Nicolas **Barrios**

Software Engineer · High Performance Computing Enthusiast

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Summary

Currently working as a Software Systems Architect with Bolt Graphics, Inc., as well as Graduate Student at the University at Buffalo's School of Engineering and Applied Sciences. I'm specializing my Master's curriculum in Parallel Computing and HPC because of my interest in that field.

Education

University at Buffalo, School of Engineering and Applied Sciences

Buffalo, NY USA

M.S. in Computer Science and Engineering — *Jan 2019 - Expected Dec 2021*

- Specializing in High Performance Computing and Parallel Processing
- GPA: 3.45 / 4.00

University at Buffalo, School of Engineering and Applied Sciences

Buffalo, NY USA

B.S. in Computer Science — *Aug 2017 - Expected Dec 2021*

- GPA: 3.52 / 4.00

Projects

Game of Life on GPGPU

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 algorirthms 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.

Kademlia Distributed Routing Table

Software Engineer — *Mar 2021 - Apr 2021*

- Implemented a stripped-down version of the Kademlia distributed routing table using the Go programming language
- Developed the routing table to handle concurrent access and modification using Go channels and mutexes
- Created a testing suite to check for correctness on each required functionality
- Implemented the node data structure to use a request-response scheme when communicating RPC messages through the network

Inspectre

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
- Applied Agile methodologies by using Zenhub and Github to track team progress and sprint goals
- Implemented continuous integration and continuous deployment (CI/CD) pipelines using Travis CI, resulting in less wasted time with problematic pushes to the codebase
- Designed style guidelines for a consistent user interface within the game, using accessibility friendly color schemes and fonts.
- Github Link: https://github.com/cse442-spring-2020-offering/cse442-semester-project-bugs-are-features

Work Experience

Bolt Graphics, Inc.

Remote, USA

Software Systems Architect — *Aug. 2021 - Present*

- Developing a novel, hardware-accelerated render platform. See more at https://www.bolt.graphics/the-bolt-platform

University at Buffalo School of Engineering and Applied Sciences

Buffalo, NY USA

Teaching Assistant — *Aug 2019 - Present*

- Assisted Professor Ethan Blanton in teaching the Systems Programming course
- Collaborating with professors and fellow teaching assistants to reinforce course materials.
- Hosting 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