Chuck Rozhon

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Education

Aug 2013 - May 2017	Bachelors of Science in Computer Science The University of Illinois, Urbana-Champaign GPA: 3.96/4.00
September 2017 -	Doctor of Philosophy in Computer Science University of California, Davis

Skills

Languages:	C++, C, Python, GLSL, HLSL, AMD ISA, various assembly languages
Version Control:	Git, Perforce, SVN, Mercurial
API's and Libraries:	OpenGL, DirectX, Metal, Vuklan, SDL, GLFW

Research Lab Experience

A Declarative Grammar of Flexible Volume Visualization Pipelines — June 2018
Shin, Min; Rozhon, Charles; Ma, Kwan-Liu.
IEEE Transactions on Visualization and Computer Graphics, 17.08.2018.

- Modified an existing C++ volume rendering framework to be programmed using declaritive configuration files instead of GLSL and C++ code
- Using knowledge of GPU driver behavior and GPU architecture, wrote C++ code that generates GLSL for the appropriate visualization
- Partially responsible for maintaining C++ and GLSL code-base volume rendering code-base during the project

GPU-based Volume Rendering Advised by Professor Matthew Turk — August 2014 - May 2017

- Moved existing CPU software renderer to GPU hardware
- Allows data to be manipulated and changed interactively
- Allows different shaders to be loaded in real-time and applied to the visualization
- Gives the ability to explore different transfer functions and rendering techniques

Work Experience

AMD - DirectX Driver Optimization - Software Engineer C++ C Direct-X HLSL January 2019 - August 2019

- Optimized various video-games to perform faster on AMD architecture through driver changes
- Modified game shaders to better utilize GPU architecture, requiring a knowledge of the hardware and the algorithms being used
- Modified the volumetric fog generation in Fortnite: Battle Royale to not generate unnecessary scattering information each frame, improving game performance

NVIDIA - MacOS Metal Driver - Intern C++ C Objective-C Metal May 2017 - August 2017

- Worked with the Metal driver team, implementing Apple's MacOS specific graphics API for NVIDIA products
- Re-factored and re-implemented core components to no longer be dependent on other driver code from within the company, allowing greater independence for Metal driver developers
- Worked on re-factoring driver architecture in the large C++ and Objective-C code-base

Jump Trading - Intern C++ Python May 2016 - August 2016

- Converted multi-cast stock market data to an internal representation for an algorithmic trading platform, tuning performance at the nanosecond scale
- Designed and implemented an application for keeping internal UI software updated, similar to Steam but for in-house applications
- Designed and implemented a server that could remotely kill applications started on a client's machine, monitoring them and forcefully updating the software if needed
- Designed and implemented a system for inter-process communication using shared memory that was required for the previous items

NVIDIA - OpenGL Embedded Linux - Intern C C++ Python Perl Git Perforce May 2015 - August 2015

- Worked on the Tegra embedded GPU used in cars and pachinko machines
- Wrote OpenGL/EGL profiling software to assist the tracing of driver bugs
- Wrote software that interacted with the large low-level driver codebase in C and C++

Algorithms Course Assistant Teaching experience August 2015 - December 2015

- Graded homeworks and gave useful feedback to students for core computer science course
- Helped lead discussions, guided students towards answers and resolved gaps in knowledge
- Presented material in straightforward and effective manner

NCSA Spin Intern Python OpenGL Mercurial October 2014 - May 2017

- Visualized volumetric data using ray-casting in OpenGL.
- Increased performance by using efficent data structures on the GPU to minimize lookups of data
- Worked with shaders, blending, framebuffers, and other modern OpenGL techniques

Awards

All semesters	College of Engineering Dean's List
Aug. 2016	Robert M. Stephens Engineering Scholarship
Aug. 2015	Franz Hohn and J.P. Nash Scholarship
May 2015	NCSA SPIN Intern of the Year
Jan. 2015	NCSA SPIN Best Lightning Talk and Presentation
May 2013	Optimist Club Scholarship Dollars for Scholars

Open Source Contributions

yt Project Python OpenGL Mercurial August 2014 -

- Data visualization library for astrophysical simulations

Dolphin Emulator C++11 Git July 2014 -

- Dolphin is an open-source Gamecube and Wii emulator
- Assisted in eliminating compiler warnings, and standardizing code style before major release