

EDUCATION

Lexington, KY	University of Kentucky	Expected: May 2023
<ul style="list-style-type: none">- Major: Computer Science, Applied Mathematics B.S. (GPA: 3.92)- Key Courses: Linear Algebra, Advanced Computer Graphics, Probability, Systems Programming, Calculus 1-4, Programming in C, Artificial Intelligence, Algorithms and Data Structures, Statistics, Numerical Methods- Key Skills: C, C++, Python, CUDA, Databases, Go, Graphics Programming, OpenGL, Artificial Intelligence and Machine Learning, Vulkan, Optimization, Imaging, Parallel Programming, CMake, Unity, GDB, Tensorflow		

EMPLOYMENT

Mobile Gaming Engineering Intern	Twitch Interactive / Amazon	June 2021 – Aug. 2021
<ul style="list-style-type: none">- Developing video streaming APIs using the Go Programming Language- Maintaining the Twitch Mobile App within the Kotlin / Android OS Ecosystem- Lead a project to develop an improved broadcasting experience for mobile gaming		
Integration Engineering Co-op	Intel Corporation	Oct. 2020 – May 2021
<ul style="list-style-type: none">- Wrote automated test simulations for the Simics platform in C and Python, speeding up test time by >60%- Debugged and validated processor firmware configurations simulated on FPGA, saving >\$2,500/vulnerability- Analyzed processor and system designs using computer architecture knowledge to design validation tests		
Software Engineer	University of Kentucky	May 2019 – July 2020
<ul style="list-style-type: none">- Improved faculty data comprehension by creating a data visualization web app in PHP, JavaScript, and SQL- Automated faculty job search process by using Python to parse new applicants, saving 2 hours daily- Revitalized department DevOps with automated code review in GitLab and redeploying legacy systems in Docker		

EXTRA-CURRICULAR / RESEARCH

Smart Manufacturing Research Assistant	University of Kentucky	Jan. 2020 – Present
<ul style="list-style-type: none">- Developed a convolutional neural network in Pytorch that detected manufactured part defects with 99% accuracy- Used CUDA acceleration to create to handle high resolution, datasets and decrease training time by 150%		
Biomedical Imaging Research Assistant	University of Kentucky	Mar. 2020 – Oct. 2020
<ul style="list-style-type: none">- Developed an optimized version of NIRFAST to render real-time 3D data visualizations of cerebral blood flow- Optimized imaging device using CUDA and MATLAB GP GPU Toolbox to improve runtime by ~300%		
Embedded Systems Team	UK Solar Car Team	Aug 2019 – Present
<ul style="list-style-type: none">- Helped with development of the systems within the car such as RTOS, sensors, and microprocessors, networking- Helped maintain large scale SVN version control for the team on Linux		

PERSONAL PROJECTS

Physically Based Path Renderer:

- Implemented Monte Carlo based path tracing rendering algorithm in C++ that handles multiple BDRFs
- Developed support for volumetric density functions to render participating media accurately
- Optimized the code base using several acceleration structures such as bounding volumes and KD Trees

Rendering Engine in OpenGL Core Profile:

- Created a real time toy rendering engine to interact with models and test various shaders
- Wrote several aesthetically pleasing shaders in GLSL such as cell, gooch shading, and others
- Managed the packing and build automation of the entire system using CMake

3D Signed Distance Raymarching in Unity:

- Used High-Level Shading Language (HLSL) to create signed distance field shaders
- Created a robust and efficient graphics pipeline using Unity's Shader Framework and C#

OPEN-SOURCE CONTRIBUTIONS

Blender Foundation:

- Implemented precise method to select a random set of objects in a context given a random factor using Boost

Godot Game Engine:

- Fixed material normal mapping error that caused refraction to be offset rather than distorted on rough surfaces