

CyWi: Open-Source Wireless Innovation Lab for Smart Ag, AR/VR, and Beyond

Team Number: sddec19-02

Client: Dr. Hongwei Zhang

Faculty Advisor: Dr. Hongwei Zhang

Team Members

Chenye Lim Ryan Cullinan

Jian Chew Shay Willems

Pawel Darowski Tyler Beder

Dates

August 26, to September 13, 2019

Biweekly Summary

These first weeks of CyWi's second semester has been busy. We've determined that the SDR and TI mote antennas are too strong, even at minimum output strength. This mean that attenuators will need to be installed. Our goal minimum range for each device is about 2 to 4 feet on minimum output strength. This will help simulate a larger network as devices will need to hop in order to communicate with those farther away.

During the summer, our server machine was used by another research team to control SDRs at Curtiss Farms. We didn't get access to the server until a few weeks into the semester so our server development fell behind. It's now on site at our lab room and we've started server setup.

Accomplishments

- Fixed server issue of Linux not recognizing our boot drive
 - Linux now recognizes all three drives.
- Determined server network connectivity is a software-related issue
 - Used the same network switch and cable to verify that network connectivity works on an Intel NUC (node controller) in the lab room. Worked with a PhD student to try other network ports on the server and each pointed to a driver/kernel issue.

Pending Issues

- Server cannot reach the ISU network. We've ruled out any bad ports on the desktop. The lab room network switch does provide connectivity. The next step will be to reinstall Linux.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Chenye Lim	Enabled connectivity between SDR and SDR with OpenAirInterface platform while determined the signal range between two corners of the lab.	5	45
Jian Chew	Enabled connectivity between SDR and SDR with OpenAirInterface platform while determined the signal range between two corners of the lab.	5	45
Pawel Darowski	Troubleshoot network connection to the server, read Emulab installation notes	4	59
Ryan Cullinan	Worked on getting linux installed on server. Fixed issue with linux not recognizing our boot drive.	3	29
Shay Willems	Worked on determining the power needed to have radios communicate from 2 - 2.5 feet efficiently.	1	38
Tyler Beder	Worked on radio power and looking through TI documentation for configuration	1	30

Plan for Coming Week

- Continue basic server setup
 - Install Linux onto the m.2 solid state drive
 - Setup RAID for the additional hard disk drives
 - Enable SSH for remote access to boost our project development
- Investigate creating off-machine backups for our main OS drive
- Determine how much attenuation is needed and whether attenuators can be easily installed or if they'll need to be soldered onto the TI motes
- Begin node controller (Intel NUC) setup
 - Install Linux and OAI