

# David Moon

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## Education

- 2018–present **Ph.D. Computer Science**, *University of Colorado*, Boulder, CO.  
2011–2016 **B.A. Mathematics & Computer Science**, *Williams College*, Williamstown, MA.

## Employment

- 2016–2018 **Software Engineer**, *Addepar*, New York City, NY.  
Full-stack web development using Ember.js and Java. Addepar is an online platform for managing complex investment portfolios. Developed several features for benchmarking portfolios, a central workflow for our users.
- Summer 2015 **Research Intern**, *Computer Science Department*, Williams College.  
Worked with Stephen Freund on optimizing the FastTrack dynamic race detector. Using hash consing and a novel synchronization-based caching technique, significantly reduced space overhead and slightly reduced mean time overhead on the Java Grande and DaCapo benchmark suites.
- Summer 2014 **Research Intern**, *Data Research Training Grant REU*, Duke University.  
Worked with Paul Bendich on topological data analysis. Proved a new result toward run-time analysis of algorithm for computing persistent homology.
- Summer 2013 **Research Intern**, *SMALL REU*, Williams College.  
Worked with Steven Miller in the Number Theory & Probability group. Co-authored three publications in the *Journal of Number Theory*, one of which I spearheaded near-independently of our advisor. Received an honorable mention for a talk given at the 2013 Young Mathematicians Conference.

## Publications

### Refereed Journal Articles

- Dec 2015 Thao Do, Archit Kulkarni, Steven J. Miller, David Moon, Jake Wellens, James Wilcox. *Sets characterized by missing sums and differences in dilating polytopes*, *Journal of Number Theory* 147, 123-153.
- Feb 2015 Thao Do, Archit Kulkarni, Steven J. Miller, David Moon, Jake Wellens. *Sums and differences of correlated random sets*, *Journal of Number Theory* 147, 44-68.
- Aug 2014 Philippe Demontigny, Thao Do, Archit Kulkarni, Steven J. Miller, David Moon, Umang Varma. *Generalizing Zeckendorf's Theorem to  $f$ -decompositions*, *Journal of Number Theory* 141, 136-158.

### Reports & Posters

- May 2016 David Moon. *Specifying and Enforcing Synchronization Disciplines in Multithreaded Programs*. Honors thesis for the Williams CS department.

Aug 2015 David Moon, Stephen Freund. *Optimizing Dynamic Race Detection with Hash Consing*. Summer research poster for the Williams CS department.

Jul 2014 David Moon. *Maximum Number of Nonzero Persistence Cycles in a Vietoris-Rips Filtration*. Technical report on summer research results for the Data RTG group at Duke.

## Teaching

Fall 2018 **Teaching Assistant**, *Principles of Programming Languages (CSCI 3155)*, University of Colorado.

Spring 2018 **Adjunct Instructor**, *Front-End Web Application Development (CSC 59940)*, City College of New York. Inaugural member of the NYC Tech-In-Residence Corps, a municipal-industry-academic partnership designed to bring industry professionals into classrooms. Co-designed and co-taught a project-based course to introduce students to modern front-end web technologies and software engineering practices. Course reviews averaged 4.7/5.0. Co-taught with Michelle Shu, advised by Michael Grossberg.

○ "Very interesting, [sic] peaked my interest in web development."

○ "The instructors were very knowledgeable, I felt confident in their skills and the information they gave."

○ "Mentors were helpful and available outside of classroom."

○ "Would recommend because this is the best course in CCNY."

Fall 2015 **Teaching Assistant**, *Galois Theory (MATH 394)*, Williams College.

Spring 2014 **Teaching Assistant**, *Data Structures (CSCI 136)*, Williams College.

Fall 2012 **Teaching Assistant**, *Discrete Mathematics (MATH 200)*, Williams College.

## Speaking

May 2016 *Specifying and Enforcing Synchronization Disciplines in Multithreaded Programs*. Honors thesis defense presented to the Williams CS department.

January 2016 *Circle Packing: From Cookie Cutting to Complex Analysis*. Expository colloquium talk presented to the Williams math department.

July 2014 *Maximum Number of Nonzero Persistence Cycles in a Vietoris-Rips Filtration*. Summer research talk presented to the Data RTG REU group at Duke University.

August 2013 *Sets Characterized by Missing Sums and Differences in  $\mathbb{Z}^D$* . Summer research talk co-presented with Archit Kulkarni at the Young Mathematicians Conference. Received an honorable mention out of 37 talks.

April 2013 *A Space-Filling Curve*. Expository talk presented at the Hudson River Undergraduate Mathematics Conference.

## Other Interests

Former professional ensemble member of [Choral Chameleon](#). Avid rollerblader.