

Alexa VanHattum

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Research Interests

Programming languages, compilers, formal methods

Education

Fall 2018–Present **Cornell University** | Ph.D. Student, Computer Science | GPA: 4.00
Advisor: Adrian Sampson

2012–2016 **Brown University** | B.Sc., Computer Science | GPA: 3.80

Awards & Grants

April 2020 **NSF Graduate Research Fellow 2020**

April 2020 **Finalist: Qualcomm Innovation Fellowship 2020** with Rachit Nigam

June 2019 **Student Volunteer Scholarship** Programming Languages Design & Implementation (PLDI)

May 2019 **Outstanding Teaching Assistant** from Cornell CS, for Programming Languages & Logics

April 2019 **Travel Scholarship** CRA-W Grad Cohort for Women Workshop

September 2018 **Travel Scholarship** Programming Languages Mentoring Workshop (PLMW) at the International Conference on Functional Programming (ICFP)

May 2016 **Honorable Mention: Senior Prize in CS** Brown CS

October 2015 **Anita Borg Travel Scholarship** Grace Hopper Celebration of Women in Computing

Publications

(In submission) *Vectorization for Digital Signal Processors via Equality Saturation.* Alexa VanHattum, Rachit Nigam, Vincent T. Lee, James Bornholt, Adrian Sampson

LCTES 2020 *A Synthesis-aided Compiler for DSP Architectures (WiP Paper).* Alexa VanHattum*, Rachit Nigam*, Vincent T. Lee, James Bornholt, Adrian Sampson (*equal contribution)

Research Experience

Fall 2018–Present **Cornell University**, Graduate Research
Advisor: Adrian Sampson
Creating solver-aided compiler technology for energy-efficient, heterogeneous hardware targets.

Spring 2016	Brown University , Independent Study in Programming Languages Advisor: Shriram Krishnamurthi (Abstract) Used refinement types in Liquid Haskell to analyze matrix arithmetic errors in the R programming language (group research capstone).
Summer 2014	The University of Toledo , Physics NSF REU Intern Advisor: Jaques G. Amar (Abstract) Implemented kinetic Monte Carlo simulations of particle island nucleation on thin films, implemented Union-Find for dynamic island-counting.

Industry Experience

2016–2018	Apple , Health Software Engineer Lead app/database engineer for Apple’s first FDA-regulated irregular heart rhythm notification feature. Contributed to the HealthKit framework. Presented <i>What’s New in Health</i> at Apple’s 2017 WWDC conference.
Summer 2015	Microsoft , Software Engineering Intern Created a message search feature for the Windows Messaging Application.

Teaching Experience

Fall 2020	Programming Languages & Logics , Cornell University, Graduate TA
Fall 2018	Programming Languages & Logics , Cornell University, Graduate TA
Spring 2016	Logic for Systems , Brown University, Head TA
Fall 2017	Intro. Object-Oriented Programming , Brown University, Head TA
Spring 2015	Discrete Structures & Probability , Brown University, TA
Fall 2014	Intro. Object-Oriented Programming , Brown University, TA
Spring 2014	First Byte of Computer Science , Brown University, TA

Service & Outreach

Summer 2020	OOPSLA 2020 Artifact Evaluation Committee
Fall 2020–Present	Programming Languages Discussion Group Co-organizer
Summer-Fall 2020	CS Teaching Committee Student representative
Fall 2019	Graduate Students for Gender Inclusion in Computing Secretary
Spring 2019	Cornell CS PhD Visit Day , Co-organizer, >100 visiting students
Spring 2019–Present	Cornell CS Colloquium , Organize student hosts for visiting speakers
Spring 2019	Cornell Girls’ Adventures in Math , Student volunteer
2016–2017	Apple Women in Science and Engineering Mentoring , Mentor
2014–2016	Brown Women in Computer Science , Mentor
2012–2014	Brown Algebra in Motion , Site leader, math tutor at local high school