

Ziv Scully

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Education

Carnegie Mellon University, *PhD, Computer Science* Pittsburgh, PA, 2016–present

THESIS ADVISORS: Mor Harchol-Balter and Guy Blelloch.

Research in queueing theory, resource allocation, and scheduling. Received NSF Graduate Research Fellowship and ARCS Foundation scholarship.

Massachusetts Institute of Technology, *BS, Math with Computer Science* Cambridge, MA, 2012–2016

SELECTED MATH COURSES: abstract algebra, real analysis, point-set topology, algebraic topology, logic and set theory, combinatorial optimization, algebraic combinatorics, theory of computation.

SELECTED COMPUTER SCIENCE COURSES: algorithm design, program analysis, large-scale symbolic systems, constructive computer architecture, microcomputer project lab, randomized algorithms, computational classical mechanics.

Brookline High School Brookline, MA, 2008–2012

Siemens Competition Regional Semifinalist, Intel Science Talent Search Semifinalist, National Merit Scholarship Finalist.

Research Experience

Carnegie Mellon University, *Graduate Research Assistant* Pittsburgh, PA, 2016–Present

ADVISORS: Mor Harchol-Balter and Guy Blelloch.

Research in queueing theory, resource allocation, and scheduling. Interests include scheduling algorithms for complex jobs with multiple tasks and performance analysis of complex scheduling policies.

Harvard Medical School, *Research Intern* Boston, MA, Summer 2016

ADVISOR: Walter Fontana.

Researched dynamic connectivity algorithms for KaSim, a simulator for protein interaction networks.

MIT CSAIL, *Undergraduate Researcher* Cambridge, MA, 2014–2016

ADVISOR: Adam Chlipala.

Worked on Ur/Web, a pure functional programming language for web applications. Built a compiler optimization that automatically finds opportunities for caching SQL-query-backed output and implements both caching and corresponding cache invalidation.

MIT PRIMES, *Math Research Student* Cambridge, MA, 2011–2012

Researched a discrete nonlinear dynamical system (2011) and matrix determinant algorithms for computer algebra (2012) in MIT PRIMES, a program to introduce high school students to math and science research.

Teaching Experience

Carnegie Mellon University, *Teaching Assistant* Pittsburgh, PA, Fall 2016

Led recitations and designed new course material for CMU 15-857, Analytical Performance Modeling.

MIT Educational Studies Program, *AP Physics C Teacher* Cambridge, MA, 2014–2015

Together with a coteacher, taught weekly classes to local high school students in preparation for the Physics C Advanced Placement exam.

Industry Experience

Intentional Software Corporation, *Software Developer Intern* Bellevue, WA, *Summer 2015*
Became proficient with Intentional’s unique application platform and wrote product code using it, both individually and as part of a six-person team.

Bridgewater Associates, *Technology Associate Intern* Westport, CT, *Summer 2014*
Completed a project in the trading department on a team with two other interns. Gained experience with machine learning and Hadoop.

TripAdvisor, *Software Engineering Intern* Newton, MA, *Summer 2013*
Built customer-facing web pages, developed internal tools for customer service, and fixed a myriad of bugs as part of the Vacation Rentals team.

Programming Language Skills

PROFICIENT: Haskell, Standard ML, C, Java, C#, Python, Ur/Web.

FAMILIAR: MIT Scheme, OCaml, JavaScript, 8051 assembly, Bluespec SystemVerilog, and others.

Awards

National Science Foundation Graduate Fellowship Program , <i>Awardee</i>	<i>2016–2019</i>
ARCS Foundation Scholarship , <i>Recipient</i>	<i>2016–2019</i>
PLDI 2016 Student Research Competition , <i>Third Place</i>	<i>June 2016</i>
Intel Science Talent Search , <i>Semifinalist</i>	<i>January 2012</i>
Siemens Competition , <i>Regional Semifinalist</i>	<i>October 2011</i>

Publications and Preprints

SRPT for Multiserver Systems

I. Grosz, Z. Scully, and M. Harchol-Balter (2018).

In *Proceedings of the ACM Workshop on Mathematical Performance Modeling and Analysis (MAMA 2018)*. Irvine, CA, USA, June 2018.

SOAP: One Clean Analysis of All Age-Based Scheduling Policies

Z. Scully, M. Harchol-Balter, and A. Scheller-Wolf (2018).

In *Proceedings of ACM SIGMETRICS 2018 Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2018)*. Irvine, CA, USA, June 2018.

Optimally Scheduling Jobs with Multiple Tasks

Z. Scully, G. Blelloch, M. Harchol-Balter, and A. Scheller-Wolf (2017).

In *Proceedings of the ACM Workshop on Mathematical Performance Modeling and Analysis (MAMA 2017)*. Urbana, IL, USA, June 2017.

A Program Optimization for Automatic Database Result Caching

Z. Scully and A. Chlipala (2017).

In *Proceedings of the 44th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2017)*. Paris, France, January 2017.

Motors and Impossible Firing Patterns in the Parallel Chip-Firing Game

T.-Y. Jiang, Z. Scully, and Y. X. Zhang (2015).

SIAM Journal on Discrete Mathematics, 29(1), pp. 615–630.

PREVIOUS VERSION: *DMTCS Proceedings*, vol. AT, pp. 537–548.

Efficient Calculation of Determinants of Symbolic Matrices with Many Variables

T. Khovanova and Z. Scully (2013).

arXiv:cs.SC/1304.4691.

Presentations and Posters

2018 INFORMS Annual Meeting , <i>Invited talk</i>	<i>November 2018</i>
SIGMETRICS 2018 , <i>Paper and talk</i>	<i>June 2018</i>
2017 INFORMS Annual Meeting , <i>Invited talk</i>	<i>October 2017</i>
2017 INFORMS APS Conference , <i>Invited talk</i>	<i>July 2017</i>
MAMA 2017 , <i>Extended abstract and talk</i>	<i>June 2017</i>
POPL 2017 , <i>Paper and talk</i>	<i>January 2017</i>
PLDI 2016 Student Research Competition , <i>Talk and poster</i>	<i>June 2016</i>
2012 MIT PRIMES Conference , <i>Talk</i>	<i>May 2012</i>
2012 MAA Undergraduate Student Poster Session , <i>Poster</i>	<i>January 2012</i>
2011 MIT PRIMES Conference , <i>Talk</i>	<i>May 2011</i>

Other Activities

MIT Educational Studies Program, *Program Director, Teacher* Cambridge, MA, 2012–present
Codirected two educational programs for middle- and high-school students, Spring HSSP 2013 and ProveIt 2013–2014, and taught numerous classes to middle- and high-school students on a variety of math and programming topics (including aforementioned employment teaching AP Physics C).

MIT Asymptones, *President, Singer, Arranger* Cambridge, MA, 2012–2016
Sang bass and arranged music for the Asymptones a cappella group. Served as group president in 2015.

MIT Alpha Epsilon Pi Philanthropy, *Logistics Lead, Committee Member* Cambridge, MA, 2013–2014
Designed and ran AEΠ's 2014 philanthropy campaign, which raised \$30,000 for Save a Child's Heart.