

EE/CprE/SE 491 WEEKLY REPORT 7

March 21 – March 27

Group number: 18

Project title: GPGPU Parallelization of Memworld

Client &/Advisor: Dr. Wymore

Team Members/Role:

- ***William Blanchard, Parallelization Lead***
- ***[Mason DeClercq](#), Team Lead***
- ***Jay Edwards, Documentation Lead***
- ***[Cristofer Medina Lopez](#), Integration Lead***
- ***Dalton Rederick, Communications Lead***
- ***Collin Reeves, Game Development Lead***

Weekly Summary

This week, the group had a meeting at the end of the week to discuss what we had done so far and what we wanted to work on for next week. There is a new approach that is being taken to render the scene that cut out some square roots as well as fixed the swirling bug that happened when close to colored voxels. Shading based on distance has also been implemented to give a better sense of depth until we can get lighting added. Multithreading and physics is continuing to be implemented. More people are going to work multithreading in the future to get that implemented.

- **Past week accomplishments**

- Wil Blanchard:
 - Research on and discussion of physics engine concepts
- [Mason DeClercq](#):
 - Implemented a new approach to rendering the scene. There are no more “artifacts” (swirling effect) in the image towards the side of the world now.
 - Implemented shading based on distance
 - Looked into what was causing the drop in FPS
- Jay Edwards:
 - Worked on implementing multithreading
- Cristofer Medina Lopez:
 - Trying to debug the OpenCL implementation of memworld on Mac, specifically the kernel source code for the project.
 - Set up the Memworld tools on Windows. Manage to run Memworld on my desktop, equipped with a Radeon RX 580 GPU, managed to obtain max 250 fps with the current state of the project
- Dalton Rederick:
 - Messed around with changing values in the render file to extend size of rendered area
 - Tested changing hex values to see if we can change the default color palette
- Collin Reeves:
 - Tested framerate with new merge requests from Mason.

- **Pending issues**

- OpenCL on mac is appearing to be difficult to get working. Issues with the kernel being initialized and built properly.

- OpenCL/GL interoperation will be put on the back burner until Mac is working to determine compatibility

○ **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>
Wil Blanchard	Research on and discussion of physics engine concepts	3	21.5
Mason DeClercq	Implemented a new approach to raycasting, Shading based on distance is implemented, determined what is slowing our FPS	8	57
Jay Edwards	Continued working on multithreading	3	23
Cristofer Medina Lopez	Debugging the kernel source code to correct issues. Output picture achieved on the Mac but additional fixes needed.	2	30.5
Dalton Rederick	Tested changing values of the testing environment	1	23.5
Collin Reeves	Tested some merge requests for framerate updates.	1	24

○ **Plans for the upcoming week**

- Wil Blanchard: Meet with Jay and Cristofer to help implement the parallelization of Memworld processes

- Mason DeClercq : Voxel octree implementation in kernel program
- Jay Edwards: Try to implement Multithreading into Memworld, Planning on meeting with Cristofer and Wil
- Cristofer Medina Lopez: Debugging the kernel source code for OpenCL for Memworld application so it can run on Mac. Plan on working with Jay to work on multithreading for the project.
- Dalton Rederick: Look into the current build and apply knowledge gained from testing to create a larger testing environment. Ideally reaching the bounds required in the requirements document
- Collin Reeves: Fix up velocity collisions, possibly look into bouncing.

- **Summary of weekly advisor meeting**

We did not have an advisor meeting this week.