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

Just last week, the data collection team met up to collect data using Wireshark on the current 360 camera streaming framework that utilizes RTSP. We used OBS viewer to stream the Insta360 Pro camera. Then utilized Wireshark to track the data packets being sent over the network. We are looking forward to applying some of the research we had done to get any information regarding the performance of the network when the Insta360 pro is out in the field. The data collection team had also observed and assisted Evan, one of Dr. Hongwei's graduate students, in collecting data out in the field. We drove around 2 routes until sufficient test data was acquired, collecting data via scripts for measuring FPS, stall ratio, and SSIM scores.

Past week accomplishments

Vibhu Dhavala – This past week I have been focusing on working with the VLC plugin for unity. After a meeting with the rest of the team working on Unity we have decided to move away from the prior script and are switching the the VLC for Unity plugin. I have been working with the VLC# library to gain an understanding of how RTSP streaming can be properly implemented with best efficiency

Cristofer Espinoza – As part of the data acquisition team, we were able to collect data using the Insta360 pro camera in ARA's labs. Although the data isn't necessarily reflective of relevant information if this camera is supposed to be out in a field, it allowed us to get down the process and see what information we could pull when the stationary camera is set up again out at Curtiss Farm. I had also accompanied Evan for some of his data collection last Saturday as we drove around to emulate the Insta360 camera on a tractor our in the fields at Curtiss Farm.
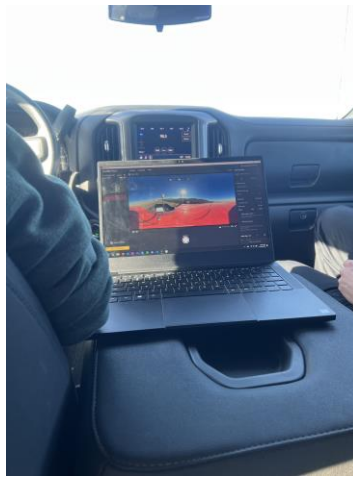
Andrew French – This week the data collection team was able to successfully observe the communication between the camera and the virtual machine using Wireshark. Using that knowledge, we should be able to collect data for our reports next week. I also joined Evan at Curtis farm for his data collection this last week.

Caleb Kitzelman – This week we spent some time working with Wireshark and collected data from interactions between personal computers and RTSP streams. Personally, I spent some time working on SSIM implementation for frame-to-frame comparisons. Finally, spent reasonable amount of time taking data measurements at Curtiss farm with Evan.

Samuel Rettig - Implemented the VLC plugin to Unity as, per a consensus from a discussion, we decided to move away from the prior solution. Tested new solution with build in examples and looked up ways to use VLC to show the RTSP stream. Also did research into various Github's to identify solutions already implemented.

Jake Roskopf - This week I worked with Samuel Rettig to figure out a new RTSP solution. We have currently decided to try using a VLC plugin to solve this. I worked on researching examples of RTSP streaming with VLC as well as using it in Unity. We are hoping this new plugin will be a better solution since it has more examples and documentation than the last one.

Pending issues

Vibhu Dhavala – Implement the VLC plugin for Unity

Cristofer Espinoza – Some of the research I had done on Wireshark didn't display the information I was looking for so I will have to see if it was because I was using it on previously collected data instead of live data.

Andrew French – None

Caleb Kitzelman – None

Samuel Rettig – Not exactly sure how/what is the best solution for the VLC plugin.

Jake Roskopf - None

Individual contributions

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Vibhu Dhavala		7	73
Cristofer Espinoza	Wireshark research, data collection on Durham UE, data collection on Curtiss Farm mobile UE	8	63
Andrew French	Successfully pulled stream information from Wireshark. Joined for data collection at Curtis Farm	7	83
Caleb Kitzelman	SSIM research and implementation. Data collection from Curtiss Farm	7	76
Samuel Rettig	Unity Development and Research	7	83
Jake Roskopf	VLC video implementation	6	85

Plans for the upcoming week

Vibhu Dhavala: Within this week I hope to have the VLC RTSP stream implemented and plan to spend and extra time fine tuning the UI

Cristofer Espinoza: I want to see how to acquire the information I had researched using the collected data or see if I can try the collection methods while the stream is live. Evan had mentioned getting images to be able to compare and compute SSIM scores. I think this would be a great opportunity to get involved and apply DSP related experience.

Andrew French: Take data collections using Wireshark to be able to display in our report. Prepare for final presentation.

Caleb Kitzelman: Worked on formatting data and preparing for final presentations. Updating website, final documents, etc.

Samuel Rettig: Finish RTSP streaming capability + test out the system. Hopefully find out various improvements that can be made, and either make those improvements, or create a document to show what can be improved going forward when the project is taken over by another group of seniors.

Jake Roskopf: I plan to finish up the VLC video application with Sam and hope to get some tests ran. With all this issues we've ran into, it may be a bit crunched for time, but I believe it is still attainable.