

EE/CprE/SE 4920 WEEKLY REPORT #3

Oct 3rd, 2025 – Oct 16th, 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

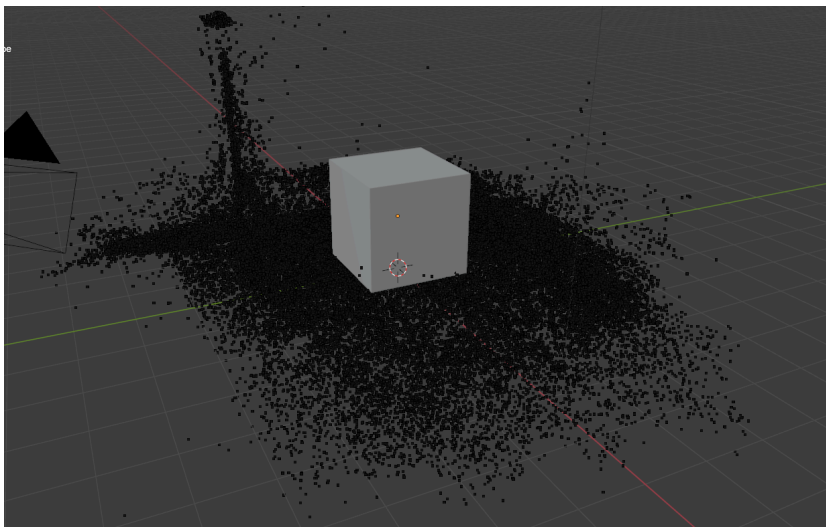
- **Weekly Summary**

Finished plugin prototype which can take a video, compute the camera motion and scene points, then apply the motion and point to a blender scene. Worked on UI components for the plugin, worked on file importing scripts. Another attempt was made to create a floor detection algorithm using a different approach (eigenfunctions). This most recent attempt shows promise to overtake the state of the art technique (RANSAC) in performance for this specific use-case.

- **Past week accomplishments**

- **Eric Wittrock:** Finished the working prototype by integrating the tracking script into blender as a plugin. Created UI element to control the script. Wrote scripts to assign motion to the camera and populate the point cloud.

Worked on a different approach for the floor detection algorithm because the old equation was unsolvable. When representing points as a sum of eigenfunctions, the aggregate equation does grow in complexity with the number of points. As a result, roots can be found extremely fast.



- **Andrew Gooding:** Tested Colmap on mac uploaded different script scenes and worked on changing the UI.
- **Will Ernatt:** Simple UI completed for Blender Plugin, video to image extraction completed, import of existing .abc point cloud completed.
- **Isaac Kenyon:** Out for the first week. Then I was working on a way to batch and parallelize running the camera detection for multiple different clips. The thought is that for different scenes the user can add the different videos and have them all render and export separately without having to run each individual video. The batch interface is being written for a command line UI and will show the current status of the camera detection algorithm running.

○ **Pending issues**

- **Eric Wittrock:** No notable pending issues.
- **Andrew Gooding:** None this week
- **Will Ernatt:** COLMAP/GLOMAP having trouble running externally.
- **Isaac Kenyon:** Get a server instance setup and figure out storage requirements for testing the batch system if files will be temporarily stored on the server.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours Past 2 Weeks</u>	<u>HOURS cumulative</u>
Eric Wittrock	Finished a simple plugin prototype that allows the user to interact with the camera estimation algorithm inside of blender. Tried a new approach for solving the floor detection problem.	12	42
Andrew Gooding	Downloaded photogrammetry and tested COLMAP/GLOMAP on Blender	8	25
Will Ernatt	Image Extraction completed, Basic UI for Blender plugin, COLMAP troubleshooting	12	42
Isaac Kenyon	Colmap implemented, bash script changes	8	21

○ **Comments and Extended Discussion**

Comment by Eric Wittrock: There was a format error in the prior weeks' status report. The original template on canvas labeled the 3rd column in the table above as "Hours this week" instead of hours for a 2-week period. In status report #2 and #3, I inadvertently logged my hours from a single

week rather than the last two weeks. Realizing this mistake, I corrected my cumulative hours to $6+12+12+12=42$.

- **Plans for the upcoming week**

- **Eric Wittrock:** Allow user to select video to be tracked using a UI inside of blender

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

- **Will Ernatt:** Troubleshoot COLMAP, add UI features(choose executable paths).d

- **Isaac Kenyon:** Get the server up and running to test some experiments with the command line batch interface, and possibly also start a rough UI site implementation just for uploading a video file and getting back a point cloud ready to open up in blender.