EE/CprE/SE 491 WEEKLY REPORT # 7

3/21 – 4/2

Group number: 12

Project title: Application Exploration of 5G-and-Beyond Wireless Systems and Rural Broadband

Client &/Advisor: Hongwei Zhang

Team Members/Role:

Caleb Kitzelman - Undefined
Cristofer Espinoza - Undefined
Andrew French - Undefined
Jake Roskopf - Undefined
Samuel Rettig - Undefined
Vibhu Dhavala – Undefined

Weekly Summary

This week we had our bi-weekly meeting with Dr. Hongwei and were accompanied by Dr. Marie-Jose Montpetit who is a research affiliate with MIT with interests in wireless internet and network coding applications. In our meeting, it was determined that we should be in the phase where our project is defined and we have member roles. After the meeting, it seems that we will be headed in a direction that utilizes video feed for real-time data. We then hope to be able to implement XR, drones, or automation. We have reached out to Joshua, one of his undergraduate students to help us walk through setting up and using the 5G RAN solution he recommended in the previous week.

Past Week Accomplishments

Samuel Rettig: This week I went through the srs_Ran Code w/ the "5G in Bullets" book as a resource. Since it seems like our project will be something with 5G + cameras and analysis, I tried to view the code through this Lense.

Cristofer Espinoza: This past week I had attempted to investigate the "5G in Bullets" as well as the open-source codes for 5G RAN solutions by OpenAirInterface5g and srsRAN project. The setup does require a device with a Linux Ubuntu OS so we have not been able to go through the setup process. I have reached out to Joshua hoping to set up a meeting with everyone to be able to see the setup process and demo.

Jake Roskopf: This week I spent time trying to figure out the srs_RAN code works and what software I need on my computer to begin to use it. It was more complex than expected and I ran into many issues with the set-up process. I also spent time this week researching some VR gear and how it is currently being used for different applications. I reached out to the SIC about getting some VR demos to better help our understanding of the technology and how we can use it for our project.

Vibhu Dhavala: This past week I spent more time with the SRS RAN project by reading the documentation. I also cloned the project from GitHub to begin developing with it however I was struggling to set up a project. I also began reading the 5G in bullets document.

Caleb Kitzelman: These past two weeks I spent some time looking into the 5G in bullets book to learn more about how 5G works and how to navigate the open-source code we were given to look into. There is a lot to learn and hopefully in some of the coming days we will be able to sit down as a team and look more into the code. I've also spent a good chunk of time looking into applications and learning about OpenVR, which is an open-source stack for VR. I've been looking into how it works and how we can utilize it in our future applications.

Andrew: These past two weeks I worked on installing the software to install the code for the SRS RAN project and each of the needed dependencies. Additionally, I began to looking through "5g New Radio in Bullets".

Pending Issues

Samuel Rettig: I do not know how to run the code- nor do I know exactly what hardware is necessary to do so.

Cristofer Espinoza: We have not yet heard from the graduate students regarding a demo of the 5G RAN solution demo.

Jake Roskopf: I do not have the software needed on my computer to run the srsRAN code, so I need to figure out how to run it on ISU computers.

Vibhu Dhavala: I hope to have a meeting with research students and hope they can

Caleb Kitzelman: I hope to be able to view some of the current things being tested in the ARA wireless lab. I also want to learn more about the performance characteristics we are looking and how the lab measures and determines the characteristics.

Andrew: The code for the SRS RAN project is confusing and I'm not sure how it is run or utilized.

Individual Contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Jake	Familiarizing myself with the srs_RAN code and researching VR equipment	8	27
Samuel	Familiarized myself further with code (project in mind)	6	26
Cristofer	Looked into "5G in Bullets", OpenAirInterference5g, and srsRAN Project5g.	4	23
Caleb	Worked with 5G in bullets book and have been trying to better understand the 5G code. Looked deeper into applications.	9	30
Andrew	I worked on downloading the software needed to work on the SRS code and its dependencies. I began looking at 5g in bullets.	7	39
Vibhu	Continuing reading documentation for the SRS code and also starting to read 5G in Bullets	6	24

Plans For the Upcoming Week

Samuel Rettig: Learn more about how to deploy, analyze, and effectively use the 5G srsRan code.

Cristofer Espinoza: I will continue to read into the 5G in Bullets, OpenAirInterference5g and srsRAN Project5g. Since we are closer to defining our project, I will start to research into more VR applications from rural and ag communities.

Jake Roskopf: I plan on becoming more familiar with the code and begin to form plans for the next steps in regard to needed hardware, testing, and end of semester.

Vibhu Dhavala: I hope to be able to get clarification and start working on creating test code using the SRS Ran Solution. I will also continue to read the 5G in bullets documentation

Caleb Kitzelman: Determine roles for our project and take a solid step towards beginning to work on and design possible solutions to our applications. Develop a project plan and roadmap that pushes us in a good direction from the start. Personally, I plan to keep looking into the 5G in bullets source and start poking into the srsRAN code.

Andrew: I plan to keep working through 5g in bullets and potentially look further into the SRS code.