Liam P Tyler

Computer Scientist

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Education

2018–Present **Master's in Computer Science** — *University of Minnesota*
Emphasis: Computer graphics — GPA: 4.0/4.0

2014–2018 **B.S. in Computer Science, Math minor** — *University of Minnesota*
Emphasis: Computer graphics — GPA: 3.98/4.0

Work History

Summer 2019 **Activision** – *Engine Programmer Intern*
Helped port the engine to iOS with Metal and a GPU frame capture tool for the PS4. Worked on shader translation, adding compute shader support, and lowering the memory usage.

2015–2019 **University of Minnesota** – *Teaching Assistant*
Led recitations and labs, review and create course content, and guest lectured for several classes in the Computer Science department.

Summer 2018 **Vital Images** – *Software Developer Intern*
Improved a graphical tool for algorithm scientists to visualize the differences in 3D volumes, and helped design and implement a new regression testing framework.

Summer 2017 **University of Minnesota** – *Research Assistant*
Converted a new cancer cell migration simulator from Matlab to C++, and created some statistical tools to analyze the output and performance.

Summer 2016 **Seagate** – *Software Developer Intern*
Improved the functionality and layout of an intra company website, and created a new website for generating and managing documentation for a testing framework.

Primary Skills

C++, C, Python | OpenGL, Unity, Metal | Linux, Windows | Visual Studio, RenderDoc, GDB

Selected Projects

Personal **Custom Game Engine (ongoing)** — *Languages: C++, OpenGL*
Cross platform game engine in C++ and OpenGL. Features include a tiled-deferred renderer, dynamic shadows, optimized asset loading, and an entity component system.

Graphics 1 **VR Real Time Ray Tracer** — *Languages: C++, OpenGL*
Implemented using OpenGL compute shaders and the MinVR framework. Worked for the HTC Vive, CAVE, and desktop

Computer Vision **3D Real Time Object Tracking** — *Languages: C++, OpenGL*
Used infrared cameras and epipolar geometry to reconstruct an object's position and rotation in real time, displayed using my game engine

Animation **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

Extra Curricular Activities

- UMN Rock Climbing Team Officer
- Volunteer at a parrot rescue shelter
- 2017 Minnehack participant, and 2015 ICPC regional competition participant
- Marathon runner and competitive rock climber