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

March 2020 **NSF Graduate Research Fellow 2020**

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

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 Hyacinth, a synthesis-aided compiler targeting spatial, heterogeneous computer architectures from LLVM IR.

Spring 2016 **Brown University**, Independent Study in Programming Languages
Advisor: Shriram Krishnamurthi (Abstract)
Analyzed matrix arithmetic in the R programming language as a group research capstone. Used refinement types in Liquid Haskell to statically surface matrix manipulation errors and warnings.

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. Ran simulations on the Ohio Supercomputer Center's clusters, 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 *What's New in Health* 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 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

Fall 2019	**Graduate Students for Gender Inclusion in Computing** Secretary, founding member for new student group
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