Jerry Hsu

Purdue Computer Science BS , 3.81 GPA

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Education

Computer Science, B.S.
Mathematics, B.S.
Purdue University
Expected May, 2020

Work Experience

Software Developer
Purdue University Envision Center
2017 – Present

- Improved the performance GLSL applications for visualizing protein molecule interactions in VR. Decreased rendering time from 60 FPS with 1,000 atoms to 150 FPS with 50,000 atoms.
- Deployed networked digital learning packages on university courses with Blackboard SCORM API.

Software Engineering Intern
Amazon Commerce Platform
2019 Summer

- Implemented diagnostic data processing on cloud systems for bill computation.
- Designed data chunking systems that reduced network transfer usage by 70% when accessed.

Undergrad Teaching Assistant
Purdue University, CS 390VR
2018 - Present

- Supervised students in working with novel VR applications.
- Fostered an explorative atmosphere while providing technical and design guidance.

Proficiencies

- Languages
  - C & C++
  - GLSL/HLSL
  - C#
  - Java
- Frameworks
  - OpenGL & GLM
  - Unity 3D / HLSL
  - .NET framework / WPF

Projects

C++ Game Engine

2017 – 2018

- A 2D game engine written in C++ built on top of OpenGL 4.3 core.
- Built in constraint-based custom physics engine with a SPT broad phase.
- Grid based temperature simulation with OpenGL Compute shaders.
- GUI support with event dispatchers, anchor based automatic UI scaling, instanced atlas text rendering, and sliced sprites rendering.
- Multithreaded call system that allows simultaneous OpenGL compute and CPU based physics operations.
- Full hierarchy system and transform parenting.

Real Time Protein Visualization

2019 – Present

- Dynamic Realtime GPU based occlusion culling. Culls out almost 60%+ of atoms occluded on large protein structures, massively improving fill-rate bottlenecks.
- Realtime Screen Space fluid particle rendering. Renders the Van Der Waals surface of large molecules in VR with dynamically changing atom structures without the use of marching cubes or Delaunay triangularization.
- Billboarding and deferred shading of small atom elements and text through custom particle systems.
- Octahedral imposter rendering. Automatic billboarding of background elements.

Realtime SPH Fluid Simulation

2019

- A real-time SPH fluid simulation written with compute shaders in OpenGL.
- Realistic modeling of pressure, velocity, and solid fluid interactions with two way coupled solids.
- Written with compute shaders capable of simulating and rendering 500k+ particles in real-time on commercial hardware.