Asher Norland

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EDUCATION

Rensselaer Polytechnic Institute (RPI)   Troy, NY
Bachelor of Science, Computer Science   Aug. 2014 - May 2018
Honors: Three-time Dean's Honor List recipient   GPA: 3.09 / 4.00
Select Courses: Advanced Computer Graphics, Computer Vision, Fundamentals of Geometry

EXPERIENCE

Disbelief   Cambridge, MA
Programmer I   Aug. 2018 – present
- Work with clients in the games and hardware industry within their development workflow.
- Contribute to major AR and VR platforms, including their SDK and subsequent Unreal Engine integrations.
- Optimize, debug, and create features for the Unreal Engine, including audio, graphical post processing, and the engine's use of the Android platform.

RPI – Center for Architecture Science and Ecology   Troy, NY
Undergraduate Research Assistant   Jan. 2017 – Jan. 2018
- Developed web frontend and backend for data visualization funded by the Bill & Melinda Gates Foundation.
- Integrated WebGL support for three-dimensional mesh manipulation to enable architectural visualization.

PROJECTS & RESEARCH

Soul Engine   Team Lead and Manager
Rensselaer Center for Open Source (RCOS)   Jan. 2016 - present
- Built a simulation and visualization engine with a focus on GPU and CPU parallelism for generic computing tasks, which served as the foundation for all other RPI projects and research.
- Developed a rendering framework for real-time path tracing with dynamic and self-balancing workloads.
- Created modules that facilitate task-based CPU scheduling, sparse hashed data storage, and finite element physics.
- Accessible at https://github.com/Synodic-Software/Soul-Engine

"Multiple Coordinate System LBVHs for Ray Tracing"   Advised by Dr. Barb Cutler
Undergraduate Senior Capstone Paper   Jan. 2018 - May 2018
- Developed a modified Linear Bounding Volume Hierarchy for ray queries that allows the representation of objects of very different scales (e.g. galaxies and small satellites) to coexist in a scene using a nested coordinate system.
- Created a support library for non-power-of-two integer bit lengths on the GPU, enabling efficient memory usage.
- Presented the paper at a poster session to RPI peers and professors.

LifeSim   Team Lead and Manager
RCOS   Aug. 2016 – Jan. 2017
- Developed a three-dimensional world with physics for genetically generated skeletal and muscle armatures.
- Trained the armatures for genetically learned movement across a procedurally generated terrain.

Heterogeneous Atmosphere Volume Rendering   Solo Development
Computer Graphics Project   Nov. 2016 – Dec. 2016
- Populated an atmosphere with NASA's Earth data and visualized it with Rayleigh and Mie light scattering.
- Implemented heterogenous volume sampling with variable length ray marching for real-time rendering on the GPU.

Vocal Intonation via Fluid Simulation   Solo Development
Computer Graphics Project   Nov. 2016 – Dec. 2016
- Generated artificial voice in the form of audio output based on artificial breaths and simulated vocal cord vibration.
- Simulated a two-dimensional GPU fluid with an integrated dynamic vocal tract, modifiable by an emotion target.

SKILLS & LEADERSHIP

Programming Languages: *Proficient* C++, C, Python, CMake, GLSL; *Familiar* Java, JavaScript, C#
Technologies: *Proficient* CUDA, Vulkan, OpenGL, Git, Perforce; *Familiar* MPI, OpenCL
Software: *Proficient* Windows, Unreal Engine, AR/VR platforms; *Familiar* Linux, Unity
Leadership: Disbelief paper club organizer (*May 2019 – present*); RPI intramural soccer captain (*Fall 2017 & 2018*)
Volunteering: RCOS mentor (*Winter & Spring 2018*)
Interests: Film, Hiking, Soccer, Apple Cider