**Lonnie L. Souder II**
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## PROFESSIONAL EXPERIENCE

**GPU Software Engineer IV** 2022-present
*Meta*
- Investigate device agnostic GPU code alternatives to CUDA for use in Meta's deep learning infrastructure

**GPU Software Engineer** 2021-2022
*Verizon*
- Supported development of the large volumetric capture stage
- Maintained and debugged CUDA device code and host-side CUDA abstractions
- Standardized file format for multi-camera calibration and provided a reader/writer library
- Set up Jenkins scripted pipeline templates for use across any project
- Provided feedback regarding the team workflow and project planning which resulted in more tangible weekly results and far greater project stability

**Algorithm Developer** 2019-2021
*Toyon Research Corporation*
- Analyzed existing computer vision code for bottlenecks using nvprof, Nvidia NSight, and VS Performance Profiler
- Implemented parallelized algorithms in CUDA to run on the GPU
- Packaged software for delivery to client using Docker and CPack
- Maintained and updated CI scripts and configuration files

**XR Software Developer** 2018-2019
*Rowan Virtual Reality Lab*
- Wrote C# code to consume REST API in Unity
- Handled compatibility issues for multiple devices during development
- Wrote code for custom world-space GUI element interaction for Oculus Go

**Software Engineering Intern** Summer 2017 & 2018
*OPEX Corporation*
- Added graphics features to dialogs and worked to fix graphic bugs using MFC libraries in C++
- Worked on build scripts to be used with Jenkins and made changes to better integrate Plastic SCM into Jenkins
- 2D graphic rendering optimization; Increased performance by 80% using Visual Studio Performance Profiler

## SKILLS

C++ • CUDA • Rust • C# • F# • Python • OpenGL • Unity3D • VR • FMOD • OpenMP • Triton • OpenCV • Machine Learning • CMake
Performance Profiling • Docker • Docker-Compose • Plastic SCM • Git • Continuous Integration • Bash • Linux • Verilog • Embedded Systems

## COMMUNITY OUTREACH

**Exercism.io** Ongoing
- Mentor for C++ and F# language tracks
- Occasional open-source contributor

## PROJECTS (*All projects are available on GitHub*)

**VR Iron Man Simulator in Unity3D** Fall 2018
*Introduction to Virtual Reality*

For my final project, I created a small VR game for the Oculus Rift in Unity3D. In this game, the player takes on the role of an *Iron Man*-esque hero. The player is able to fly and shoot lasers and missiles to defeat waves of enemy aircraft. Notable accomplishments on this project include writing the aircraft AI pathfinding algorithm implemented as a PID steering system, writing player input handling, writing missile behavior, and implementing 3D sound using FMOD. I also modeled and textured the player's hands, the missiles, and the player's home base.

**Playground Engine: A C++ and OpenGL Game Engine** Fall 2020
*Personal Project*

This small game engine was born from scraps of code I wrote while learning OpenGL. Eventually, I gathered together some of the pieces into useful abstractions such as Models, Shaders, Cameras, Meshes, and SceneNodes for building a scene graph. The project uses CMake for cross platform building, CTest for testing, Travis CI for automated builds and testing, and Codecov for test metrics.

**Voxel Playground** Fall 2021
*Personal Project*

This small project consists of a simple voxel grid class and an even simpler OpenGL renderer. Voxels in a grid just hold any generic data about a particular point in space. Sample voxel data I used was a simple active/inactive boolean and a distance from an evaluated SDF function. The renderer rendered voxels as points for debugging purposes and eventually cubes with simple diffuse lighting.

## EDUCATION

**BS Electrical & Computer Engineering** 2015-2019
*Rowan University,* GPA: 3.685

**Rowan Scholars Program Scholarship Recipient** 2015-2019