11/15/24 – 11/21/24

Group number: **40**

Project title: 3D Gaussian Splatting With Dynamically Raytraced Lighting

Client: Jackson Vanderheyden & Brian Xicon

Advisor: Simanta Mitra

- **Past week accomplishments**

Ethan Gasner: As mentioned in the previous week I figured out the issue with the library importation that was preventing me from continuing the development, so with that done, I simply continued to work on the Structure from motion program.

Kyle Kohl: I continued to work on Pytorch Code running in Unity via the Library. Once I am done with that I began investigating what it takes to make a Unity Package to put all our code in.

Jackson Vanderheyden: This week I continued development on the hybrid renderer. Specifically, I am working on dynamically updating scene buffer values so camera and object movement can be captured.

Luke Broglio: This week I continued to work on BVH construction. My progress has been slower than I initially expected but I did some more research into the surface area heuristic and I have been able to make better progress afterwards.

Brian Xicon: This week I wanted to research exactly why the given databases were chosen in similar projects. I researched how each database helps train our Gaussian Point Optimizer in different properties such as roughness and original lighting.

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Ethan Gasner	Continued work on the structure from the motion program.	6	60
Kyle Kohl	Continued work on making a Pytorch model work inside of a Unity Project.	6	60
Brian Xicon	Researched the reasoning behind choosing certain databases for our Gaussian Point Optimizer.	6	60

Jackson Vanderheyden	Worked on dynamically updating scene buffer values so camera and object movement can be captured.	6	60
Luke Broglio	Continued BVH constructor which included doing more research specifically into the Surface area heuristic.	6	60

○ **Plans for the upcoming week**

Ethan Gasner: Since this next week is thanksgiving week, My plan is to hopefully create a working prototype to demonstrate to others and hopefully for the end of semester faculty panel.

Kyle Kohl: I plan to continue investigating what it takes to make a Unity Package to put all our code in.

Jackson Vanderheyden: I will finish dynamically updating scene buffers and start working on directional light support (potentially other spot and directional light types).

Luke Broglio: I want to finalize the BVH construction system and then start to work on preliminary Ray-Gaussian intersection code.

Brian Xicon: I want to continue different research paths for our Gaussian Point Optimizer while I continue to implement it.

○ **Summary of weekly advisor meeting**

We did not meet with our advisor, professor Mitra this week.