

Education

University of Illinois Urbana-Champaign | *May 2019*

GPA: 3.90/4.0

BS in Computer Science — Minor in Electrical and Computer Engineering, and Music

Work and Leadership Experience

Disbelief | *Graphics and Engine Programmer*

May 2019 - Present

- › Credited on several AAA Unreal Engine games such as Borderlands 3, Gears 5, and Gears Tactics
- › Optimized speed and memory usage to ensure the games run smoothly at a high-fidelity
- › Tracked down and fixed numerous hard to find bugs among a code base of several million lines

Argonne National Laboratory | *Research Aide*

Jun 2017 - Aug 2018

- › Designed a scalable algorithm for using a remote RAM pool to enable in situ processing
- › Performed timing studies of a C++/MPI implementation that achieved 67 GB/s of bandwidth
- › Wrote paper that was published as part of the RAW 2018 workshop

Genesis Automation | *Software Developer*

Jun 2015 - Jan 2019

- › Programmed drivers and state machines to control the operation of automation equipment
- › Designed a method for the machine's code to compile and execute DLL scripts
- › Designed and implemented various applications to improve efficiency for common tasks

Robotics Clubs (FRC Robotics & iRobotics) | *Programming Lead*

December 2013 - May 2019

- › Hosted programming sub-team meetings and developed training material for new members
- › Wrote the software architecture to section the code into individually assignable segments

Skills

Compiled Languages: C++, C, C#, Java, Verilog, HLSL, GLSL, Fortran, OCaml, Haskell

Interpreted Languages: Python, R, Matlab, SQL, PHP, JavaScript, Batch, Bash, Lua, Visual Basic

Assembled Languages: x86 Assembly, Z80 Assembly, MIPS Assembly, 6502 Assembly

Frameworks: CUDA, OpenGL, SDL, SFML, MPI, OpenMP, Charm++, OpenCV

Environments: Visual Studio, Perforce, Git, Jira, Unreal, Unity, Linux, Make, Arduino, Android

Personal Projects

Unreal Engine Game Reverse Engineering

x86 Assembly, Unreal, x64dbg

Reversed engineered a modern Unreal Engine 4 game with x64dbg to find it's asset encryption key. With this key I was able to unpack the assets to find a particular image I was after.

Ascend

Unity, C#

Developed a 2D horror puzzle platformer in Unity over a year with a team of seven. Worked on software architecture, save/respawn system, gameplay (e.g. player movement and movable boxes), UI system, etc.

Vector Wireframe Renderer

C++, OpenGL, SDL

Designed an SDL/OpenGL application to render silhouetted wireframes in the style of a vector monitor. Optimized the program to render in real-time with a movable camera.

Z80 Assembly Math Program

Z80 Assembly, TI-BASIC

Created a math program for the TI-83+ to complete math homework faster. Ported to Z80 assembly to improve operational speed and add features not previously possible.

Swerve Drive Demonstration Game

C++, Java

Developed a Java game to demonstrate the functionality of a drive system constructed for FRC robotics. Presented playable demonstration at a competition to passersby and released it on the FRC forums.

Various Puzzle Solvers

C++, Java

Designed and wrote several complex algorithms to solve puzzles such as a Rubik's Cube, a minesweeper variant, and a game of Tetris.