Samantha E. Davies

Contact Information

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Education

University of Washington 09/2016-present
Degree: PhD in Mathematics
Cumulative QPA: 3.82/4.0

University of Illinois at Chicago 08/2015-07/2016
Degree: MS in Mathematics
Cumulative QPA: 3.84/4.0

Carnegie Mellon University 08/2011-05/2015
Degree: BS in Mathematical Sciences, minor in Economics College and University Honors
Cumulative QPA: 3.78/4.0

Research Experience

UIC- Department of Mathematics, Statistics, and Computer Science 10/2015-06/2016
Planted clique

- Performed research with a group of UIC Ph.D. students under the direction of Lev Reyzin, an Assistant Professor in the MSCS department at UIC
- Studied variants of the planted clique problem and other graph distinguishing problems using statistical algorithms. Work for this project is ongoing

Carnegie Mellon University- Department of Mathematical Sciences 02/2015-05/2015
Knight's tour

- Performed research under the direction of Carl Yerger, who was a Shelly Visiting Professor at CMU
- Implemented algorithms which can find knight's tours on small Aztec diamonds and showed traditional inductive arguments for knight's tours fail for Aztec diamonds
- The resulting paper, *Algorithms for Finding Knight's Tours on Aztec Diamonds*, has been accepted for publication in *Involve: A Journal of Mathematics*

Brown University- Department of Applied Mathematics 06/2014-08/2014
Leadership Alliance Summer Research Program

- Performed research under the direction of Johnny Guzman, an Associate Professor of Applied Mathematics at Brown University
- Numerically and analytically examined the behavior of solutions of the one dimensional generalized model vorticity equation in search of determining whether solutions to the three dimension Euler Equations exist globally

Carnegie Mellon University- Department of Mathematical Sciences 06/2013-08/2013
Summer Undergraduate Applied Mathematics Institute

- Studied signal processing, mathematical software and other topics with a group of 14 other mathematics students from across the country
- Performed research under the direction of Gregory Johnson, an Assistant Teaching Professor of Mathematics at CMU
- Discovered and proved properties in binomial coefficients produced using the factorial defined by Manjul Bhargava over geometric progressions

Teaching

- **Math 124** (Calculus I, Winter & Spring 2017)
  Taught 2 active learning styled sections twice each week, held weekly office hours, graded exams and weekly quizzes.
- **Math 126** (Multivariable Calculus, Fall 2016)
  Taught 2 lecture styled sections twice each week, held weekly office hours, graded exams and weekly quizzes.
- **Math 121** (UIC Pre-Calculus, Fall 2015 and Spring 2016)
  Taught 3 active learning styled sections twice each week, held weekly office hours, graded exams.
- **21-241** (CMU Matrices and Linear Transformations, Spring 2015)
  Taught 1 lecture styled section twice each week, held weekly office hours, graded exams and weekly homeworks
- **with high probability**
  Manage my math blog with high probability, https://samidavies.wordpress.com. Some posts are about topics in advanced mathematics, but most are aimed towards a general audience and motivated by real world examples! (My first year at UW really hindered my writing, but after September 13th 2017, 4pm EST, it should pick back up again.)

Volunteer and Leadership Experience

- Freedom Education Project Puget Sound
  Tutor math to students at the Washington Corrections Center for Women
- Community Advisor for Morewood Gardens- 08/2014-05/2015

  Assisted in the selection, hiring, and training of a staff of 11 Resident Assistants. Lead the house staff in the development of a shared house vision for 470 residents, while serving as an active point of interface between the house community and the greater CMU community.
- Vice President for Kappa Kappa Gamma: Delta Xi Chapter 01/2013-12/2013

Programming Languages

Experience working with LaTeX, Python, Julia, Matlab, Maple

Relevant Coursework

Carnegie Mellon University:

Discrete Mathematics (2 semesters)	Real Analysis (2 semesters)	Principles of Computing
Linear Algebra (2 semesters)	Differential Equations	Operations Research
Mathematical Finance (2 semesters)	Numerical Methods	Algebraic Structures
Probability (2 semesters)	Combinatorics	Graph Theory

University of Illinois at Chicago:

The Probabilistic Method	Computer Algorithms II	Discrete Geometry
Foundations in Data Science	Measure Theory	Complex Analysis

University of Washington:

Adv. Linear Algebra (2 quarters)	Modern Algebra (3 quarters)	Complex Analysis (3 quarters)
Counting and Sampling	Optimization	