

# 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

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 Scholar** Grace Hopper Celebration of Women in Computing

## Publications

ASPLOS 2021 *Vectorization for Digital Signal Processors via Equality Saturation*. Alexa VanHattum, Rachit Nigam, Vincent T. Lee, James Bornholt, Adrian Sampson. [PDF](#). [ACM DL](#).

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

## 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 *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 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      **Artifact Evaluation Committee SPLASH OOPSLA 2020**

Fall 2020–Present      **Programming Languages Discussion Group** Co-organizer

Summer-Fall 2020      **CS Teaching Committee** Student representative

Fall 2019–Present      **Graduate Students for Gender Inclusion in Computing** Secretary

Summer 2019      **Student Volunteer PLDI 2019**

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