

EE/CprE/SE 4920 WEEKLY REPORT #3

Sept 19th, 2025 – Oct 2nd, 2025

Group number: 15

Project title: Vision Based Camera Motion Tracking

Client &/Advisor: Eric Wittrock & Dr. Gaffar

Team Members/Role: Isaac Kenyon, Andrew Gooding, Will Ernatt

○ **Weekly Summary**

This week involved shifting focus to create a refined product rather than creating new features. Development was concentrated on bringing the camera pose estimation algorithm into Blender so that the product can soon be fully integrated. Worked on blender UI and blender-side control of the algorithm. Some additional time was spent on the ongoing development of one of the new proposed features: floor detection.

○ **Past week accomplishments**

- **Eric Wittrock:** Ran experiments in Jupyter Notebook for floor detection. Researched the RANSAC regression algorithm. Continued developing a custom floor detection algorithm, this time trying to maximize the entropy of a moving cross section of the sum of bell curves. Got GLOMAP to work in addition to COLMAP, and created CLI commands via a python script.
- **Andrew Gooding:** Was able to install photogrammetry and all the dependencies needed for it to run. I am able to run COLMAP/GLOMAP on Blender using mac.
- **Will Ernatt:** Continued developing Blender plugin implementation of COLMAP/GLOMAP pipeline, looked into dense scene reconstruction via COLMAP as a potential feature of the final product.
- **Isaac Kenyon:** I was out for the majority of this status update, working slightly on automating the generated files into blender for ease of use the past couple of days.

○ **Pending issues**

- **Eric Wittrock:** Prebuild binaries are larger than necessary because they contain GUI libraries. A custom build without QT is yet to be achieved.
- **Andrew Gooding:** None this week
- **Will Ernatt:** Blender issues with requisite files and executables of COLMAP/GLOMAP remain. Could try calling on the executables from outside the blender addons folder or figure another solution.

- **Isaac Kenyon:** None this week. Will be able to work full time for the rest of the status updates.

- **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Eric Wittrock	Ran experiments with fake data and tried a new approach to a floor detection algorithm, worked on making python interact with COLMAP scripts.	6	18
Andrew Gooding	Downloaded photogrammetry and tested COLMAP/GLOMAP on Blender	6	17
Will Ernatt	Glomap implemented, Blender plugin work continued	6	18
Isaac Kenyon	Colmap implemented, bash script changes	2	13

- **Plans for the upcoming week**

- **Eric Wittrock:** Integrate python-colmap interaction into blender as a plugin so that feature matching can be initiated from the blender UI. The video input path will be temporarily hard-coded.

- **Andrew Gooding:** Continue work on the Mac version of Blender and working on getting features teammates have on windows and linux on mac.

- **Will Ernatt:** Blender plugin troubleshooting, read research paper on HDR Environment Map Estimation

- **Isaac Kenyon:** Same as the last update, look into automating the generated files into blender, the current process involves many buttons and clicks to get running. Also the installation of some files.