Peter Whidden

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Education

University of Washington - Seattle WA
Major - Astrophysics
Graduation Expected 2018

Leadership

UW Computer Graphics CoFounder & President

http://uwc.graphics
A student organization that hosts weekly meetups to teach and discuss topics in graphics programing.
We create weekly workshops teaching three.js, shaders and more in a format accessible to a group of students with a wide range of programming experience.

Professional Experience

CERN

Google Summer of Code Student Developer - Summer 2016
https://summerofcode.withgoogle.com/archive/2016/projects/6045990297534464/
Built web-based 3D interactive features to visualize particle accelerator models for CERN's JSRoot data analysis framework.
Increased rendering performance of 3D histograms by 5x.

University of Washington "N-body Shop" Research Group

Undergraduate researcher - Spring 2016
Optimized and tested code on University of Texas' Stampede Supercomputer.
Vectorized n-body simulation code to take advantage of 512-bit SIMD instructions on the Intel Xeon Phi Knights Corner.

Three.js - Open Source 3D WebGL Library

Contributor - 2015-2016
https://threejs.org/examples/#webgl_clipping_intersection
Expanded a feature in three.js (a 3D graphics library used by millions) by adding to shaders and the WebGLRenderer allowing a user to view cross sections of 3D models. Code is now merged into official release.

Large Synoptic Sky Survey Telescope Data Management

GPU Computing Research - December 2016-Present
Using CUDA C/C++ to accelerate the search for Kuiper Belt Objects (Minor Planets, Asteroids and Comets).
Implemented kernel-based moving object detection on GPUs to efficiently sift through large amounts of telescope data. Achieved 1000x speedup over a previous implementation.

Selected Projects

Non-Linear Ray Traced Renderer and Minimal Game Engine

C++, OpenGL, glm, glfw - Fall 2016
A minimal game engine that allows the player to create 3D portals that bend and transport light like a black hole. Accomplished by implementing techniques used in the production of the film "Interstellar".

Barnes-Hut Particle Simulation and Renderer

C++, Standard Library - Winter 2016
Video Output - https://goo.gl/oFiYR4
Simulates the gravitational interactions of up to millions of particles using spatial partitioning and the Barnes-Hut algorithm. Also includes a renderer which outputs each frame of the simulation into an animation.

VR Solar System Explorer

C#, Unity, SteamVR, Vive - Fall 2016
Built a to-scale version of the solar system in Unity using NASA texture data. Used Vive controllers to implement "Iron man" style thruster controls from each hand for locomotion.

WebVR Viewer for TIPSY Simulation Data

Javascript, threejs, WebVRBoilerplate: Spring 2016
http://transdimensional.xyz/projects/Tipsy%20VR/webvr-boilerplate/index.html
Allows for viewing of cosmological (galaxies and stars) simulations in the TIPSY format in a web browser, and in VR with a cardboard or Oculus.

WebVR Experimental SoundCloud Interface

Javascript, threejs, WebVRBoilerplate, SoundCloud API: Fall 2016
An experimental interface that allows the user to enter any soundcloud artist, and walk/fly through a virtual discography. Songs are placed throughout 3D space, and UI is automatically colored based on track album artwork.

Skills

Languages: Javascript, C++, Python, GLSL, Java, C#
Experience: OpenGL, WebGL, three.js, CUDA, OpenMP
Software: Solidworks, Ableton Live, Final Cut Pro, Premiere, Reason, Photoshop/Gimp, Eclipse, VS, Unity

Interests

Space, Astronomy, Mountain Climbing, Computer Graphics, Music Production, Skateboarding, ShaderToy