

Research Interests

formal verification, concurrent and distributed systems, operating systems

Education

- 2022–present **PhD Computer Science**, *Northeastern University (NU)*, Boston, MA
4.0/4.0 GPA
- 2020–2022 **MMath Thesis Computer Science**, *University of Waterloo (UW)*, Waterloo, ON
95.75/100.00 GPA
- 2014–2018 **BA Computer Science with Honors & BA Mathematics**, *New York University (NYU)*, New York, NY
3.921/4.000 GPA, Summa Cum Laude, Phi Beta Kappa

Research Experience

- 2022–present **NU PhD Research Assistant**, *Advisor: Ji-Yong Shin*
Developing a unified framework that makes practical the formal verification of safety and liveness properties of protocols and implementations of distributed systems exhibiting weak consistency semantics.
- 2020–2022 **UW Master’s Research Assistant**, *Advisor: Martin Karsten*
Thesis: Improving Data Locality in Applications through Execution Delegation
Developed tools and methods for predicting situations where delegating execution between cores via user thread migration can improve an application’s data locality and, therefore, performance.
- 2017–2018 **NYU Senior Honors Thesis**, *Advisor: Christopher Mitchell*
Thesis: Ghosting ASLR: A Spectre Extension
Designed, implemented, and evaluated a novel approach for defeating address space layout randomization by leveraging the Spectre microprocessor vulnerability.
- Summer 2016 **NYU Courant Undergraduate Research Fellow**, *Advisor: Jinyang Li*
Implemented and evaluated a novel database storage structure to reduce the latency of accesses performed in parallel with database entry migration.
- Summer 2015 **NYU Courant Undergraduate Research Fellow**, *Advisor: Chee Yap*
Designed and implemented a system for testing and visualizing Soft Subdivision Search algorithms in robotic motion planning. System was presented in a publication entitled *Path Planning for Simple Robots using Soft Subdivision Search* in which I was acknowledged.

Awards

- 2020–2022 **Graduate Excellence Award in CS**, *UW CS*
- 2020 **Graduate Scholarship**, *UW CS*
- 2018 **Best in Panel Presentation: CS, Math**, *NYU CAS 44th Annual Research Conference*
- 2018 **Academic Excellence & Achievement in Science**, *NYU CAS*
- 2018 **CS Prize: Outstanding Performance**, *NYU CAS*
- 2017 **CS Prize: Most Promising Student in the Junior Year**, *NYU CAS*
- 2017 **Dean’s Undergraduate Research Fund Award**, *NYU CAS*

- 2015–2018 **Louis Baron Scholarship Award for Math**, *NYU CAS*
2014–2018 **Julius Silver/CAS Scholarship**, *NYU CAS*
2014–2017 **Dean’s List**, *NYU CAS*

Teaching Experience

- Spring & Fall 2021 **CS456 Computer Networks Teaching Assistant**, *UW*
Winter 2021 **CS116 Introduction to CS 2 Teaching Assistant**, *UW*
Summer 2018 **Linear Algebra and Computer Science Tutor**, New York, NY

Industry Experience

- 2018–2020 **Back-End Research & Development Engineer**, *Geopipe, Inc.*, New York, NY
 - Managed and developed the generation of virtual model products.
 - Implemented and tested research algorithms to improve the quality and accuracy of product models. Work funded by NSF SBIR: Phase II grant.
 - First author on paper submitted to the European Conference on Computer Vision 2020 and first inventor on patent (no. 20230100300).
 - Supervised the daily work of undergraduate interns.
- Summer 2017 **Back-End Research & Development Assistant**, *Geopipe, Inc.*, New York, NY
- Spring 2018
 - Managed and developed the generation of virtual model products.
 - Assisted in the implementation and testing of research algorithms to improve the quality and accuracy of product models. Work funded by NSF SBIR: Phase I grant.

Presentations

- 2024 **New England Systems Verification Day**
Verifying safety and liveness of compositions of weakly consistent distributed systems
- 2024 **NU Systems Day**
Verifying Weakly Consistent Distributed Systems
- 2023 **Pre-OSDI/ATC Workshop**
Modeling Weakness: A Framework for Verifying Weakly Consistent Distributed Systems
- 2022 **UW Master’s Thesis Presentation**
Improving Data Locality in Applications through Execution Delegation
- 2021 **UW Systems and Networking Group Seminar**
Delegated Execution - Migrating to Warmer Caches
- 2018 **NYU CAS 44th Undergraduate Research Conference**
Ghosting ASLR: A Spectre Extension

Patents

Bryant J. Curto, Thomas Daniel Dickerson, and Daniel Christopher Ritchie. Systems and methods for inferring object from aerial imagery, 2021. US Patent 20230100300. Patent pending.

Skills

PLs: Coq, C++, C, Python, Bash

OSes: Linux, MacOS

Tools: Vim, Perf, Git, GDB/LLDB, gnuplot, \LaTeX