# Asher Norland

asher.norland@gmail.com | (218)-206-3918 | San Francisco, CA | norrlander.com

## EXPERIENCE

**Firaxis Games** — **Sparks-Glencoe, MD**
***Graphics Programmer*** — *Nov. 2020 – Oct. 2025*
*Civilization VII*

- Created core procedural systems for in-game environments, including vegetation placement and building distribution.
  - Implemented parametric curve generation and sampling within vectorized terrain system for rivers.
- Designed and built a user-friendly scripting grammar and tooling to enable creation of procedural environments.
  - Worked closely with artists to provide necessary tools and data feedback to match environment concepts.
- Implemented efficient CPU ray tracing algorithms for both individual and batched parallel-friendly intersection queries across asynchronous VFX, terrain, and procedural placement systems.
- Developed generic and specialized acceleration structures to enable rapid scene updates including the use of modern single kernel parallel LBVH to support unified 2D and 3D queries with ray, points, and convex shapes.
- Managed asset quality via extensive and automated performance testing for thousands of procedural model variations.
  - Designed and implemented the player-facing graphics and AI benchmarking.
  - Provided quantitative data and analysis to guide engineering and art optimization efforts.

*Marvel's Midnight Suns*

- Provided launch support for HDR rendering and polished features for rendering and gameplay systems.

**Disbelief** — **Cambridge, MA**
***Programmer I*** — *Aug. 2018 – Sept. 2020*

- Provided specialist services to clients in the games and hardware industry within their development workflow.
- Audited Unreal Engine for its applicability to modern console features and presented detailed written reports.
- Contributed to major AR, VR, and console platforms, including their SDK and subsequent Unreal Engine integrations.
- Optimized, debugged, and created features for the Unreal Engine, including audio reverb simulation, graphical post processing, and the engine's use of the Android platform.

*Wolves in the Walls*

- Made UE4 engine graphics pipeline changes to support additional global buffers for stylized rendering.
- Solved performance concerns by optimizing stylized fragment shaders based on published research.

**RPI – Center for Architecture Science and Ecology** — **Troy, NY**
***Undergraduate Research Assistant*** — *Jan. 2017 – Jan. 2018*

- Developed web frontend and backend for a project funded by the Bill & Melinda Gates Foundation.
- Integrated WebGL support for three-dimensional mesh manipulation to enable architectural visualization.

**RPI – Rensselaer Center for Open Source** — **Troy, NY**
***Team Lead*** — *Jan. 2015 – Jan. 2018*

- Managed a seven-person team across different ML, HPC, and graphics projects, provided system-design leadership, delivered technical presentations, and mentored individuals alongside other teams.
- Built a simulation and visualization engine with a focus on GPU and CPU parallelism for generic computing tasks.
- Developed a rendering framework for real-time path tracing with dynamic and self-balancing workloads.
- Developed a modified LBVH structure for ray queries that allowed objects of vastly different scales (e.g. galaxies and small satellites) to coexist in a shared, nested coordinate system.
- Implemented heterogenous volume sampling with variable length ray marching for real-time rendering on the GPU.

## EDUCATION

**Rensselaer Polytechnic Institute (RPI)** — **Troy, NY**
***B.S in Computer Science*** — *Aug. 2014 - May 2018*

## SKILLS & INTERESTS

**Programming Languages:** ***Proficient*** C++, C, Python, CMake, Shading Languages; ***Familiar*** TypeScript, C#
**Technologies:** ***Proficient*** CUDA, Vulkan, DirectX 12, Git, Perforce; ***Familiar*** MPI, OpenCL
**Software:** ***Proficient*** Windows, Nsight, RenderDoc, Unreal Engine, AR/VR platforms; ***Familiar*** Linux, Switch
**Interests**: Film, Hiking, Photography, Apples