EE/CprE/SE 4920 WEEKLY REPORT #6

Oct 31st, 2025 – Nov 11th, 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**

  Created new UI design and integrated it with new functionality. Worked on progress bar which will soon be incorporated in the new UI. Fixed orientation and position COLMAP to Blender mapping. Now the camera motion animation is no longer misaligned with the video. Automated the caching and deletion of the database file by detecting changes to the video input, allowing for fast scene setup. Setup camera backdrop as user's video input.

- **Past week accomplishments**

  • **Eric Wittrock**: Applied COLMAP to blender space transformation and fixed camera quaternion orientation after camera keyframes are created from output text files. Now camera motion matches footage. Made a feature to automatically track changes to the video input and use cached data if no change was made. The cache will be deleted if a new video is uploaded. Integrated code with a separate branch containing updated UI so that the most recent UI and functionality work together. A script now automatically applies the input video to the camera backdrop.

  • **Andrew Gooding:** Wrote script that is able to break a video down into scenes and open the new camera tracking in blender for MAC.

  • **Will Ernatt:** New UI designed for prototype, work done to better integrate the functionality of the prototype into a usable blender plugin, able to run on any machine. Implemented setup features for users to select video and workspace.

  • **Isaac Kenyon:** Finished the listing features for past computed videos. Got 2 steps of the script converted to python. Continued UI progress bar.

- **Pending issues**

  • **Eric Wittrock:** The camera is not rotating with the expected magnitude, and the floor detection algorithm appears to have a bias tilt.

  • **Andrew Gooding:** None this week

  • **Will Ernatt:** No major issues.

• **Isaac Kenyon:** UI progress bar display issues.

- **Individual contributions**

NAME	**Individual Contributions** *(Quick list of contributions. This should be short.)*	**Hours Past 2 Weeks**	**HOURS cumulative**
Eric Wittrock	Fixed camera position and orientation mappings. Auto-delete cache. Integrate new functionality with new UI.	14:30	72:15
Andrew Gooding	Wrote a MAC script to automate the COLMAP/GLOMAP features.	12	63
Will Ernatt	UI design, settings panel, creation of Blender Operators for UI, refactoring	12	66
Isaac Kenyon	Listing feature, bash to python, UI progress bar	14	49

- **Plans for the upcoming week**

• **Eric Wittrock:** Apply dynamic focal length. Add resolution setting to UI so that users can change the currently hard-coded value. Use Autoencoder or Unet to convert standard to HDR image luminosity range.

• **Andrew Gooding:** Continue working on the script and add the changes made from the windows version.

• **Will Ernatt:** Create testing benchmarks, adjust UI element descriptions to better reflect their functionality.

• **Isaac Kenyon:** Complete the UI progress bar, and then focus on the ability to import points already rendered. This will be useful for long videos that take lots of time, speeding up collaboration if someone has already done the computation.