EE/CprE/SE 491 WEEKLY REPORT 2

February 7 – February 13

Group number: 18

Project title: GPGPU Parallelization of Memworld

Client &/Advisor: Dr. Wymore

Team Members/Role:

- *William Blanchard, Parralelization Lead*
- *Mason DeClercq , Team Lead*
- *Jay Edwards, Documentation Lead*
- *Cristofer Medina Lopez, Integration Lead*
- *Dalton Rederick, Communications Lead*
- *Collin Reeves, Game Development Lead*

o **Weekly Summary**

This week, the group set up a meeting and met with Dr. Wymore to discuss the progress that we were making on the project. He quickly went over the requirements of the project as well. We also 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. We decided that everyone should be able to run Memworld on their computer and start looking at OpenCL and OpenGL. We were able to get the Memworld application to run with OpenCL and it is running significantly faster than before. We are getting close to meeting the optimization requirements, but still have a little way to go.

- o **Past week accomplishments**

  - Wil Blanchard:

    - Cloned the group Git repository and built the Memworld project
    - Did OpenCL research to determine how we would be able to ensure the quickest processor in the computer is always being used

  - Mason DeClercq :

    - Implemented OpenCL into Memworld
    - Researched more about OpenCL while trying to implement it in order for it to function in the project

  - Jay Edwards:

    - Worked on getting my workstation running and getting dependencies set up. Cloned memworld and attempted to get it running

  - Cristofer Medina Lopez:

    - Did more investigating into OpenCL. Read several documents to gain a better understanding of how to use it and how it interacts with the GPU. Understanding how to write code for OpenCL.
    - Worked on setting up OpenCL with the tools that I am currently using to run the client's application; this is still a work in progress.

  - Dalton Rederick:

    - Worked towards setting up the dev environment, ran into a few snags here and there (need to rearrange file locations off of C drive, as it's run out of space)
    - Didn't get as much done this week as expected due to labs going long. Will (hopefully) have more time next week to work on backlog

  - Collin Reeves:

    - Got memworld to run with openCL on my desktop. Going to be looking into how to use different devices in the implementation.

o **SWOT Analysis**

Strengths: - Allows for gpu parallelization so that scenes can render faster and in better detail - Portability - Works on more variations of hardware than its competitors		Weaknesses: - Difficult to implement when compared to other libraries - Performance is based on hardware - Mac functionality appears to be more obtuse
	OpenCL	
Opportunities: - Scenes rendering faster allows for more complex features to be added such as physics. Which would expand what projects can be made with it. - Better chance at optimizing the GPGPU aspect of the application compared to other libraries		Threats: - Don't have control over bugs/deprecated functions in the application - Difficult to install for non-tech savvy people/customers

o **Pending issues**

- OpenCL on mac is appearing to be difficult to get working

o **Individual contributions**

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Wil Blanchard	Set up Git repository, OpenCL documentation research	3.5	6.5
Mason DeClercq	Got OpenCL working with the project, Learned how to use OpenCL	9	17
Jay Edwards	Worked on getting my workstation prepared	2	5
Cristofer Medina Lopez	Working with OpenCL to understand how to use it. Looking to get OpenCL to work with Memword.	5	9

Dalton Rederick	Worked on setting up development enviroment	2	6.5
Collin Reeves	Got memworld to run on my computer	4	6

- **Plans for the upcoming week**

  · Wil Blanchard: Set up my repository with the OpenCL API, start really digging into the methodology and standard techniques to parallelize algorithms

  · Mason DeClercq : Further optimize the algorithm for rendering the memworld world. Look into how to target a specific device for parallelization.

  · Jay Edwards: Finish setting up my workstation, go through OpenCL exercises and see if I can find any optimizations

  · Cristofer Medina Lopez: Continue to get OpenCL to interact with the current environment setup. Investigate methods to help better optimize the current state of the application.

  · Collin Reeves: Researching OpenCL, specifically going to look into how to target different devices.

  · Dalton Rederick: Research OpenCL/GL. Test out dev environment. Read through the thesis and look into other projects.

- **Summary of weekly advisor meeting**

  This week's advisory meeting, we more firmly established end goals for this project. This included the speeding up of the raycasting engine, making a demo to show off the engine, and adding extra features given time. We then updated our advisor on where we were in terms of getting the source code set up and progress in its parallelization.