MEGAN REDDY

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RELEVANT EXPERIENCE

Blizzard Entertainment, Unannounced Survival Game (PC/Console)

Associate Graphics Engineer *Jul 2023 – Present*

- Planned and conceptualized froxel-based volumetric fog solution to further unify and enhance existing volumetric rendering techniques in-engine. Maintained and took ownership of existing fog system features and bugs
- Supported various graphics efforts for open-world survival game, including debug and metrics visualizations, memory defragmentation, and sun/moon rendering and interactions with the time-of-day system
- Utilized DirectX, HLSL, and C++ for implementing graphics features and PIX for debugging graphics pipelines, analyzing performance factors, and evaluating memory footprints
- Collaborated with stakeholders early in feature development to ensure that production needs were fulfilled

Graphics Engineering Intern *May 2022 – Aug 2022*

- Designed and implemented local fog volume solution for proprietary AAA game engine, including LBVH acceleration for fast ray-volume intersection and raymarching for rendering and density variation
- Developed tool for artists to create fog volumes and author attributes such as density, emission, shape, and color

University of Virginia, Department of Computer Science

Graphics Researcher *Aug 2020 – Aug 2021*

- Proposed and co-authored project investigating non-photorealistic rendering techniques and their applications in traditional ray tracing. Prototyped and developed algorithm from scratch in C++ and modeled test scenes in Maya
- Presented findings at the ACM SIGGRAPH 2021 Posters session for rendering research: Link

GPU Research Assistant *May 2020 – Aug 2020*

- Investigated GPU acceleration techniques for serially-driven KROME astrochemical modeling package
- Built GPU-enabled variant of KROME's native ODE solver (DLSODA) using CUDA Fortran

PROJECTS

Radioactive (Group), Unreal Engine 5, Blueprints Link *May 2023*

- Developed first-person puzzle-adventure game where player must navigate to the top of a radioactive lighthouse using a flashlight to interact with the environment and solve puzzles
- Designed in-game UI, puzzles, and scene layout and created new models and shaders to enhance visuals

DXR Path Tracer with ReSTIR (Individual), DirectX 12, C++ Link *Dec 2022*

- Implemented the paper *Spatiotemporal reservoir resampling for real-time raytracing with dynamic direct lighting* (Bitterli et al. 2020) using DirectX Raytracing and NVIDIA's Falcor framework
- Extended the algorithm to include A-Trous denoising pass in addition to weighted RIS and spatiotemporal reuse

GPU-Accelerated Heterogeneous Volume Rendering (Group), CUDA, C++ Link *Dec 2022*

- Implemented the paper *A null-scattering path integral formulation of light transport* (Miller et al. 2019), a method to enable multiple-importance sampling and faster convergence of heterogeneous media
- Designed GPU and CUDA-enabled variant of the algorithm to allow for even faster rendering of volumetric media

SKILLS

Languages/APIs: C++, C, Direct3D 12, OpenGL, HLSL, GLSL, CUDA, WebGL, MEL, Python
Tools: Unreal Engine, Unity, Autodesk Maya, Houdini, Visual Studio, Git, Perforce, PIX, Qt, Procreate

EDUCATION

University of Pennsylvania, M.S.E. in Computer Graphics and Game Technology *May 2023*
University of Virginia, B.S. in Computer Science *May 2021*