

# 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.

- "He is kind and knowledgeable. He manages a class well and always goes over difficult material."
- "David has been supremely helpful in handling any questions I have (which is a lot) in what I consider to be a challenging class."
- "Really like how its clear he knows the content and can easily tie concepts together through similarities and difference. Just really good explanations in general, one of the best TA experiences I've had (I'm a Junior)."

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."
- "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.