

Curriculum vitae for **Adam Wierman**

CONTACT DETAILS

Computing and Mathematical Sciences
California Institute of Technology
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RESEARCH OVERVIEW

My research focuses on three seemingly distinct areas: cloud computing, network economics, and power systems. Though diverse, the areas are each essential to my broader research goal: easing the incorporation of renewable energy into IT and, more generally, into the electricity grid. My work toward this goal is diverse in both area and technique. It not only draws on tools from algorithms, networking, operations research, economics, and control; but also starts from theory and continues through academic implementation to industrial transfer.

RESEARCH KEYWORDS

Sustainable computing; Network economics; Power systems; Scheduling and resource allocation; Networking; Cloud computing; Applied probability; Algorithmic game theory.

EMPLOYMENT

- 2015-pres Professor and Executive Officer (a.k.a. Chair) of Computing and Mathematical Sciences
 Director of Information Science and Technology
 California Institute of Technology
- 2012-2015 Professor of Computer Science
 California Institute of Technology
- 2007-2012 Assistant Professor of Computer Science
 California Institute of Technology

EDUCATION

- 2007 Ph.D. in Computer Science
 Carnegie Mellon University, Pittsburgh, PA
 Advised by Mor Harchol-Balter.
 Thesis committee: Mor Harchol-Balter, John Lafferty, Bruce Maggs,
 Alan Scheller-Wolf, and Ward Whitt.
- 2004 Masters of Science in Computer Science
 Carnegie Mellon University, Pittsburgh, PA
 Advised by Mor Harchol-Balter.
- 2001 B.S. in Computer Science with an additional major in Mathematics,
 and minors in Psychology and Statistics
 Carnegie Mellon University, Pittsburgh, PA

SELECTED HONORS AND AWARDS

- 2017** Caltech ASCIT teaching award recipient
- 2016 Coauthor of ACM Greenmetrics “Best Student Paper” award recipient
- 2014** Coauthor of IEEE Communication Society William R. Bennet Prize recipient. Award recognizes the “best original paper published in any journal associated with the IEEE Communication Society in the previous 3 calendar years.”
- 2013 Coauthor of IFIP Performance “Best Student Paper” award recipient.
- 2013 Coauthor of IEEE Power & Energy Society (PES) General Meeting “Best Paper on System Operations and Market Economics” award recipient
- 2013 Coauthor of IEEE Sustainable Computing Register “Pick of the month” for April
- 2013** Research on Sustainable Data centers included in the “HP NetZero Data Center Architecture,” which was named a **Computerworld Honors Laureate**
- 2012 Coauthor of IEEE Green Computing Conference (IGCC) “Best Paper” award recipient
- 2012 Student Minghong Lin received an IBM Ph.D. Fellowship
- 2011** ACM Sigmetrics “Rising Star” award recipient. Award given in recognition of “outstanding contributions in the design and analysis of scheduling insights into policies, which provided fundamental scheduling and fairness in modern computing systems.”
- 2011 Coauthor of IEEE Infocom “Best Paper” award recipient
- 2011 Coauthor of ACM Greenmetrics “Best Student Paper” award recipient
- 2010 Coauthor of IFIP Performance “Best Paper” award recipient
- 2010** Caltech ASCIT teaching award recipient
- 2010 Visiting Fellow at the Isaac Newton Institute of Mathematical Sciences
- 2009** NSF CAREER grant recipient
- 2008 Okawa Foundation grant recipient
- 2008 Finalist for the Microsoft New Faculty Fellowship
- 2008 Honorable Mention for the INFORMS Doctoral Dissertation Award for Operations Research in Telecommunications
- 2008** CMU School of Computer Science Distinguished Dissertation Award recipient
- 2007 Named a Siebel Scholar
- 2006** Carnegie Mellon Graduate Student Teaching Award recipient
- 2005 Alan J. Perlis School of Computer Science Student Teaching Award recipient
- 2005 Carnegie Mellon Graduate Student Teaching Award Honorable Mention
- 2003 Coauthor of ACM Sigmetrics “Best Student Paper” award recipient
- 2003-2006 National Science Foundation Graduate Fellowship recipient

PROFESSIONAL SERVICE

Editorial positions

- 2015-pres ACM Sigmetrics Vice-Chair
- 2015-2016 Guest editor of special issue for Queueing Systems (QUESTA)
- 2014-pres ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS) associate editor
- 2014-pres IEEE Transactions on Networking (ToN) associate editor
- 2014-2016 Sustainable Energy, Grids & Networks (SEGAN) editorial board
- 2014-pres IEEE Transactions on Network Science and Engineering (TNSE) associate editor
- 2013-pres Queueing Systems (QUESTA) editorial board
- 2013-2015 IEEE Transactions on Cloud Computing (TCC) editorial board
- 2013-2014 Guest editor of special issue for ACM Transactions on Internet Technology (TOIT)
- 2012-2016 Operations Research (OR) associate editor
- 2011-2015 ACM Sigmetrics board of directors
- 2010-2016 Performance Evaluation (PEVA) editorial board

Conference-related duties:

2018 Program co-Chair: ACM Sigmetrics
2017 Program Committee: IFIP Performance
2017 Program Committee: ACM Sigmetrics
2017 Program Committee: ACM MAMA
2016 Program Committee: NSDI
2016 Program co-Chair: “Algorithms & Uncertainty” long program at the Simons Institute
2016 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGTE)
2016 Steering Committee: ACM Greenmetrics
2016 Program Committee: Workshop on Economics of Cloud Computing
2016 Program Committee: ACM MAMA
2016 Program Committee: ACM e-Energy
2015 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGTE)
2015 Program Committee: ACM MAMA
2015 SIG Webmaster: ACM Sigmetrics
2015 Program Committee: ACM EC
2015 Program Committee: ACM Sigmetrics
2015 Program Committee Chair: NetEcon
2014 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGTE)
2014 Steering Committee: ACM Greenmetrics
2014 Program Committee: ACM MAMA
2014 SIG Webmaster: ACM Sigmetrics
2014 Program Committee: ACM EC
2014 Program Committee: ACM eEnergy
2014 Program Committee: NetEcon, joint with WPIN
2014 Program Committee: European Conference on Queueing Theory (ECQT)
2014 Program Committee: “Mathematics of Planet Earth” series at DIMACS
2013 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGTE)
2013 SIG Webmaster: ACM Sigmetrics
2013 Program Committee: IEEE SmartGridComm
2013 Program Committee: IFIP Performance
2013 Steering Committee: ACM Greenmetrics
2013 Program Committee: ACM WPIN + NetEcon
2013 Program Committee: IEEE Green Computing Conference
2013 Program Committee: ACM MAMA
2013 Program Committee: ACM EC
2013 Program Committee: ACM Sigmetrics
2013 Program Committee: IEEE ICDCS
2012 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGTE)
2012 SIG Webmaster: ACM Sigmetrics
2012 Steering Committee: ACM Greenmetrics
2012 Program Committee: Workshop on Pricing and Incentives in Networks (WPIN)
2012 Program Committee: ACM Sigmetrics/Performance
2012 Program Committee: ACM Greenmetrics
2012 Program Committee: ACM MAMA
2012 Program Committee: WWW
2012 Program Committee: INFORMS MSOM
2012 Program Committee: DCPerf
2011 SIG Webmaster: ACM Sigmetrics
2011 Program Committee: ACM Greenmetrics
2011 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGTE)

2011 Program Committee: IEEE Workshop on Green and Sustainable Communication Networks
 2011 Program Committee: Conference on Utility and Cloud Computing (UCC)
 2011 Program Committee: IEEE ITC-23
 2011 Program Committee: IFIP Performance
 2011 Program Committee: ACM Sigmetrics
 2011 Program Committee: ICST ValueTools
 2010 SIG Webmaster: ACM Sigmetrics
 2010 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGТ)
 2010 Program Committee: ACM Greenmetrics
 2010 Program Committee: EXERT Workshop
 2010 Program Committee: IEEE ITC-22
 2010 Program Committee: IFIP Performance
 2010 Program Committee: ACM Sigmetrics
 2010 Conference co-Chair: ACM Hotmetrics
 2010 Program Committee: Newton Institute Stochastic Processes in Comm. Sciences (SCS)
 2009 Conference co-Chair: Southern California Network Economics Game Theory (SoCal NEGТ)
 2009 SIG Webmaster: ACM Sigmetrics
 2009 Conference co-Chair: EURANDOM Young European Queueing Theorists Symposium (YEQT-III)
 2009 Discussant: ACM Hotmetrics
 2009 Program Committee: Net-COOP
 2009 Program Committee: ACM Hotmetrics
 2009 Program Committee: ACM Greenmetrics
 2009 Program co-Chair: IEEE ICCCN Network Algorithms and Perf. Eval. Track
 2009 Program Committee: ACM Sigmetrics/Performance
 2009 Program Committee: IEEE ITC-21
 2009 Best Paper Committee: IEEE Mascots
 2009 Program Committee: IEEE Mascots
 2009 Conference Webmaster: ACM Sigmetrics
 2008 SIG Webmaster: ACM Sigmetrics
 2008 Discussant: ACM Hotmetrics
 2008 Publicity co-Chair: ACM Sigmetrics
 2008 Program Committee: ACM Sigmetrics
 2008 Program Committee: IEEE Mascots
 2007 Program Committee: ACM Sigmetrics
 2007 Conference Webmaster: ACM Sigmetrics
 2007 Best Paper Committee: ACM Sigmetrics

Invited Referee for Journals and Conferences (each listed only once):

Nature, Journal of the ACM (JACM), IEEE Transactions on Networking (ToN), Operations Research (OR), Annals of Operations Research (ANOR), Management Science (MS), Performance Evaluation (PEVA), Journal of Scheduling (JoS), Journal of Algorithms (JoA), Queueing Systems: Theory and Applications (QUESTA), Journal of Parallel and Distributed Computing (JPDC), Computer Networks (COMNET), Parallel Computing (PARCOMP), Applied Mathematics Letters, Operations Research Letters, Performance Evaluation Review (PER), ACM Sigmetrics, IFIP Performance, IEEE Infocom, QEST Conference, IEEE Mascots, ICST ValueTools Conference, IEEE International Parallel and Distributed Processing Symp (IPDPS), Conference on Decision and Control (CDC), The World-wide Web (WWW) Conference, ACM Hotmetrics, IEEE ITC, IEEE ICCCN, IEEE DSN, Wiley Encyclopedia of Operations Research and Management Science, Journal of Systems and Software, Internet Measurement Conference (IMC), IEEE Transactions on Automated Control (TAC), Probability in the Engineering and Informational Sciences (PEIS), Manufacturing and Service Operations management (MSOM).

Panel member for grant proposal review (each listed only once):

US National Science Foundation (NSF), Singapore National Research Foundation (NRF), Israel Science Foundation

(ISF).

Professional Memberships:

ACM, IEEE, INFORMS

TEACHING EXPERIENCE

Courses taught at Caltech:

CS/EE 144 *Networks: Structure & Economics*

This course is targeted at juniors and seniors and focuses on all the things that go into making Google, Yahoo, and Facebook work.

Online reviews for Winter 2017: 4.71/5, 87% response rate.

Online reviews for Winter 2016: 4.59/5, 89% response rate.

Online reviews for Winter 2015: 4.70/5, 59% response rate.

Online reviews for Winter 2014: 4.62/5, 82% response rate.

Online reviews for Winter 2013: 4.46/5, 98% response rate.

Online reviews for Winter 2012: 4.42/5, 76% response rate.

Online reviews for Winter 2011: 4.76/5, 74% response rate.

Online reviews for Winter 2010: 4.77/5, 70% response rate.

CS/EE 145 *Projects in Networking*

Students work in small groups to design and execute a project in the area of networking, broadly construed. The goal is for the project to either end with a deliverable (e.g. a working web application prototype) or a publishable conference paper. Projects from this course have yielded multiple conference submissions, a patent, and a startup being incorporated.

Online reviews for Spring 2017: 4.71/5, 31% response rate.

Online reviews for Spring 2015: 4.88/5, 12% response rate.

Online reviews for Spring 2014: 4.33/5, 21% response rate.

Online reviews for Spring 2013: 4.60/5, 21% response rate.

Online reviews for Spring 2012: 4.00/5, 35% response rate.

Online reviews for Spring 2011: 4.00/5, 44% response rate.

Online reviews for Spring 2010: 5.00/5, 38% response rate.

CS/EE 146 *Advanced Networking*

This is a topics course in networking, with changing focus from year to year.

Topics have included Sustainable computing (2011) and platform design (2016) when I have taught the course.

Online reviews for Spring 2016: 4.54/5, 25% response rate.

Online reviews for Spring 2011: 4.11/5, 79% response rate.

CS/EE 147 *Network performance evaluation*

Spring 2013, 2010, Winter 2009, Fall 2008

Course covers introductory stochastic modeling, scheduling theory, and queueing theory.

Online reviews for Spring 2013: 5.00/5, 60% response rate.

Online reviews for Spring 2010: 4.71/5, 47% response rate.

Online reviews for Winter 2009: 5.00/5, 86% response rate.

Online reviews for Fall 2008: 6.90/7, 69% response rate.

CS/SS 241 *Introduction to SISL, Topics in Algorithmic Game Theory*, co-taught with John Ledyard
Winter 2007

This topics course is jointly offered by CS and Economics. When I taught it in 2007, it focused on Algorithmic Game Theory.

Combination of online and paper reviews: 6.70/7, 83% response rate.

Teaching awards:

Spring 2017 Caltech ASCIT Teaching Award
Spring 2010 Caltech ASCIT Teaching Award
Spring 2006 Carnegie Mellon Graduate Student Teaching Award.
Spring 2005 Alan J. Perlis School of Computer Science Student Teaching Award.
Spring 2005 Honorable Mention for the Carnegie Mellon Graduate Student Teaching Award.

ADVISING EXPERIENCE

Affiliated postdoctoral fellows:

Shai Vardi	2016-2018, supervised jointly with Federico Echenique
Krishnamurthy Dvijotham	2015-2016, supervised jointly with Steven Low Joined PNNL in 2016.
Hu Fu	2015-2016, supervised jointly with Federico Echenique Joined UBC as an Asst. Professor in 2016.
Siddharth Barman	2012-2015, supervised jointly with Katrina Ligett and Federico Echenique Joined IIT, Bangalore as an Asst. Professor in 2015.
Umang Bhaskar	2012-2014, supervised jointly with Katrina Ligett and Federico Echenique Joined Tata Institute of Fundamental Research as an Asst. Professor in 2015.
Enrique Mallada	2013-2015, supervised jointly with Steven Low Joined Johns Hopkins University as an Asst. Professor in 2015.
Yakov Babichenko	2012-2014, supervised jointly with Katrina Ligett and Federico Echenique Joined the Technion as an Asst. Professor in 2014.
Yunjian Xu	2012-2013, supervised jointly with Steven Low and K. Mani Chandy Joined Singapore University of Technology and Design as an Asst. Professor in 2013.
Eilyan Bitar	2012-2013, supervised jointly with Steven Low Joined Cornell University as an Asst. Professor in 2013.
Sachin Adlakha	2010-2013, supervised jointly with Steven Low and K. Mani Chandy Joined Ayasdi, a data science startup.
Krishna Jagannathan	2010-2011, supervised jointly with Eytan Modiano (MIT) Joined IIT Madras as an Asst. Professor in 2011.
Daniel Golovin	2009-2011, supervised jointly with Andreas Krause Joined Google in 2011.
Lijun Chen	2008-2011, supervised jointly with Steven Low Joined Colorado U. at Boulder as an Asst. Professor
Jason Marden	2007-2009, supervised jointly with John Ledyard Joined Colorado U. at Boulder as an Asst. Professor in 2009. Moved to UCSB as an Associate Professor in 2015.
Lachlan Andrew	2007-2008, supervised jointly with Steven Low Joined Swinburne University as an ARC Future Fellow in 2008. Moved to Monash University as an Associate Professor in 2014.

Graduate student advising:

Riley Murray	Coadvised with Venkat Chandrasekaran, entered in 2016
Yu Su	entered in 2015
Navid Azizan	Coadvised with Babak Hassibi, entered in 2015
Gautam Goel	entered in 2015 Received an NSF Graduate Fellowship

Palma London	entered in 2014 Received an NSF Graduate Fellowship
John Pang	Coadvised with Steven Low, entered in 2014 Named an A-Star Fellow
Niangjun Chen	Entered in 2012 Named an A-Star Fellow
Xiaoqi Ren	Entered in 2012 Named Caltech's "Outstanding TA" for Fall 2014. Named Renick Institute for Sustainability Graduate Research Fellow in Spring 2016.
Changhong Zhao	Coadvised with Steven Low, entered in 2011, defended in 2016. "Real-time load-side control of electric power systems." Named Qualcomm Innovation Fellowship Finalist in 2015. Received the Demetriades Prize in 2016. Joined NREL in 2016
Desmond Cai	Coadvised with Mani Chandy and Steven Low, entered in 2010, defended in 2016. "Electricity Markets for the smart grid: Networks, timescales, and integration with control" Joined the A-Star research institute, Singapore in 2016.
Subhonmesh Bose	Coadvised with Steven Low, entered in 2009, defended in 2014. "An integrated design approach to power systems: From power flows to electricity markets." Received Atkinson Postdoctoral Fellowship in Sustainability at Cornell. Joined Cornell as a postdoctoral scholar and moved to UIUC as an Assistant Professor in 2015.
Zhenhua Liu	Coadvised with Steven Low, entered in 2009, defended in 2014. "Sustainable IT and IT for sustainability." Received an honorable mention for the SPEC Distinguished Dissertation Award. Joined LBNL as a postdoctoral scholar and moved to Stony Brook as an Asst. Professor in 2015.
Minghong Lin	Entered in 2008, defended in 2013. "Algorithmic challenges in green data centers." Received an IBM Graduate Fellowship and was named a finalist for the Facebook Fellowship. Joined Facebook as a Research Scientist in 2013.
Ragavendran Gopalakrishnan	Entered in 2008, defended in 2013. "Characterizing distribution rules for cost sharing games." Joined Colorado U at Boulder as a postdoctoral scholar and then joined Xerox Research in 2015.
Elizabeth Bodine-Baron	Coadvised with Babak Hassibi, entered in 2007, defended in 2012. "Peer effects in social networks: Search, matching markets, and epidemics." Joined RAND as an Associate Engineer in 2013.
Jayakrishnan Nair	Coadvised with Steven Low, entered in 2007, defended in 2012. "Scheduling for heavy-tailed and light-tailed workloads in queueing systems." Joined CWI as a postdoctoral scholar and then moved to IIT Bombay as an Asst. Professor in 2014.

Graduate student qualification/thesis/candidacy committees:

John Bruer	2017, Caltech, ACM dissertation committee
Yujie Tang	2017, Caltech, EE candidacy committee
Utkan Candogan	2017, Caltech, EE candidacy committee
Rachel Cummings	2017, Caltech, CMS dissertation committee
Zhang Ying	2017, CUHK, dissertation committee
Linqi Guo	2017, Caltech, CMS candidacy committee
Sumanth Dathathri	2016, Caltech, CDS dissertation committee
Christos Thrampoulidis	2016, Caltech, EE dissertation committee
Juba Ziani	2016, Caltech, CS candidacy committee
Yuh Shyang Wang	2016, Caltech CDS dissertation committee

Xiaoqi Yin	2016, CMU, ECE candidacy and dissertation committee
Changhong Zhao	2016, Caltech, EE dissertation committee
Nikolai Matni	2015, Caltech, CDS dissertation committee
Masoud Farivar	2015, Caltech, CMS dissertation committee
Rachel Cummings	2015, Caltech, CMS candidacy exam
Yuh-Shyang Wang	2015, Caltech, CDS candidacy exam
Wei Mao	2015, Caltech, EE dissertation committee
Lingwen Gan	2014, Caltech, EE dissertation committee
Changhong Zhao	2014, Caltech, EE candidacy exam
Sean Keller	2013, Caltech, CS dissertation committee
Micheal Olsen	2013, Caltech, CS dissertation committee
Annie Liu	2013, Caltech, CS dissertation committee
Lingwen Gan	2013, Caltech, EE candidacy exam
David Aikema	2013, University of Calgary, external examiner
Mathieu Feuillet	2012, INRIA Paris-Rocquencourt, dissertation reviewer
Michael Olson	2012, Caltech, CS candidacy exam
Mayank Bakshi	2011, Caltech, EE dissertation committee
Sormeh Shadbakht	2011, Caltech, EE dissertation committee
Annie Liu	2011, Caltech, CS candidacy exam
Smruti Padhy	2011, IIT, Delhi dissertation reviewer
Sean Keller	2010, Caltech, CS candidacy exam
Dave Buchfuhrer	2010, Caltech, CS candidacy exam and dissertation committee
Longbo Huang	2010, USC, EE dissertation committee
Mahyar Salek	2009, USC, CS candidacy exam
Daniel Wilhelm	2008, Caltech, CNS candidacy exam

Undergraduate research advising (outside of courses):

Jack Kleeman	2017 Summer Undergraduate Research “Search costs in online platforms”
Catherine Jamshidi	2015-2016 Independent study “Rethinking student-house matching” Received the Hinrichs Memorial Award
Joseph Choi	2014-2015 Independent study “Optimized distributed system design”
Katie Knister	2013-2014 Independent study “Quantifying the value of data center demand response”
Iris Liu	2013-2014 Independent study “Pricing data center demand response” Received the Bhansali Prize for Undergraduate Research in Computer Science
Ben Razon	2012-2013 Independent study “Data center demand response”
Yizhen Wang	2012 Summer Undergraduate Research “Renewable and cooling aware geographical load balancing”
Michael Hirshleifer	2012 Summer Undergraduate Research “Renewable and cooling aware geographical load balancing”
Michael Wu	2010 Summer Undergraduate Research “Power measurements for data centers”
Yuehua (Fred) Zhao	2010 Summer Undergraduate Research “Power measurements for data centers”
Christina Lee	2010 Summer Undergraduate Research “Effect of social networks on stable matchings.”

Sherwin Doroudi	2009-2010 Independent study “Understanding fairness using a queueing game.” Work will be submitted to a journal shortly.
Matthew Maurer	2009-2010 Independent study “Energy-aware geographical routing for data centers.”
Anthony Chong	2009-2010 Senior thesis “Peer effects in 2-sided matchings and the Caltech rotation problem.”
Sherwin Doroudi	2008 Summer Undergraduate Research Received a Rose Hills Foundation Fellowship “A game theoretic approach to the sensor coverage problem.” Published at the Southern California Conf. for Undergrad Research
Benjamin Flora	2008 SURF student “SMART online multi-objective scheduling.”
Matthew Maurer	2008 SURF student “Energy use reduction via power modeling.”
Gwendolyn Stockman	Senior honors thesis at CMU in 2005-2006. “The impact of abandonment in multi-class priority queues.”

CONTRACT AND GRANT SUPPORT

Grant support:

2016 – 2019	ARPA-E NODES NODES: Real-time Optimization and Control of Next-Generation Distribution Infrastructure <i>Emiliano Dall’Anese, Brian Johnson, Blake Lundstrom, Benjamin Kroposki, Steven Low, John Doyle, Adam Wierman, Sairaj Dhople, Na Li, Antranik Paylan, Robert Sherick</i>
2015 – 2020	NSF CNS–1518941 NETS: Large: Networked Markets: Theory and Applications <i>Adam Wierman (PI), Federico Echenique (Co-PI), John Ledyard (Co-PI), Matthew Elliott (Co-PI), Katrina Ligett (Co-PI)</i>
2015 – 2018	NSF CPS–1545096 CPS: Synergy: Beyond Stability: Performance, Efficiency and Disturbance Management for Smart Infrastructure Systems <i>Adam Wierman (PI), Steven Low (co-PI), Dennice Gayme (PI), Ao Tang (PI), Vijay Gupta (PI)</i>
2013 – 2016	NSF EPAS–1307794 A unified approach to quantifying market power in the future grid <i>Adam Wierman (PI), Hamed Mohsenian-Rad (PI)</i>
2013 – 2016	NSF CNS–1319820 CSR: Collaborative Research: Data center demand response: Coordinating the cloud and the smart grid <i>Adam Wierman (PI), Steven Low (co-PI), Hamed Mohsenian-Rad (PI)</i>
2011 – 2014	NSF CCF-1101470 ICES: A revealed preference approach to computational complexity in economics <i>Adam Wierman (PI), Federico Echenique (co-PI)</i>
2009 – 2014	NSF CNS-0846025 CAREER: Towards a rigorous foundation for scheduling in modern systems <i>Adam Wierman (PI)</i>
2008 – 2011	NSF CCF-0830511 Bridging probabilistic and competitive analysis of scheduling policies <i>Adam Wierman (PI)</i>

External collaborator on international grant:

2013 – 2015	Netherlands: NWO 600.065.130.12N242
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2013 – 2015 Bridging probabilistic and competitive analysis of scheduling policies
 Australia: ARC DP130101378
 Resource management algorithms and software systems for green cloud computing

Industrial interactions:

AT&T Student interned in 2011, 2012.
 Cloud Energetics Adviser, 2013.
 Cloudera Joint research collaboration, 2013 and 2014.
 Facebook Student interned in 2011. Sponsored course “clickmaniac” project in 2012, 2013, 2014.
 Student named **finalist for Facebook Fellowship** in 2011 and 2012.
 Fujitsu Student interned in 2014.
 Google Invited visits in 2009, 2014, 2015, 2017. Student interned in 2011, 2012, 2013.
 HP Student interned in 2011, 2012, 2013. Research included in the “**NetZero Data Center Architecture**”
 in 2012-2013, which was named a **2013 Computerworld Honors Laureate**.
 IBM Invited visits in 2007-2013. Student won the **IBM Ph.D. Fellowship** in 2012.
 Student interned in 2012.
 Math Academy Advisory Board, 2017
 Microsoft Named a Finalist for the MS New Faculty Fellowship. Faculty grant in 2008. Sponsored workshops in 2013-2017.
 Invited visits in 2008-2017. Students interned in 2016 and 2017.
 Qualcomm Student interned in 2015. Student named **Qualcomm Innovation Fellowship Finalist** in 2015 and 2016.
 Rand Student interned in 2011. Collaborative project 2012.
 SoCal Edison 2 students interned in 2010, 2 students worked part-time 2010-2012. Joint research project 2013-2020.
 Yahoo Invited visit in 2009. Sponsored joint workshops in 2009, 2010, 2011. Student interned in 2009.
 Verizon Joint research collaboration, 2016.

INSTITUTE SERVICE

2016-pres Director of Information Science and Technology (IST) initiative
 2015-pres Executive officer of CMS
 2015 EAS Division chair search committee
 2013-pres Member of Linde Institute Board
 2013-pres Co-director of SISL
 2014-2015 CMS graduate option representative
 2014 Led the creation of new CMS PhD option
 2013-2014 EE faculty hiring committee
 2013 Redesigned the CS major & minor to improve diversity
 2012-2013 CMS faculty hiring committee
 May 2012 Created new CS minor
 2010-2011 Member of student/faculty conference committee for CS
 2010-2011 CMS faculty hiring committee
 2010-2015 CS undergraduate option representative
 2008-pres Co-director of the Rigorous System Design Research Group (RSRG)
 2007-2013 IST Lunch Bunch co-organizer
 2007-2011 CS/EC Hiring committee

Complete list of publications by Adam Wierman

Electronic copies of all listed publications are available on my web page. My web page also includes this list of publications indexed by year, topic, coauthor, and venue.

Books

- [—] Jayakrishnan Nair, Adam Wierman, and Bert Zwart. “The fundamentals of heavy-tails: Properties, Emergence, and Identification.” Forthcoming.

Thesis

- [07] Adam Wierman. “Scheduling for today’s computer systems: Bridging theory and practice.” Ph.D. Thesis. Carnegie Mellon University, Pittsburgh, PA. May 2007. CMU-CS-07-126. **Co-recipient of the Carnegie Mellon School of Computer Science Distinguished Dissertation Award. Finalist receiving Honorable Mention for the INFORMS Doctoral Dissertation Award for Operations Research in Telecommunications.**

Refereed Journal and Conference Publications

- [17] ohammad A. Islam, Shaolei Ren, and Adam Wierman. “Exploiting a Thermal Side Channel for Power Attacks in Multi-Tenant Data Centers.” Proceedings of ACM Conference on Computer and Communications Security, 2017.
- [17] Weixuan Lin, John Pang, Eilyan Bitar, and Adam Wierman. “Networked Cournot competition in platform Markets: Access control and efficiency loss.” In the proceedings of IEEE CDC, 2017.
- [17] Gautam Goel, Niangjun Chen, and Adam Wierman. “Thinking fast and slow: Optimization decomposition across timescales.” In the proceedings of IEEE CDC, 2017.
- [17] Mohammad Islam, Xiaoqi Ren, Shaolei Ren, and Adam Wierman. “A spot capacity market to increase power infrastructure utilization in multi-tenant data centers.” In the proceedings of ACM Sigmetrics (poster), 2017.
- [17] Mohammad Islam, Shaolei Ren, and Adam Wierman. “A first look at power attacks in multi-tenant data centers.” Proceedings of ACM Greenmetrics, 2017.
- [17] Yunjian Xu, Desmond Cai, Subhonmesh Bose, and Adam Wierman. “On the efficiency of networked stackelberg competition.” In the proceedings of the Conference on Information Sciences and Systems (CISS), 2017.
- [17] John Pang, Hu Fu, Won Lee, and Adam Wierman. “The efficiency of open access platforms for networked cournot markets.” In the proceedings of IEEE INFOCOM, 2017.
- [17] Zixuan Fang, Longbo Huang, and Adam Wierman. “Prices and subsidies in the sharing economy.” In the proceedings of WWW, 2017.
- [16] Navid Ruhi, Niangjun Chen, Krishnamurthy Dvijotham, and Adam Wierman. “Opportunities for price manipulation by aggregators in electricity markets.” In proceedings of ACM Greenmetrics, 2016. **“Best Student Paper”** award recipient.
- [16] Ragavendran Gopalakrishnan, Sherwin Doroudi, Amy Ward and Adam Wierman. “Routing and staffing when servers are strategic.” To appear in Operations Research. Extension of a paper that appeared in the proceedings of *ACM EC*, 2014.
- [16] Rachel Cummings, Federico Echenique, Adam Wierman. “The empirical implications of privacy-aware choice.” To appear in Operations Research. Extension of paper that appeared in *ACM EC*, 2014.

- [16] Jayakrishnan Nair, Krishna Jagannathan, and Adam Wierman. “When heavy-tailed and light-tailed flows compete: The response time tail under generalized max-weight scheduling.” *IEEE Transactions on Networking* (2016), 24(2), 982-995. Extension of a paper that appeared in the proceedings of *IEEE Infocom*, 2013.
- [16] Xiaoqi Ren, Palma London, Juba Ziani, and Adam Wierman. “Joint Data Purchasing and Data Placement in a Geo-Distributed Data Market.” *Proceedings of ACM Sigmetrics* (poster), 2016.
- [16] Niangjun Chen, Joshua Comden, Zhenhua Liu, Anshul Ghandi, and Adam Wierman. “Using predictions in online optimization: Looking forward with an eye on the past.” *Proceedings of ACM Sigmetrics*, 2016.
- [16] Mahdi Ghamkhari, Adam Wierman, and Hamed Mohsenian-Rad. “Energy portfolio optimization of data centers.” *IEEE Transactions on Smart Grid* (2016) 99: 1-13.
- [16] Mohammad A. Islam, Xiaoqi Ren, Shaolei Ren, Adam Wierman and Xiaorui Wang. “A Market Approach for Handling Power Emergencies in Multi-Tenant Data Center.” *Proceedings of IEEE HPCA*, 2016.
- [16] Jayakrishnan Nair, Adam Wierman, and Bert Zwart. “Provisioning of large scale systems: The interplay between network effects and strategic behavior in the user base.” *Management Science* (2016). 62(6): 1830-1841.
- [15] Hao Chen, Zhenhua Liu, Ayse Coskun, and Adam Wierman. “Optimizing energy storage participation in emerging power markets.” *Proceedings of IEEE Green Computing Conference*.
- [15] Desmond Cai, Enrique Mallada, and Adam Wierman. “Distributed optimization decomposition for joint economic dispatch and frequency regulation.” *Proceedings of IEEE CDC*, 2015.
- [15] Masoud Badii, Na Li, and Adam Wierman. “Online convex optimization with ramp constraints.”
- [15] Niangjun Chen, Xiaoqi Ren, Shaolei Ren, and Adam Wierman. “Greening multi-tenant data center demand response.” *Performance Evaluation* (2015) 91, 229-254.
- [15] Niangjun Chen, Xiaoqi Ren, Shaolei Ren, and Adam Wierman. “Greening multi-tenant data center demand response.” *Proceedings of IFIP Performance*, 2015.
- [15] Subhonmesh Bose, Chenye Wu, Yunjian Xu, Adam Wierman and Hamed Mohsenian-Rad. “A unifying market power measure for deregulated transmission-constrained electricity markets.” (2015) *IEEE Transactions on Power Systems*, 30(5):2338-2348. Extension of a paper that appeared in *IEEE PES General Meeting*, 2013.
- [15] Kai Wang, Minghong Lin, Florin Ciucu, Adam Wierman, and Chuang Lin. “Characterizing the impact of the workload on the value of dynamic resizing in data centers.” To appear in *Performance Evaluation*. Extension of a paper that appeared in the *IEEE Infocom mini-conference* in 2013.
- [15] Xiaoqi Ren, Ganesh Ananthanarayanan, Adam Wierman and Minlan Yu. “Hopper: Decentralized Speculation-aware Cluster Scheduling at Scale.” *Proceedings of ACM Sigcomm*, 2015
- [15] Niangjun Chen, Anish Agarwal, Adam Wierman, Siddharth Barman, and Lachlan Andrew. “Online Convex Optimization using Predictions.” *Proceedings of ACM Sigmetrics*, 2015.
- [14] Siddharth Barman, Umang Bhaskar, Federico Echenique, Adam Wierman. “On the Existence of Low-Rank Explanations for Mixed Strategy Behavior.” *Proceedings of WINE*, 2014.
- [14] Jayakrishnan Nair, Vijay Subramanian, and Adam Wierman. “On competitive provisioning of cloud services.” *Proceedings of IFIP Performance*, 2014.
- [14] Jayakrishnan Nair, Vijay Subramanian, and Adam Wierman. “On competitive provisioning of ad-supported cloud services.” *Proceedings of Allerton*, 2014.
- [14] Adam Wierman, Zhenhua Liu, Iris Liu, and Hamed Mohsenian-Rad. “Opportunities and challenges for data center demand response.” *Proceedings of IEEE IGCC*, 2014.

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- [14] Subhonmesh Bose, Desmond Cai, Steven Low and Adam Wierman. “The role of a market maker in networked Cournot competition.” Proceedings of IEEE CDC, 2014.
- [14] Ragavendran Gopalakrishnan, Sherwin Doroudi, Amy Ward and Adam Wierman. “Routing and staffing when servers are strategic.” Proceedings of ACM EC, 2014.
- [14] Rachel Cummings, Federico Echenique, Adam Wierman. “The empirical implications of privacy-aware choice.” Proceedings of ACM EC, 2014.
- [14] Mahdi Ghamkhari, Hamed Mohsenian-Rad and Adam Wierman. “Optimal power procurement for data centers in day-ahead and real-time electricity markets.” Proceedings of INFOCOM Workshop on Smart Data Pricing, 2014.
- [14] Zhenhua Liu, Iris Liu, Steven Low, and Adam Wierman. “Pricing data center demand response.” Proceedings of ACM Sigmetrics, 2014.
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- [14] Zhenhua Liu, Minghong Lin, Adam Wierman, Steven Low, and Lachlan Andrew. “Greening geographical load balancing.” IEEE Transactions on Networking (2014) 23(2): 657-671.. Extension of a paper that appeared in the proceedings of *ACM Sigmetrics*, 2011.
- [14] Ragavendran Gopalakrishnan, Jason Marden, and Adam Wierman. “Potential games are necessary to ensure pure Nash equilibria in cost sharing games.” Mathematics of Operations Research, to appear. Extension of a paper that appeared in the proceedings of *ACM EC*, 2013.
- [13] Desmond Cai and Adam Wierman. “Inefficiency of forward markets with supply friction.” Proceedings of IEEE CDC, 2013.
- [13] Jonatha Anselmi, Danilo Ardagna, John C. S. Lui, Adam Wierman, Yunjian Xu and Zichao Yang. “The economics of the cloud: price competition and congestion.” In the proceedings of NetEcon, 2013.
- [13] Minghong Lin, Adam Wierman, Lachlan Andrew, and Eno Thereska. “Dynamic right-sizing for power-proportional data centers.” IEEE Transactions on Networking (2013), 21(5): 1378-1391. Received the **2014 IEEE Communication Society William R. Bennet Prize** for the “best original paper published in any journal associated with the IEEE Communication Society. Conference version previously appeared in the Proceedings of *Infocom* 2011.
- [13] Lachlan L.H. Andrew, Siddharth Barman, Katrina Ligett, Minghong Lin, Adam Meyerson, Alan Roytman, and Adam Wierman. “A tale of two metrics: Simultaneous bounds on competitiveness and regret.” In proceedings of COLT, 2013.
- [13] Lachlan L.H. Andrew, Siddharth Barman, Katrina Ligett, Minghong Lin, Adam Meyerson, Alan Roytman, and Adam Wierman. “A tale of two metrics: Simultaneous bounds on competitiveness and regret.” In Proceedings of ACM Sigmetrics, 2013. (Accepted as a poster.)
- [13] Chenye Wu, Subhonmesh Bose, Adam Wierman, and A. Hamed Mohesenian-Rad. “A unifying approach for assessing market power in deregulated electricity markets.” In proceedings of IEEE PES General Meeting, 2013. **Selected as the “Best Paper on System Operations and Market Economics.”**

- [13] Minghong Lin, Jian Tan, Adam Wierman, and Li Zhang. “Joint optimization of overlapping phases in MapReduce.” *Performance Evaluation* (2013) 70:10,720-735. It was **one of the ten most downloaded papers** of *Performance Evaluation* during Fall 2013 and Winter 2014.
- [13] Minghong Lin, Jian Tan, Adam Wierman, and Li Zhang. “Joint optimization of overlapping phases in MapReduce.” In proceedings of IFIP Performance, 2013. **“Best Student Paper” award recipient.**
- [13] Zhenhua Liu, Benjamin Razon, Adam Wierman, Yuan Chen. “Data center demand response: Avoiding the coincident peak via workload shifting and local generation” *Performance Evaluation* (2013) 70:10, 770-791. It was **one of the ten most downloaded papers** of *Performance Evaluation* during Fall 2013 and Winter 2014.
- [13] Zhenhua Liu, Benjamin Razon, Adam Wierman, Yuan Chen. “Data center demand response: Avoiding the coincident peak via workload shifting and local generation” In proceedings of IFIP Performance, 2013.
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- [13] Ragavendran Gopalakrishnan, Jason Marden, and Adam Wierman. “Potential games are necessary to ensure pure Nash equilibria in cost sharing games.” In proceedings of ACM EC, 2013.
- [13] Siddharth Barman, Umang Bhaskar, Federico Echenique and Adam Wierman. “The empirical implications of rank in bimatrix games.” In proceedings of ACM EC, 2013.
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- [13] Jayakrishnan Nair, Krishna Jagannathan, and Adam Wierman. “When heavy-tailed and light-tailed flows compete: Response times under generalized max-weight scheduling.” In proceedings of IEEE Infocom, 2013.
- [13] Kai Wang, Minghong Lin, Florin Ciucu, Adam Wierman, and Chuang Lin. “Characterizing the impact of the workload on the value of dynamic resizing in data centers.” In proceedings of IEEE Infocom mini-conference, 2013.
- [13] Jason Marden and Adam Wierman. “Overcoming the limitations of utility design for multiagent systems.” *IEEE Transactions on Automated Control* (2013) 58:6, 1402-1415.
- [13] Jason Marden and Adam Wierman. “Distributed welfare games.” *Operations Research* (2013) 61:1, 155-168.
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- [12] Vinod Ramaswamy, Sachin Adlakha, Srinivas Shakkottai and Adam Wierman. “If You Can’t Beat ’Em, Join ’Em: Incentives for P2P-Assisted Content Distribution.” In Proceedings of Allerton, 2012.

- [12] Minghong Lin, Zhenhua Liu, Lachlan L. H. Andrew and Adam Wierman. “Online algorithms for geographical load balancing.” In Proceedings of IEEE IGCC, 2012. **“Best Paper” award recipient.**
- [12] Federico Echenique and Adam Wierman. “Finding a Walrasian equilibrium is easy for a fixed number of agents.” In Proceedings of ACM EC, 2012.
- [12] Zhenhua Liu, Yuan Chen, Cullen Bash, Adam Wierman, Daniel Gmach, Zhikui Wang, Manish Marwah, and Chris Hyser. “Renewable and cooling aware workload management for sustainable data centers.” In Proceedings of ACM Sigmetrics, 2012. **An extension of this work is used in HP’s NetZero Data Center Architecture, which was named a 2013 Computerworld Honors Laureate. It was one of the ten most downloaded papers of ACM Sigmetrics during Fall 2013 and Winter 2014.**
- [12] Kai Wang, Minghong Lin, Florin Ciucu, Adam Wierman, and Chuang Lin. “Characterizing the impact of the workload on the value of dynamic resizing in data centers.” In Proceedings of ACM Sigmetrics, 2012. (Accepted as a poster.)
- [12] Chang Woo Yang, Adam Wierman, Sanjay Shakkottai, and Mor Harchol-Balter. “Many flows asymptotics for SMART scheduling policies.” *IEEE Transactions on Automated Control* (2012) 57:2, 376-391.
- [11] Minghong Lin, Adam Wierman, and Bert Zwart. “The heavy-traffic growth rate of Shortest Remaining Processing Time.” *Performance Evaluation* (2011) 68:10, 955-966.
- [11] Jonatha Anselmi, Urtzi Ayesta, and Adam Wierman. “Competition yields efficiency in load balancing games.” *Performance Evaluation* (2011) 68:11, 986-1001.
- [11] Jonatha Anselmi, Urtzi Ayesta, and Adam Wierman. “Competition yields efficiency in load balancing games.” *Proceedings of IFIP Performance*, 2011.
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- [11] Ragavendran Gopalakrishnan, Jason Marden and Adam Wierman. “Characterizing distribution rules for cost sharing games.” *Proceedings of NetGCoOp*, 2011.
- [11] Minghong Lin, Adam Wierman, Lachlan Andrew, and Eno Thereska. “Online dynamic capacity provisioning in data centers.” *Proceedings of Allerton*, 2011.
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- [11] Adam Wierman. “Fairness and scheduling in single server queues.” *Surveys in Operations Research and Management Science* (2011) 16(1):39-48.

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- [09] Jason Marden and Adam Wierman. “Overcoming limitations of game-theoretic distributed control.” *Proceedings of Conference on Decision and Control (CDC)* 2009.
- [09] Wei Chen, Dayu Huang, Ankur Kulkarni, Jayakrishnan Unnikrishnan, Quanyan Zhu, Prashant G. Mehta, Sean Meyn and Adam Wierman. “Approximate dynamic programming using fluid and diffusion approximations with applications to power management.” *Proceedings of Conference on Decision and Control (CDC)* 2009.
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- [05] Adam Wierman and Mor Harchol-Balter. “Classifying scheduling policies with respect to higher moments of conditional response time.” *Proceedings of ACM Sigmetrics 2005*.
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- [04] Adam Wierman, Nikhil Bansal, and Mor Harchol-Balter. “A note comparing response times in the M/GI/1/FB and M/GI/1/PS Queues.” *Operations Research Letters* (2004) 32:1, 73-76.
- [03] Adam Wierman, Takayuki Osogami, and Jörgen Olsén. “A unified framework for modeling TCP-Vegas, TCP-SACK, and TCP-Reno.” *Proceedings of IEEE Mascots 2003*.
- [03] Adam Wierman and Mor Harchol-Balter. “Classifying scheduling policies with respect to unfairness in an M/GI/1.” *Proceedings of ACM Sigmetrics 2003*. **“Best Student Paper” award recipient.**
- [02] Mor Harchol-Balter, Karl Sigman, and Adam Wierman. “Asymptotic convergence of scheduling policies with respect to slowdown.” *Performance Evaluation* (2002) 49, 241-256.
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Refereed workshop papers

- [15] Xiaoqi Ren, Ganesh Ananthanarayanan, Adam Wierman and Minlan Yu. “Speculation-aware Cluster Scheduling at Scale.” To appear in *Performance Evaluation Review*. An earlier version appeared at the *MAMA workshop at Sigmetrics 2015*.
- [15] Niangjun Chen, Xiaoqi Ren, Shaolei Ren, and Adam Wierman. “Greening multi-tenant data center demand response.” To appear in *Performance Evaluation Review*. An earlier version appeared at the *MAMA workshop at Sigmetrics 2015*.
- [14] Mahdi Ghamkhari, Hamed Mohsenian-Rad, and Adam Wierman. “Optimal power procurement for data centers in day-ahead and real-time electricity markets.” *IEEE INFOCOM Workshop on Smart Data Pricing, 2014*.

- [13] Minghong Lin, Jian Tan, Adam Wierman, and Li Zhang. “Joint optimization of overlapping phases in MapReduce.” To appear in *Performance Evaluation Review*. An earlier version appeared at the *MAMA workshop at Sigmetrics 2013*.
- [12] Minghong Lin, Adam Wierman, Alan Roytman, Adam Meyerson, and Lachlan L.H. Andrew. “Online optimization with switching costs.” To appear in *Performance Evaluation Review*. An earlier version appeared at the *MAMA workshop at Sigmetrics 2012*.
- [12] Jayakrishnan Nair, Sachin Adlakha, and Adam Wierman. “Inventory management in the presence of renewable energy.” Proceedings of MSOM, 2012.
- [11] Sherwin Doroudi, Ragavendran Gopalakrishnan, and Adam Wierman. “Dispatching to incentivize fast service in multi-server queues.” To appear in *Performance Evaluation Review*. An earlier version appeared at the *MAMA workshop at Sigmetrics 2011*.
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- [09] Lachlan Andrew, Adam Wierman, and Ao Tang. “Optimal speed scaling under arbitrary power functions.” *Performance Evaluation Review* (2009) 37:2, 39-41. An earlier version appeared at the *MAMA workshop at Sigmetrics 2009*.
- [08] Ho-Lin Chen, Jason Marden, and Adam Wierman. “The effect of local scheduling in load balancing designs.” *Performance Evaluation Review*. 36:2, 110-112. An earlier version appeared at the *MAMA workshop at Sigmetrics 2008*.
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- [02] Mor Harchol-Balter, Karl Sigman, and Adam Wierman. “Understanding the slowdown of large jobs.” *Performance Evaluation Review* (2002) 30:3, 9-11. An earlier version appeared in the *MAMA workshop at Sigmetrics 2002*.

Chapters in Books

- [12] Adam Wierman, Lachlan L. H. Andrew, and Minghong Lin. “Speed scaling: An algorithmic perspective.” Sanjay Ranka and Ishfaq Ahmad. *Handbook of Energy-Aware and Green Computing*. CRC Press, to appear.
- [08] Jack Mostow, Gregory S. Aist, Cathy Huang, Brian Junker, Rebecca Kennedy, Hua Lan, DeWitt Latimer IV, Rollanda O’Connor, Regina Tassone, and Adam Wierman. “4-Month evaluation of a learner-controlled reading tutor that listens.” Melissa Holland and F. Pete Fisher (Editors), *The path of speech technologies in computer-assisted language learning*. Routledge, 2008.

Unrefereed Letters

- [13] Subhonmesh Bose, Chenye Wu, Adam Wierman, and Hamed Mohsenian-Rad. “The need for new measures to assess market power in deregulated electricity markets.” *IEEE Smart Grid Newsletter* 2013.
- [11] Lachlan L. H. Andrew, Minghong Lin, Zhenhua Liu, and Adam Wierman. “Algorithms for Dynamic Capacity Provisioning.” *Proceedings of Conf. on Optical Internet (COIN)* 2012.
- [11] Federico Echenique, Daniel Golovin, and Adam Wierman. “Complexity and economics: computational constraints may not matter.” *ACM SigEcom Exchanges* (2011) 10:1, 2-5.
- [10] Lachlan L.H. Andrew, Minghong Lin, Ao Tang, and Adam Wierman. Speed Scaling to Trade-off Efficiency, Simplicity, Robustness and Fairness. *IEEE COMSOC Multimedia Communications Technical Committee E-Letter* (2010) 5:4, 32-36.

Technical Reports which do not overlap with above lists

- [03] Adam Wierman and Mor Harchol-Balter. “Bounds on a fair policy with near optimal performance.” *Carnegie Mellon School of Computer Science Technical Report CMU-CS-03-198*.
- [02] Adam Wierman and Nikhil Bansal. “Competitive analysis of M/GI/1 queueing policies” *Carnegie Mellon School of Computer Science Technical Report CMU-CS-02-201*.

Selected invited talks by **Adam Wierman**

Keynotes and distinguished lectures

- July 2017 Caltech Computes: Disrupting Science and Engineering with Computational Thinking
Caltech Bay Area Alumni Luncheon
- Apr 2017 How Clean is the Cloud
Caltech Watson Lecture
- Dec 2016 How Clean is the Cloud
The Caltech Associates
- Nov 2016 Caltech Computes: Disrupting Science and Engineering with Computational Thinking
Caltech Alumni College
- Aug 2016 Online Scheduling meets Queueing
The Simons Institute
- Aug 2016 Energy and Uncertainty
The Simons Institute
- Apr 2016 Data Centers and Energy: Did we get it backwards?
Texas A&M Leaders & Innovators Series
- Feb 2016 Data Centers and Energy: Did we get it backwards?
Keynote talk at UIUC CSL Student Conference
- Dec 2015 Networked Markets: Intermediaries and Market Power
UCLA EE Distinguished Seminar
- Apr 2015 Data Centers, Energy, and Optimization
Northwestern Industrial Engineering Distinguished Lecture
- Feb 2015 Data Centers, Energy, and Optimization
Boston University CISE Distinguished Lecture
- July 2014 Data centers and Energy: Have we gotten it backwards?
Microsoft Faculty Summit
- Oct 2013 Algorithmic challenges for sustainable data centers
UCSD CS Distinguished Lecture
- Sept 2013 Algorithmic challenges for sustainable data centers
Princeton ORFE Distinguished Lecture
- June 2013 Heavy-tails: Properties, Emergence, and Identification
Tutorial at ACM Sigmetrics
- June 2013 Congestion and price competition in the cloud
Keynote talk at ACM WPIN+NetEcon
- May 2012 Algorithmic challenges for greening data centers
Keynote talk at the Imperial College Energy-Performance colloquium
- May 2012 Energy procurement in the presence of intermittent sources
Keynote talk at the Imperial College Energy-Performance colloquium
- May 2012 Algorithmic challenges in sustainable data centers
Keynote talk at the STOC workshop on Computational Sustainability
- June 2011 Algorithmic challenges for greening IT
Keynote talk at ACM Sigmetrics conference
- Sept 2009 Scheduling to balance energy and delay.
Columbia IEOR Distinguished Lecture
- Sept 2008 Does helping the little guy help everyone?
Carnegie Mellon CS Distinguished Lecture
- Aug 2008 Does helping the little guy help everyone?
Mini-course at the Adv. Network Sci. Lecture Series at UCSD

Invited conference talks and departmental seminars

May 2017 Platforms and Networked Markets
Purdue

Apr 2017 Platforms and Networked Markets
USC

Apr 2017 Platforms and Networked Markets
Chicago Booth

Feb 2017 The Power of Predictions in Online Optimization
Georgia Tech, ISYE

Nov 2016 The Power of Predictions in Online Optimization
The Simons institute

July 2016 Data Markets in the Cloud: Pricing, Privacy, and Versioning
Microsoft Faculty Summit

May 2016 Data Centers and Energy: Did we get it backwards?
University of Minnesota DTC Seminar series

Dec 2015 Data Centers and Energy
Berkeley AMPLab Seminar

Nov 2015 Data Centers, Energy, and Online Optimization
Invited talk at Johns Hopkins

Nov 2015 On the Efficiency of Networked Stackelberg Competition
Invited talk at INFORMS General Meeting

June 2015 Data Centers and Energy: Did we get it backwards?
Invited talk NSF Sustainable Data Center Workshop

May 2015 Data Centers, Energy, and Optimization
Stanford GSB / MSE

Jan 2015 Data Centers, Energy, and Optimization
Princeton CS Colloquium

Nov 2014 Online Convex Optimization with Predictions
Invited talk at the INFORMS general meeting

Oct 2014 Data Center Demand Response: Opportunities and Challenges
Invited talk at the IEEE Green Computing Conference

Sept 2014 Data Centers and Energy: Did we get it backwards?
Invited talk at the DIMACS Data Aware Energy Usage meeting

June 2014 Electricity markets and renewable energy
Invited talk at the Stochastic Networks Conference

April 2014 Algorithmic challenges in sustainable data centers
Invited talk at NYU Stern IOMS Department, Host: Ilan Lobel

Feb 2014 The empirical implications of complexity for economics
Invited keynote at IMSE Workshop, Host: Bruce Hajek and Yuliy Baryshnikov

Dec 2013 Algorithmic challenges in sustainable data centers
Invited talk at Ohio State, Host: Chris Stewart

Nov 2013 Algorithmic challenges in sustainable data centers
Invited talk at McGill, Host: Xue Liu

Oct 2013 An empirical perspective on the computational complexity of economic models
Invited talk at INFORMS General Meeting, Auctions section

Apr 2013 Congestion and price competition in the cloud
Invited talk at NSF IGERT at Wayne State

Feb 2013 Congestion and price competition in the cloud
Invited talk at Banff workshop on Large-scale networks

Nov 2012 Energy procurement in the presence of intermittent sources
Invited talk at Univ. of Waterloo, Hosts: Catherine Rosenberg and S. Keshav

Nov 2012 Algorithmic challenges in sustainable data centers
Invited talk at Univ. of Toronto, Host: Bianca Schroeder

Nov 2012 Algorithmic challenges in sustainable data centers
Invited talk at McMaster, Host: Doug Down

Nov 2012 Algorithmic challenges in sustainable data centers
Invited talk at USC, Host: Minlan Yu

Oct 2012 Energy procurement in the presence of intermittent sources
Invited talk at INFORMS

Oct 2012 Smoothed online convex optimization
Invited talk at INFORMS

Sept 2012 Energy procurement in the presence of intermittent sources
Invited talk at the "Stochastic Activities Month" at EURANDOM

Sept 2012 Congestion and price competition in the cloud
Invited talk at the "Stochastic Activities Month" at EURANDOM

Aug 2012 Algorithmic challenges in sustainable data centers
Invited talk at Univ. of Colorado at Boulder, Host: Jason Marden

July 2012 Algorithmic challenges in sustainable data centers
Invited talk at IBM Research, Host: Li Zhang

June 2012 Algorithmic challenges in sustainable data centers
Invited talk at the Stochastic Networks Conference

Mar 2012 Dynamic capacity provisioning in data centers
Invited talk at Texas A&M, Host: Srinivas Shakkottai

Feb 2012 Dynamic capacity provisioning in data centers
Invited talk at ITA, Host: Sujay Sanghavi

Dec 2011 Algorithmic challenges for greening IT
Invited talk at CMU, Host: Mor Hachol-Balter

Nov 2011 Algorithmic challenges for greening IT
Invited talk at Berkeley, Host: Rhonda Righter

Nov 2011 Algorithmic challenges for greening IT
Invited talk at UT Austin, Host: Sujay Sanghavi and Sanjay Shakkottai

Sept 2011 Online dynamic capacity provisioning in data centers
Invited talk at the Allerton Conference, Host: Yi Lu

July 2011 Speed scaling: Optimality vs. robustness
Invited talk at INFORMS Applied Probability Conference

May 2011 A revealed preference view of computation for economics.
Invited talk at MSR New England, Host: Ishai Menache

May 2011 A revealed preference view of computation for economics.
Invited talk at MIT, Host: Devavrat Shah

Mar 2011 A revealed preference view of computation for economics.
Invited talk at Univ. of Colorado at Boulder, Host: Jason Marden

Feb 2011 Scheduling to balance energy and delay.
Invited talk at UC Riverside, Host: Victor Zordan

Nov 2010 A revealed preference view of computation for economics.
Invited talk at Basque Center for Applied Mathematics, Host: Urtzi Ayesta

Nov 2010 Scheduling to balance energy and delay.
Invited talk at Basque Center for Applied Mathematics, Host: Urtzi Ayesta

Nov 2010 A revealed preference view of computation for economics.
Invited talk at Social NEGT

Sept 2010 Scheduling for the tail: Robustness versus Optimality.
Invited talk at Allerton, Host: R. Srikant and Bruce Hajek

Aug 2010 Algorithmic issues for green data centers.
Invited talk at NSF Workshop on the Science of Power Management.

June 2010 Scheduling to balance energy and delay.
Invited talk at Cambridge University Newton Institute

Dec 2009 Scheduling to balance energy and delay.
Invited talk at Tokyo Institute of Technology, Host: T. Osogami and H. Takagi

Nov 2009 Scheduling to balance energy and delay.
Invited talk at EURANDOM, Host: Onno Boxma

Nov 2009 Scheduling to balance energy and delay.
Invited talk at Stanford, Host: Tim Roughgarden and Ramesh Johari

Oct 2009 Overcoming limitations of game theoretic control.
Invited talk at INFORMS annual meeting, Applied Probability section

Oct 2009 Understanding fairness using a queueing game.
Invited talk at INFORMS annual meeting, Applied Probability section

Oct 2009 Speed scaling for power management.
Invited talk at INFORMS annual meeting, Applied Probability section

Oct 2009 Scheduling to balance energy and delay.
Invited talk at UCLA, Host: Mihaela van der Schaar

Sept 2009 Scheduling to balance energy and delay.
Invited talk at UCSD, Host: Ruth Williams & Tara Javidi

July 2009 Scheduling to balance energy and delay.
Invited talk at Cornell, Host: Kevin Tang

July 2009 Stochastic analysis of power-aware speed scaling.
Invited talk at INFORMS Applied Probability meeting

June 2009 Scheduling to balance energy and delay.
Invited talk at USC, Host: Rahul Jain

May 2009 Power management via speed scaling.
Invited talk at Lee Center Workshop

Mar 2009 The impact of back-end scheduling in load balancing games.
Invited talk at Yahoo Research workshop

Oct 2008 Scheduling despite inexact job size information
Invited talk at INFORMS annual meeting, Telecommunications section

Oct 2008 The effect of local scheduling in load balancing designs
Invited talk at INFORMS annual meeting, Applied Probability section

Sept 2008 Stochastic analysis of power-aware scheduling
Invited talk at the Allerton Conference, Host: Bruce Hajek and R. Srikant

June 2008 “Non-cooperative cooperation.”
ACM Hotmetrics Work in Progress session

June 2008 “Scheduling despite inexact job-size information.”
ACM Sigmetrics

May 2008 “The effect of local scheduling in load balancing designs.”
ACM MAMA workshop at Sigmetrics

Apr 2008 “Practical Theory.”
Invited talk at Microsoft Research, Host: Harold Javid

Mar 2008 “Scheduling for today’s systems.”
Invited talk at INFORMS Telecommunication Conference, Dissertation Award Finalist Session

Jan 2008 “Modern scheduling issues.”
Invited talk at IBM Research Watson, Host: Cathy Xia and Mark Squillante

Sept 2007 “Revisiting the performance of large jobs in the M/GI/1 queue.”
Invited talk at the Allerton Conference, Host: Bruce Hajek and R. Srikant

July 2007 “Revisiting the performance of large jobs in the M/GI/1 queue.”
Invited talk at INFORMS Applied Probability conference

July 2007 “Scheduling in polling systems.”
Invited talk at INFORMS Applied Probability conference

Mar 2007 “Fairness in queues.”
Invited talk at CMU, Host: Mor Harchol-Balter

- Feb 2007 “Scheduling for today’s computer systems.”
Invited talk at NYU, Host: Michael Pinedo
- Dec 2006 “Levels of information: How much do policies need to know about job sizes.”
Invited talk at CWI, the Netherlands, Host: Rudesindo Nunez Queija
- Nov 2006 “Characterizing the effect of inexact size information in size based policies.”
Invited talk at INFORMS joint conference
- Nov 2006 “A class of policies that prioritize small jobs.”
Invited talk at University of Twente, the Netherlands, Host: Richard Boucherie
- Oct 2006 “Fairness in queues.”
Invited talk at EURANDOM Institute, the Netherlands, Host: Onno Boxma
- Sept 2006 “A class of policies that prioritize small jobs.”
Invited talk at TU/e, the Netherlands, Host: Ivo Adan
- May 2006 “Classifying policies that prioritize small jobs.”
Invited talk at Stanford University, Hosts: Peter Glynn and Balaji Prabhakar
- Dec 2005 “Understanding the impact of SMART scheduling.”
Invited talk at Columbia University, Host: Ward Whitt
- Nov 2005 “Understanding the effects of SMART scheduling.”
Invited talk at INFORMS joint conference
- July 2005 “Classifying scheduling policies with respect to moments of conditional response time.”
Invited talk at the CMU & TU/e Collaborative Workshop
- July 2005 “Classifying scheduling policies with respect to fairness and predictability.”
Invited talk at INFORMS Applied Probability conference
- July 2004 “Formalizing SMART scheduling.”
Invited talk at EURANDOM Workshop on quantitative models for production and communication networks
- May 2004 “Scheduling web servers: Theory and practice.”
Invited talk at University of Calgary, Host: Carey Williamson
- May 2004 “Achieving low mean response times while providing fairness.”
Invited talk at CORS/INFORMS joint conference
- Oct 2003 “Prioritization in multiserver queues.”
Invited talk at INFORMS joint conference