

# Nathaniel Yazdani

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nickname: Nate

## Education

### GRADUATE

2019 - now DOCTOR OF PHILOSOPHY IN COMPUTER SCIENCE (*on leave*)  
*Northeastern University, Boston*

2017 - 2019 MASTER OF SCIENCE IN COMPUTER SCIENCE & ENGINEERING<sup>1</sup>  
*University of Washington, Seattle*

### UNDERGRADUATE

2015 - 2017 BACHELOR OF SCIENCE IN COMPUTER SCIENCE WITH HONORS  
*University of Washington, Seattle*

## Experience

### RESEARCH

05/2020 - now **Intern**, Formal Methods  
*BedRock Systems, Inc.*  
Formal verification of C++ hypervisor, mechanized with IRIS logic and automated with proof search

09/2019 - now **Graduate Student**, Prof. Amal Ahmed  
*Northeastern University Khoury College of Computer Sciences*  
Mechanization of source-level Rust semantics in Coq, implemented with SSREFLECT

09/2017 - 09/2019 **Graduate Student**, Prof. Dan Grossman  
*University of Washington Allen School of Computer Science & Engineering*  
Proof automation via type-driven ornamentation for Coq, implemented as an OCAML plugin

07/2017 - 09/2017 **Research Intern**, Prof. Aleks Nanovski  
*IMDEA Software Institute*  
Compositional verification in FCSL, a Coq framework for concurrent separation logic

09/2015 - 07/2017 **Undergraduate Research Assistant**, Prof. Ras Bodik  
*University of Washington Allen School of Computer Science & Engineering*  
Synthesis of parallel tree programs in Rosette, a Racket dialect for symbolic evaluation via SMT

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<sup>1</sup>Graduate study through select accelerated program without postgraduate diploma.

## TEACHING

### Graduate Teaching Assistant

*Northeastern University Khoury College of Computer Sciences*

- Aut. 2020      • **CS 2500** Fundamentals of Computer Science I

### Graduate Teaching Assistant

*University of Washington Allen School of Computer Science & Engineering*

- Aut. 2017      • **CSE 374** Programming Concepts and Tools  
Win. 2018      • **CSE 331** Software Design and Implementation  
Spr. 2018      • **CSE 401/M501** Compiler Construction  
Aut. 2018      • **CSE 401/M501** Compiler Construction  
Win. 2019      • **CSE 331** Software Design and Implementation  
Spr. 2019      • **CSE 401/M501** Compiler Construction

### Undergraduate Teaching Assistant

*University of Washington Allen School of Computer Science & Engineering*

- Win. 2017      • **CSE 341** Programming Languages

## INDUSTRY

- 05/2015 -    **Fedora Engineering Intern**  
09/2015      *Red Hat, Inc.*  
01/2014 -    **Technical Intern**  
12/2014      *Intel Corporation*

## Scholarships, honors & awards

## RESEARCH

- 2016 - 2017    **Washington Research Foundation Fellowship**, *Washington Research Foundation*  
2016 - 2017    **Research Leader**, *University of Washington Undergraduate Research Program*  
2017            **Graduate Research Fellowship** (Honorable Mention), *National Science Foundation*  
2017            **Outstanding Undergrad. Researcher** (Honorable Mention), *Computing Research Assoc.*

## ACADEMIC

- 2016 - 2017    **Washington State Opportunity Scholarship**, *Washington State Legislature*  
2016 - 2017    **Jerre Noe Endowed Scholarship**, *U.W. School of Computer Science & Engineering*  
2015 - 2016    **Burkhardt Endowed Scholarship**, *U.W. School of Computer Science & Engineering*  
2015 - 2017    **Roy F. Mather Scholarship**, *Community Foundation for Southwest Washington*  
2015 - 2017    **Rotary Scholarship**, *Lewis River Rotary Club*

## Peer-reviewed publications

- [1] Talia Ringer, RanDair Porter, **Nathaniel Yazdani**, John Leo, and Dan Grossman. “Proof Repair Across Type Equivalences”. In: *Proceedings of the 42nd ACM SIGPLAN Conference on Programming Language Design and Implementation*. PLDI 2021. Virtual: ACM, 2021. DOI: [10.1145/3453483.3454033](https://doi.org/10.1145/3453483.3454033). arXiv: [2010.00774](https://arxiv.org/abs/2010.00774).
- [2] Talia Ringer, **Nathaniel Yazdani**, John Leo, and Dan Grossman. “Ornaments for Proof Reuse in Coq”. In: *Proceedings of the 10th International Conference on Interactive Theorem Proving*. ITP 2019. Portland, OR, USA: LIPIcs, 2019. DOI: [10.4230/LIPIcs.ITP.2019.26](https://doi.org/10.4230/LIPIcs.ITP.2019.26).
- [3] Talia Ringer, **Nathaniel Yazdani**, John Leo, and Dan Grossman. “Adapting Proof Automation to Adapt Proofs”. In: *Proceedings of the 7th ACM SIGPLAN Conference on Certified Programs and Proofs*. CPP 2018. Los Angeles, CA, USA: ACM, 2018. DOI: [10.1145/3167094](https://doi.org/10.1145/3167094).
- [4] Rastislav Bodik, Kartik Chandra, Phitchaya Mangpo Phothilimthana, and **Nathaniel Yazdani**. “Domain-Specific Symbolic Compilation”. In: *2nd Summit on Advances in Programming Languages*. SNAPL 2017. Asilomar, CA, USA: LIPIcs, 2017. DOI: [10.4230/LIPIcs.SNAPL.2017.2](https://doi.org/10.4230/LIPIcs.SNAPL.2017.2).