



Who We Are

Gaming Laboratories International, LLC (GLI) is a privately owned test laboratory. We have over 1000 employees spanning 20 offices across 6 continents. Our job is to provide world-class customer service and industry-leading testing and certification services for the regulators, suppliers (manufacturers), and operators in the gaming industry.

What We Do

In order for a new game to be used by the public, it needs to be approved for a list of jurisdictions. Suppliers create these games and contract GLI to determine if the game is ready for production. The engineering and math teams at GLI work together to develop and implement a plan to perform not only all required testing, but also additional tests to put necessary stress on the game.

Project Overview

GLI's math department creates a myriad of slot simulations and is frequently under very tight deadlines, sometimes requiring these simulations to be run in a very short amount of time. Currently due to hardware limitations, when under these tight timelines, the math analysts will often have to search for available PCs to run simulations on. These simulations currently only run on CPUs, potentially taking days to do so, so there is no benefit for the math analyst to try to run more than a few at a time on their own PC.

This project's goal would be to develop a code base to run slot simulations on an nVidia graphics processing unit (GPU) using CUDA. The goal is to prove that running the simulations on a GPU could drastically improve the speed at which they are run, in turn improving the efficiency of the math department.

Initially, a simple simulation would be created and tested on both a CPU and a GPU to prove practicality of the project, providing a benchmark for potential speed increase. Then, more complicated simulations could be created as well to test different types of features within slot games, all while implementing proper version control.

Project Goals

A group of 3-4 students will be required to develop a new version of slot simulations to run on GPUs.

- Perform initial research on slot games
- Create initial single threaded and multithreaded CPU-based slot simulations, properly documented and commented, to solidify learning of slot games, as well as provide initial, benchmark CPU run time
- Perform all necessary research on CUDA
- Create initial GPU-based slot simulations, properly documented and commented, and compare to CPU simulation to demonstrate speed increase



AFRICA • ASIA • AUSTRALIA • EUROPE • NORTH AMERICA • SOUTH AMERICA

GAMINGLABS.com

CERTIFICATION DOCUMENT



Stretch Goals

- Create proper versioning methodology and implement for remainder of project, optimizing existing code base for GPU simulation
- Create more advanced GPU-based slot simulations, incorporating more advanced slot features

Skills Required

- Moderate to advanced knowledge of C/C++/C#
- Knowledge of CUDA, or conversion of C++ to CUDA, is a plus
- Eagerness to learn new languages, techniques, and work in a unique industry
- Basic understanding of probabilities and statistics

Student Benefits

This project will provide students experience and knowledge with:

- Developing simulations that are used in an industry environment using C++ and CUDA
- Use of CUDA and GPUs in place of C++ and CPUs
- Use of code optimization techniques
- Developing proper version control implementation and documentation
- Working with a client in a formal work environment under a deadline

Location, Contact, and Additional Details

Students will be expected to spend approximately 10-15 hours a week at the Wheat Ridge office of GLI, located at 4720 Independence St., Wheat Ridge, CO 80033. All additional time spent working on the project can be wherever the students would like.

GLI will provide a computer, set up with the appropriate math analyst environment, for students to run simulations on in the office. This is the computer we will expect to see sample numbers from. If the students would like to use additional resources, such as the Computer Science super computer at Mines, to provide GLI additional data, they are more than welcome to, but that may not be within of the initial scope of the project.

Contacts:

Matthew Runas, Liaison and Test Engineer, m.runas@gaminglabs.com
Zack Hollis, Director of Software Engineering, z.hollis@gaminglabs.com

Address:

4720 Independence St.
Wheat Ridge, CO 80033



AFRICA • ASIA • AUSTRALIA • EUROPE • NORTH AMERICA • SOUTH AMERICA

GAMINGLABS.com

CERTIFICATION DOCUMENT