EE/CprE/SE 492 WEEKLY REPORT 5

Jan 2023 – Dec 2023

Group number: 12

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

Client &/Advisor:

ARA Wireless/ Dr. Hongwei

Team Members/Role:
Vibhu Dhavala, Software Engineer
Cristofer Espinoza, Hardware Engineer
Andrew French, Hardware Engineer
Caleb Kitzelman, Hardware Engineer
Samuel Rettig, Software Engineer
Jake Roskopf, Hardware Engineer

Weekly Summary

Past week accomplishments

Vibhu Dhavala – This week I continued working on developing the unity app. I did research into RTSP streaming and trying more ways to get it working within the app. I also worked on improving the UI of the application

Cristofer Espinoza – Further research into Wireshark. It was one of the few software for packet sniffing we came across earlier and it may be useful for parsing RTSP packet data.

Andrew French – I installed Wireshark and have been looking into how it can be used to collect information about the communications between our virtual machine and the camera.

Caleb Kitzelman – Research into SSIM measurement parameters and techniques related to obtaining this measurement. Looked at delay variations and ways to measure them in regard to the setup used by ARA.

Samuel Rettig - Researched how to properly create the UI elements as specified by the graduate students, as well as potential solutions for starting the RTSP stream remotely. Helped with RTSP streaming as best as I could.

Jake Roskopf - I worked on figuring out how to make RTSP streaming possible in our application

Pending issues

Vibhu Dhavala – Continue working on establishing RTSP streaming, specifically connecting the stream to the video player.

Cristofer Espinoza – How the Wireshark software would be applied to the network and/or any part of the streaming framework.

Andrew French – None

Caleb Kitzelman – Potentially need access to Linux computers and software being used by ARA for streaming purposes to implement parameter measurements

Samuel Rettig – Trying to figure out RTSP issues with Jake, as it seems this is new territory for Unity (relatively).

Jake Roskopf – I was having a lot of issues with unity and the native plugins for the RTSP streaming. I believe I have created all the correct objects for it to work, but there are errors that are occurring that are preventing the application from being tested/work. I am hoping to investigate it with Sam and Vibhu to see if we can figure it out

Individual contributions

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Vibhu Dhavala		6	67
Cristofer Espinoza	Wireshark Research	5	55
Andrew French	Wireshark Research	5	76
Caleb Kitzelman	QoE Data acquisition research	7	69
Samuel Rettig	Research + RTSP help	6	76
Jake Roskopf	RTSP work in Unity	7	79

Plans for the upcoming week

Vibhu Dhavala:

Cristofer Espinoza: Keep researching into Wireshark and see if the Unity team can access the profiler window for the current application to check CPU latency and FPS.

Andrew French: Continue research into Wireshark, hopefully use it to analyze the connection between the camera and the virtual machine, but certainly practice using it to analyze other connections the virtual machine has.

Caleb Kitzelman: I plan to look more into QoE evaluation parameters. Hopefully, I will be able to have a solution for finding SSIM ratio by the following week. I also plan to investigate video smoothness/stall ratio and find a way to properly quantify the performance.

Samuel Rettig: Work on the tickets (UI improvement) and primarily focus on RTSP streaming as that is the core of the project.

Jake Roskopf: I plan to work on completing the RTSP streaming functionality. I am hoping to also test it out with the headset to make sure that is all working before moving onto other tasks.