

KRISTEN S. GARDNER

Computer Science Department
Carnegie Mellon University

5000 Forbes Ave., Pittsburgh, PA 15213

ksgardne@cs.cmu.edu • (914) 274-1376 • www.cs.cmu.edu/~ksgardne/

EDUCATION

- 2012–Present PhD., Computer Science, Carnegie Mellon University. Advised by Mor Harchol-Balter. Expected graduation: May 2017.
- 2012–2015 M.S., Computer Science, Carnegie Mellon University.
- 2008–2012 B.A., Computer Science, Amherst College. *Summa cum laude*.

TEACHING EXPERIENCE

Carnegie Mellon University

- Fall 2014, Fall 2015 **15-857: Analytical Performance Modeling**, Teaching Assistant
Graduate-level course in queueing theory and its applications to computer systems (~20 students). Taught weekly 90-minute recitations, held two hours of office hours per week, graded homework assignments and exams.
- Fall 2013 **15-451/651: Algorithm Design and Analysis**, Teaching Assistant
Upper-level undergraduate and Masters level algorithms course (~200 students). Taught weekly one-hour recitations (~20 students), held two hours of office hours per week, graded homework assignments and exams.

Amherst College

- Fall 2011, Spring 2012 **CS111: Introduction to CS I**, Teaching Assistant
First course in an introductory programming sequence taught in Java. Provided one-on-one instruction during weekly lab sessions (~25 students).
- Spring 2010, Fall 2010, Fall 2011 **CS112: Introduction to CS II**, Teaching Assistant
Second course in an introductory programming sequence taught in Java. Provided one-on-one instruction during weekly lab sessions (~25 students).

Other

- Summer 2011, Summer 2012 **Johns Hopkins Center for Talented Youth: Fundamentals of Computer Science**, Teaching Assistant
Intensive three-week introductory computer science course for gifted middle and high school students (~15 students). Assisted with course preparation, provided one-on-one instruction during lab sessions, designed and taught selected lessons.

REFEREED PUBLICATIONS

- 2016 **K Gardner**, M Harchol-Balter, A Scheller-Wolf, B Van Houdt. A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size. Under submission to Transactions on Networking.
- K Gardner**, M Harchol-Balter, A Scheller-Wolf, M Veleznitsky, S Zbarsky. Redundancy- d : The Power of d Choices for Redundancy. Operations Research. To appear.
- K Gardner**, M Harchol-Balter, A Scheller-Wolf. A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size. IEEE Modeling, Analysis, and Simulation of Computer and Telecommunication Systems 2016, London, UK, September 2016.
- K Gardner**, S Zbarsky, S Doroudi, M Harchol-Balter, E Hyytiä, A Scheller-Wolf. Queueing with Redundant Requests: Exact Analysis. Queueing Systems. 2016. doi:10.1007/s11134-016-9485-y.
- K Gardner**, S Zbarsky, M Harchol-Balter, A Scheller-Wolf. The Power of d Choices for Redundancy. Poster, ACM SIGMETRICS/Performance 2016, Antibes Juan-les-Pins, France, June 2016.

K Gardner, S Zbarsky, M Velednitsky, M Harchol-Balter, A Scheller-Wolf. Understanding Response Time in the Redundancy-d System. Workshop on Mathematical Performance Modeling and Analysis (MAMA), Antibes Juan-les-Pins, France, June 2016.

2015 **K Gardner**, S Zbarsky, S Doroudi, M Harchol-Balter, E Hyttiä, A Scheller-Wolf. Reducing Latency via Redundant Requests: Exact Analysis. Proceedings of ACM Sigmetrics 2015 Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 15), Portland, OR, June 2015.

K Gardner, S Borst, M Harchol-Balter. Optimal Scheduling for Jobs with Progressive Deadlines. IEEE INFOCOM 2015, Hong Kong, April 2015.

TECHNICAL REPORTS

2016 **K Gardner**, M Harchol-Balter, A Scheller-Wolf, B Van Houdt. A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size. Tech report CMU-CS-16-131.

K Gardner, M Harchol-Balter, A Scheller-Wolf. S&X: Decoupling Server Slowdown (S) and Job Size (X) in Modeling Job Redundancy. Tech report CMU-CS-16-109.

2015 **K Gardner**, S Zbarsky, M Harchol-Balter, A Scheller-Wolf. Analyzing Response Time in the Redundancy-d System. Tech report CMU-CS-15-141.

2014 **K Gardner**, S Zbarsky, S Doroudi, M Harchol-Balter, E Hyttiä, A Scheller-Wolf. Queueing with Redundant Requests: First Exact Analysis. Tech report CMU-CS-14-143R.

INTERNSHIPS AND VISITS

Spring 2016 **Visiting Student Researcher, IEOR Department, UC Berkeley**, Hosted by Rhonda Righter.

Summer 2013 **Summer Research Intern, Alcatel-Lucent Bell Labs**, Hosted by Sem Borst.

FELLOWSHIPS, SCHOLARSHIPS, AND AWARDS

2016 Invited participant, Rising Stars in EECS Workshop. November 2016, Carnegie Mellon University. Siebel Scholar, Class of 2017. Awarded annually for academic excellence and demonstrated leadership to over 90 top students from the world's leading graduate schools. \$35,000.

Carnegie Mellon Graduate Student Association/Provost Conference Funding. \$500.

SIGMETRICS/Performance Student Travel Grant. \$1,600.

Google Anita Borg Memorial Scholarship. \$10,000.

CMU School of Computer Science Alan J. Perlis Graduate Student Teaching Award. Awarded to a single graduate student in the School of Computer Science (~1400 students) for excellence in teaching.

2015 CMU Computer Science Department Teaching Award.

CMU School of Computer Science Special Recognition for Teaching Effectiveness.

SIGMETRICS Student Travel Grant. \$400.

INFOCOM Student Travel Grant. \$1,250.

2012–2015 NSF Graduate Research Fellowship. \$126,000.

2012 George A. Plimpton Fellowship. Awarded by Amherst College.

Amherst College Computer Science Prize.

2011 Phi Beta Kappa.

2008 Intel Science Talent Search semifinalist.

National Merit Scholarship. \$2,500.

Robert Byrd Scholarship. \$6,000.

SERVICE AND OUTREACH

- 2015–Present **Speakers Club Member, Computer Science Department**, Reviewed presentations given by PhD students in the Computer Science Department at CMU.
External Reviewer, International Symposium on Information Theory; Transactions on Modeling and Performance Evaluation of Computer Systems; Transactions on Networking
Founder, CMU Women@SCS PhD Sisters Mentoring
Created and led a mentoring program in which senior PhD students mentor junior PhD Students.
- 2015 **Student Coordinator, OurCS Workshop**
Organized 3-day research workshop for undergraduate women.
PhD Admissions Committee, Computer Science Department
- 2014 **CMU Women@SCS Graduate/Undergraduate Sisters**
Mentored an undergraduate student considering graduate school in CS.
Student Coordinator, Computer Science Department Immigration Course
Organized orientation activities for new PhD students.
- 2013–Present **CMU Women@SCS Creative Technology Nights**
Introduced middle school girls to topics related to technology through 90-minute weekly presentations and activities.
CMU Women@SCS Roadshows
Gave presentations to introduce primary and secondary school students to CS.

TALKS

- 2016 “A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size.” INFORMS annual meeting, Nashville, TN.
“A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size.” Young European Queueing Theorists Workshop, EURANDOM, Eindhoven University of Technology, Eindhoven, the Netherlands. Invited by Jan-Pieter Dorsman.
“A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size.” CMU Theory Lunch Seminar.
“A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size.” MASCOTS 2016, London, U.K.
“Understanding Response Time in the Redundancy-d System.” Workshop on Mathematical Performance Modeling and Analysis (MAMA), Antibes Juan-les-Pins, France.
“Scheduling in Systems with Redundant Requests.” Canadian Operational Research Society (CORS) Annual Conference, Banff, Canada. Invited by Rhonda Righter.
“Queueing Theory and Performance Modeling of Computer Systems.” Women in Theory Workshop, UC Berkeley.
“Balancing the Benefits and Costs of Redundancy.” Caltech Computing and Mathematical Sciences Department seminar. Invited by Adam Wierman.
“The Power of d Choices for Redundant Requests.” UC Berkeley Industrial Engineering and Operations Research Department seminar. Invited by Rhonda Righter.
- 2015 “Scaling Redundancy to Many-Server Systems.” INFORMS annual meeting, Philadelphia, PA. Invited by Mor Harchol-Balter.
“Queues with Redundancy: Exact Analysis.” UT Austin ECE Department Simons Seminar Series. Invited by Virag Shah.
“The Power of d Choices for Redundant Requests.” CMU Theory Lunch Seminar.
“The Power of d Choices for Redundant Requests.” University of Illinois Urbana-Champaign Communications Seminar. Invited by R. Srikant.
“Understanding the Impact of Redundancy.” INFORMS Applied Probability Conference, Istanbul, Turkey. Invited by Mor Harchol-Balter.
“Reducing Latency via Redundant Requests: Exact Analysis.” SIGMETRICS 2015, Portland, OR.

“Redundant Queueing for Low Latency.” *Magic 77: A Celebration of Manuel Blum*, CMU.

“Optimal Scheduling for Video Jobs with Progressive Deadlines.” INFOCOM 2015, Hong Kong.

“Queues with Redundancy: Exact Analysis.” CMU Theory Lunch Seminar.

“Queues with Redundancy: Exact Analysis.” Columbia University IEOR Department seminar. Invited by Ton Dieker.

2014 “Optimal Scheduling for Video Jobs with Progressive Deadlines.” INFORMS annual meeting, San Francisco, CA. Invited by Bora Keskin.

“Optimal Scheduling for Jobs with Progressive Deadlines.” Georgia Institute of Technology Department of Industrial and Systems Engineering seminar. Invited by Jim Xu.

“Optimal Scheduling for Jobs with Progressive Deadlines.” University of Illinois, Urbana- Champaign Department of Electrical and Computer Engineering seminar. Invited by R. Srikant.

2013 “The Edge of Glory: Beginning a Career in Science,” Byram Hills High School Authentic Science Research Symposium, keynote speaker.

PROFESSIONAL SOCIETY MEMBERSHIPS

ACM, ACM SIGMETRICS, INFORMS, IEEE

GRADUATE COURSE WORK

Performance Modeling and Design of Computer Systems, Graduate Algorithms, Advanced Operating Systems and Distributed Systems, Linear Programming, Convex Analysis, Advanced Probability Overview, Machine Learning, Programming Language Semantics