Nicolas **Barrios**

SOFTWARE ENGINEER · HIGH PERFORMANCE COMPUTING ENTHUSIAST

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Summary

Currently a Teaching Assistant for, and Graduate Student in, the Comp Sci Department at UB'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. Love all things optimizations, whether it be developer tools or playing nice with the compiler, as well as Free & Open Source software.

Education

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

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: 3.41 / 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 compute a stencil over a matrix concurrently
- 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 DEVELOPER
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

- Developed 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
- Designed style guidelines for a consistent user interface within the game
- Github Link: https://github.com/cse442-spring-2020-offering/cse442-semester-project-bugs-are-features

Work Experience

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
- Hosting 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