EE/CprE/SE 491 WEEKLY REPORT 9

Nov 15th 2018 - Nov 28th 2018

Group number: 45
Project title: IoT environmental monitor
Client &/Advisor: Dr. Geiger

Team Members/Role:
Tyler Fritz – Software Developer,
Dong Xing – Hardware developer,
Ahmed Abuhjar – Hardware Developer,
Haoyue Ma – Hardware developer,
Yuanzhe Wang – Hardware Developer

o **Weekly Summary**

During the past week, team members worked on the three parts of the project. Leaf nodes, home nodes, and the webserver. We've done calibration on the humidity sensor to see how resistance changes depending on the relative humidity. We have also have done lots of debug for the home node code. We have a little bit of progress on getting the web server working as well.

o **Past week accomplishments**

Tyler Fritz:

- Finished implementing my algorithm that lets sensor nodes to construct a mesh network spontaneously.
- Switched from using the loop() function to using timer interrupts to improve efficiency.
- Gave each node a message queue that they can use to handle times when they're receiving tons of messages. Messages are processed from this queue in FIFO order.

Ahmed Abuhjar:

Done with calibrating the sensors and verified, using a chart, the relationship between relative humidity and the impedance of the gypsum sensor. Also worked on building a circuit that functions the same as the arduino but cheaper. This is just to get a rough idea about the design of the PCB needed for the leaf nodes.

Dong Xing:

I worked with HaoYue Ma about the homenode data uploading to the web server staffs. We tried multiple times about the pin number, APN code, etc.

Also, i created a brochure about our project for preparing for our final presentation.

Haoyue Ma:

Finished the code and the circuit for data transmitting from the 3G cellular to the web server. Tested the code with the MKR GSM 1400 and the SIM card.

Yuanzhe Wang: Worked on fixing the issue that connect the home node to the web server. Tried to get the APN and password of our SIM card to make sure it can work successfully.

o **Pending issues**
   ● When we run the code for data transmitting to the web server, we faced some issues with the PIN number of the SIM card. We will solve these issues in next week to ensure that the data can be transmitted to the web server.
   ●

o **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Tyler Fritz	Implemented the features outlined in "Past Week Contributions".	16	64
Ahmed Abuhjar	Conducted several experiments to calibrate the sensor and verified the proportionality between relative humidity and the impedance. Built a circuit with a microcontroller that works in the same way as the arduino.	24	68
Haoyue Ma	Finished the code and the circuit for data transmitting from 3G cellular to the web server. Tested the code for data transmitting.	15	54

Dong Xing	Worked with HaoYue Ma to test the upload data transferring from home node to web server.	11	49
Yuanzhe Wang	Tested, debugged and optimised the code.	6	40

o **Plans for the upcoming week** *(Please describe duties for the upcoming week for each member. What is(are) the task(s)?, Who will contribute to it? Be as concise as possible.)*

- **Tyler Fritz:** Constructing additional sensor nodes to prepare for a larger scale test of my algorithm.
- **Ahmed Abuhjar:** beside preparing for final presentation, Ahmed will confirm the accuracy of the calibration results by conducting few other experiments again.
- **Haoyue Ma:** Solve the PIN number issues to ensure that the data can be transmitted to the web server.
- **Dong Xing:** Final testing for integration of our project, fix the errors and potential risks.
- **Yuanzhe:** Prepare for the potential problem and solve them as soon as possible.

o **Summary of weekly advisor meeting**

This week's meeting with the advisor was informative. We have gone through all the work we've done during the past week, and have gotten comments that are going to help us accelerate our progress in this project for the upcoming semester Spring 2019.