

# Nicolas Barrios

SOFTWARE ENGINEER · OPEN SOURCE SOFTWARE ENTHUSIAST

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## Summary

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Software Engineer and Aspiring Open Source Contributor. 3+ years of experience with modern C++, with plenty of experience implementing build systems and developer tooling. Interested in developing high performance solutions and advancing emerging software technologies

## Work Experience

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### Bolt Graphics, Inc.

*Remote, USA*

SOFTWARE DESIGN ENGINEER (FULL-TIME)

*Dec 2021 - Mar 2023*

- Developed modular software variant of initial Bolt Graphics raytracing platform — C++
- Explored software-based raytracing best practices using publicly available documentation — Rust
- Implemented cross-platform build system integrating private IP libraries with existing rendering tools – CMake, vcpkg
- Applied CI/CD best practices on multiple cloud platforms, delivering software artifacts to company-wide teams — GitHub Actions, Azure DevOps

SOFTWARE SYSTEMS ARCHITECT (CONTRACTOR)

*Aug 2021 - Dec 2021*

- Explored a proof-of-concept implementation of Bolt Graphics IP, leading to provable results for IP success — NVIDIA OptiX

### University at Buffalo School of Engineering and Applied Sciences

*Buffalo, NY USA*

TEACHING ASSISTANT

*Aug 2019 - Dec 2021*

- Assisted Professor Ethan Blanton in teaching the Systems Programming course
- Hosted lab sessions where students implement short programs designed to show them the necessary systems programming skills
- Instructed additional after-hours sessions where students could lead course-adjacent Linux and C programming knowledge.
- Developed a introductory assignment to get students comfortable with C arrays and the C programming language as a whole

## Projects

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### dirty - DNS Information Resolving Tool

*GitHub Link*

SOFTWARE ENGINEER

*May 2023 - Ongoing*

- An in-progress DNS resolver written in the Rust programming language
- My own implementation of the DNS standards RFC 1034 and RFC 1035
- Foray into networking by handling some of 'dig's simpler lookup functionalities.

### Game of Life on GPGPU

*GitHub Link*

LEAD ENGINEER

*Jan 2021 - May 2021*

- Implemented Conway's Game of Life on NVIDIA's CUDA platform for GPGPU processing in C and C++
- Developed parallel computing algorithms designed to concurrently compute a stencil over a large matrix.
- Applied an efficient bitwise algorithm to the Life calculations for computational speedup
- Measured a speedup of over 600x over the naive CPU implementation, with a little over a billion cell updates per second.

### Inspectre

*GitHub Link*

SOFTWARE DEVELOPER

*Feb 2020 - May 2020*

- Teamed up with 4 other developers to create a visual novel horror game using Flutter and Dart for the Android platform
- Implemented continuous integration and continuous deployment (CI/CD) pipelines using Travis CI
- Designed style guidelines for a consistent user interface within the game, using accessibility friendly color schemes and fonts.

## Education

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### University at Buffalo, School of Engineering and Applied Sciences

*Buffalo, NY USA*

M.S. IN COMPUTER SCIENCE AND ENGINEERING

*Jan 2019 - Dec 2021*

- Specializing in High Performance Computing and Parallel Processing
- GPA: 3.42 / 4.00

B.S. IN COMPUTER SCIENCE

*Aug 2017 - Dec 2021*

- GPA: 3.52 / 4.00