

# Liam P Tyler

## Senior Rendering Engineer

Apple Valley MN 55124  
📞 +1 (952) 412 9843  
✉ Tyler.Liam7@gmail.com  
🌐 [liamtyler.com](http://liamtyler.com)

### Work History

#### 2023 – 2024 **Deviation Games** – Senior Rendering Engineer

Helped lead performance investigations and improvements for an Unreal 5 game. Found issues through PIX and Insight captures and then worked on code changes to improve them. Also helped develop a custom SDF character renderer using mesh shaders and tessellation.

#### 2020 – 2023 **Sledgehammer Games** – Rendering Engineer

Shipped games: Call of Duty Vanguard (2021)

##### Major achievements:

- Quality and memory improvements to the terrain system.  
*Key features:* offline adaptive tessellation and smooth lerping from low to high LODs to avoid popping.
- Color ramping system for fire VFX.  
*Key features:* improved artistic expression, improved consistency and authoring times.
- Internal research effort to improve material accuracy and decrease memory requirements.  
*Key features:* new captures devices, tinting algorithms, and improved tooling.

#### Summer 2019 **Activision** – Engine Programmer Intern

Helped port the engine to iOS with Metal, and supported an in-house PS4 GPU frame capture tool. Worked on shader translation, adding compute shader support, and lowering the memory usage.

#### 2015–2019 **University of Minnesota** – Teaching Assistant

Led discussions and labs, reviewed and created course content, and occasionally lectured for several classes in the Computer Science department. Classes: Intro to C++, Intermediate Algorithms and Data Structures, Graphics 1, and Animation & Planning.

#### Summer 2018 **Vital Images** – Software Developer Intern

Improved a ray tracing graphical tool for algorithm scientists to visualize the differences in 3D volumes. Also helped design and implement a new regression testing framework.

### Education

#### 2018–2020 **Master's in Computer Science**

Emphasis: Computer graphics

University of Minnesota

GPA: 4.0/4.0

#### 2014–2018 **B.S. in Computer Science, Math minor**

Emphasis: Computer graphics

University of Minnesota

GPA: 3.98/4.0

### Primary Skills

C++, C, Python | Vulkan, OpenGL, DX12, Unreal | Linux, Windows | Visual Studio, RenderDoc, PIX, Razor

### Selected Projects

#### Custom Game Engine (ongoing)

*Languages: C++, Vulkan*

Cross platform game engine. Features include: a custom render graph solution, mesh shader pipeline, compute shader frustum culling, fully bindless system, and an extensive asset pipeline system

#### GPU Real Time Ray Tracer

*Languages: C++, Cuda*

Cross platform gpu ray tracer using CUDA. Used SAH-based BVHs that used stack-based traversal on the gpu, and supported reflection and refraction

#### Interactive Sound Propagation in Real Time

*Languages: C++, OpenGL*

Used ray tracing and multithreaded SIMD fft convolution to simulate how the instruments should sounds for a listener in various environments in real time