<ul style="list-style-type: none"> - Met with advisor. - Met with group for weekly meeting. - Researched methods to improve the Bluetooth capabilities of Arduino. 	3	3

Plans For Upcoming Week

Jonathan Hugen

- Write a program for the fluid dispensing robot to coat the top of the silicon sensor with epoxy (shown in green) and the gold pads with ISM (shown as light blue dots).



Samuel Keely

- Server SQL foundation
- Arduino code check
- Application design

Jeremy-Min-Yih Chee

- Write the necessary source code for the software cellular module, in order to set it up for testing with the circuit box.
- Work on the UI for the app.

Clayton Flynn

- Work on improving dispensing pattern
- look at removing the needle without disturbing the material
- Work on the presentation

Ritika Chakravarty

- Continue working on methods to improve Bluetooth connectivity of the sensors.

Future Plans

We will soon be testing integral parts of our system to pin-point the exact areas we need to focus on to complete our project. The app in our project has been made and works but still requires much improvement. The way data is stored is being changed so that the app doesn't store or compute anything but instead it will be stored on a server. Incorporating the cellular network into our project wasn't heavily discussed last semester but plans have changed since then. This may or may not be difficult and this will require much discussion from the group to accomplish this. The coatings that need to be deposited onto the sensors is a straightforward task but it appears that this will require an organized method of testing that will be traceable. We don't want to chase our tail so we will have to make a spreadsheet that organizes the trials into a rating system that will allow us to change the many variables associated.