Jason D. Hartline

Electrical Engineering and Computer Science
Northwestern University
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Research Interests

Economics. Mechanism design, auction theory, microeconomics, economic theory.

Computer Science. Algorithmic mechanism design, algorithmic game theory, distributed algorithms, randomized algorithms, competitive analysis, data structures, machine learning theory.

Education

Ph.D. in Computer Science. University of Washington, Seattle, WA. *Summer 2003*
Thesis: *Optimization in the Private Value Model: Competitive Analysis Applied to Auction Design*
Advisor: Anna Karlin.

M.S. in Computer Science. University of Washington, Seattle, WA. *Spring 2000*

B.S. in Computer Science. Cornell University, Ithaca, NY. *Spring 1997*

B.S. in Electrical Engineering. Cornell University, Ithaca, NY. *Spring 1997*

Current Appointment

Associate Professor. Northwestern U., Evanston, IL. *Fall 2012 – present*
Electrical Engineering and Computer Science Department, McCormick School of Engineering and Managerial Economics and Decision Sciences Department, Kellogg School of Management (courtesy).

Previous Appointments

Assistant Professor. Northwestern U., Evanston, IL. *2008 – 2012*
Electrical Engineering and Computer Science Department, McCormick School of Engineering and Managerial Economics and Decision Sciences Department, Kellogg School of Management (courtesy).

Researcher. Microsoft Research, Mountain View, CA. *2004 – 2007*
Research Area: Algorithmic Mechanism Design, Auction Theory, Pricing Algorithms, Auctions for Sponsored Search.

Post-doctoral Research Fellow. ALADDIN, Carnegie Mellon U., Pittsburgh, PA. *Fall 2003*
Research Area: Mechanism Design.
Supervisor: Avrim Blum.

Mentoring

Ph.D. Advisees. *since 2009*

Aleck Johnsen, Bach Ha, Nima Haghpanah, Darrell Hoy, and Samuel Taggart.

Post-doctoral Fellows. *since 2006*

Liad BLumrosen (Hebrew U.) and Azarakhsh Malekian (MIT postdoc).

Summer Students. *since 2004*

Gagan Aggarwal, Abraham Flaxman, Ning Chen, Mukund Sundararajan, Benjamin Prosnitz, Matthew Burgess, Saeed Alaei, Hu Fu, and Shweta Jain.

Service

Program Committee. ACM Conference on Electronic Commerce. *2005, 2006, 2008–present*

Guest Editor. Games and Economic Behavior. *2011–present*

special issues for papers from STOC, FOCS, and SODA conferences.

Advisory Editor. Games and Economic Behavior. *2012–present*

Associate Editor. Operations Research Letters. *2012–present*

Co-organizer. New York Computer science and Economics (NYCE) Day. *2013*

Co-organizer. FOCS Workshop on Bayesian Mechanism Design. *2012*

Program Committee. Symposium on Theory of Computation. *2012*

Program Committee. ACM Symposium on Theory of Computating. *2012*

Co-organizer. Workshop on Bayesian Mechanism Design. *2011*

Co-organizer. Greece Economic and Algorithmic Theory Week. *2011*

Co-organizer. Bertinoro Workshop on Algorithmic Game Theory. *2006, 2010*

Tutorials Chair. ACM Conference on Electronic Commerce. *2010*

Local Arrangements. ACM Conference on Electronic Commerce. *2008*

Organizer. Midwest Theory Day. *2008*

Program Committee. ACM-SIAM Symposium on Discrete Algorithms. *2007*

Co-organizer. Bay Algorithmic Game Theory Symposium (biannual). *2006–2007*

Co-organizer. Workshop on Sponsored Search Auctions. *2006*

Co-organizer. Alternative Solution Concepts in Mechanism Design. *2006*

Co-organizer. ALADDIN Workshop on Auction Theory & Practice. *2003*

Awards, Fellowships, and Grants

Teacher of the Year. EECS Dept., Northwestern U. *2010–2011*

NSF Collaborative Research. Towards Realistic Mechanisms: statistics, inference, and approximation in simple Bayes-Nash implementation *2011*
with Shuchi Chawla and Denis Nekipelov.

NSF CAREER Award. Mechanism Design. *2009*

NSF Collaborative Research. Approximation in Mechanism Design. *2008*
with Shuchi Chawla.

ALADDIN Post-doctoral Research Fellowship. Carnegie Mellon University. *2003*

Math Sciences Post-doctoral Research Fellowship. National Science Foundation. *2003*
Declined.

Microsoft Endowed Fellowship. Microsoft Corp. *2001*

Bob Bandes Teaching Award, Honorable Mention. CS Dept., U. of Washington. *1998*

Small Business Innovative Research Grant. Department of Education. *1997*

Patents

Online Pricing and Buyback. U.S. Patent #8260724 *2012*
with Moshe Babaioff and Robert Kleinberg.

Systems and Methods for Pricing and Selling Digital Goods. U.S. Patent #6985885 *2006*
with Andrew Goldberg and Andrew Wright.

Book Chapters

Profit Maximizing Mechanism Design. *Algorithmic Game Theory 2007*
with Anna Karlin; eds. Noam Nisan, Tim Roughgarden, Eva Tardos, and Vijay Vazirani.

Popular Press

Badminton and the Science of Rule Making. *Huffington Post 2012*
with Robert Kleinberg.

Working Papers

Computationally Tractable Bayes-Nash Implementation. *2011*
with Nima Haghpanah. Appeared at ACM EC'11 Workshop on Implementation Theory.

Journal Papers

Mechanism Design via Consensus Estimates, Cross Checking, and Profit Extraction. with Bach Ha. *TEAC*[1] *2013*

Bayesian Mechanism Design. *FTTCS*[2] *2012*

Approximation in Mechanism Design. *American Economic Review 2012*

Derandomization of Auctions. *Games and Economic Behavior 2010*
with Gagan Aggarwal, Amos Fiat, Andrew Goldberg, Nicole Immorlica, and Madhu Sudan.

Algorithms for Data Migration. with Eric Anderson, Joseph Hall, M. Hobbes, Anna Karlin, Jared Saia, Ram Swaminathan, and John Wilkes. *Algorithmica 2010*

Reducing Mechanism Design to Algorithm Design via Machine Learning. *JCSS*[3] *2008*
with Maria-Florina Balcan, Avrim Blum, and Yishay Mansour.

Competitive Auctions. *Games and Economic Behavior 2006*
with Andrew Goldberg, Anna Karlin, Mike Saks, and Andrew Wright.

Characterizing History Independent Data Structures. *Algorithmica 2005*
with Edwin Hong, Alexander Mohr, William Pentney, and Emily Rocke.

Refereed Conference Papers

Mechanism Design for Data Science. *EC*[4] *2014*
with Shuchi Chawla and Denis Nekipelov.

Price of Anarchy for Auction Revenue. *EC 2014*
with Darrell Hoy and Samuel Taggart.

Optimal Auctions for Correlated Buyers with Sampling. *EC 2014*
with Hu Fu, Nima Haghpanah, and Robert Kleinberg.

The Simple Economics of Approximately Optimal Auctions. *FOCS*[5] *2013*
with Saeed Alaei, Hu Fu, and Nima Haghpanah.

[1] Transactions on Economics and Computation.
[2] Foundations and Trends in Theoretical Computer Science
[3] Journal of Computer and System Sciences
[4] ACM Conference on Electronic Commerce.
[5] IEEE Symposium on Foundations of Computer Science.

Refereed Conference Papers (cont.)

Auctions with Unique Equilibria. *EC 2013*
with Shuchi Chawla.

Prior-independent Auctions for Risk-averse Agents. *EC 2013*
with Hu Fu and Darrell Hoy.

Prior-free Auctions for Budgeted Agents. *EC 2013*
with Nikhil Devanur and Bach Ha.

Prior-independent Mechanisms for Scheduling. *STOC*[6] *2013*
with Shuchi Chawla, David Malec, and Balu Sivan.

Mechanism Design via Multi- to Single-agent Reduction. *EC 2012*
with Saeed Alaei, Hu Fu, Nima Haghpanah, and Azarakhsh Malekian.

Optimal Crowdsourcing Contests. *SODA*[7] *2012*
with Shuchi Chawla and Balu Sivan. Invited to GEB special issue.

Mechanism Design via Consensus Estimates, and Cross Checking, and Profit Extraction. with Bach Ha. Invited to TEAC special issue. *SODA 2012*

Truth, Envy, and Profit. *EC 2011*
with Qiqi Yan. Invited to JET special issue.

Bayesian Incentive Compatibility and Matchings. *SODA 2011*
with Robert Kleinberg and Azarakhsh Malekian. Invited to GEB special issue.

Bayesian Algorithmic Mechanism Design. *STOC 2010*
with Brendan Lucier.

Sequential Posted Pricing and Multi-parameter Mechanism Design. *STOC 2010*
with Shuchi Chawla, David Malec, and Balasubramanian Sivan.

Simple versus Optimal Mechanisms. *EC 2009*
with Tim Roughgarden.

Limited and Online Supply and the Bayesian Foundations of Prior-free Mechanism Design. with Nikhil Devanur. *EC 2009*

Selling Ad Campaigns: Online Algorithms with Cancellations. *EC 2009*
with Moshe Babaioff and Robert Kleinberg.

Mechanism Design and Money Burning. *STOC 2008*
with Tim Roughgarden.

Optimal Marketing Strategies over Social Networks. *WWW 2008*
with Vahab Mirrokni and Mukund Sundararajan.

[6] ACM Symposium on Theory of Computating.
[7] ACM-SIAM Symposium on Discrete Algorithms.

Refereed Conference Papers (cont.)

Auctions for Structured Procurement. *SODA 2008*
with Matthew Cary, Abraham Flaxman, and Anna Karlin.

Algorithmic Pricing via Virtual Valuations. *EC 2007*
with Shuchi Chawla and Robert Kleinberg.

Knapsack Auctions. *SODA 2006*
with Gagan Aggarwal.

Bayesian Optimal No-deficit Mechanism Design. *WINE*[8] *2006*
with Shuchi Chawla, R. Ravi, and Uday Rajan.

Mechanism Design via Machine Learning. *FOCS 2005*
with Maria-Florina Balcan, Avrim Blum, and Yishay Mansour.

Derandomization of Auctions. *STOC 2005*
with Gagan Aggarwal, Amos Fiat, Andrew Goldberg, Nicole Immorlica, and Madhu Sudan.

On Profit-Maximizing Envy-Free Pricing. *SODA 2005*
with Venkat Guruswami, Anna Karlin, David Kempe, Claire Kenyon, and Frank McSherry.

Collusion-Resistant Mechanisms for Single Parameter Agents. *SODA 2005*
with Andrew Goldberg.

Near-Optimal Online Auctions. *SODA 2005*
with Avrim Blum.

From Optimal Limited to Unlimited Supply Auctions. *EC 2005*
with Robert McGrew.

On the Competitive Ratio of the Random Sampling Auction. *WINE 2005*
with Uriel Feige, Abraham Flaxman, and Robert Kleinberg.

Near-Optimal Pricing in Near-Linear Time. *WADS*[9] *2005*
with Vladlen Koltun.

A Lower Bound on the Competitive Ratio of Truthful Auctions. *STACS*[10] *2004*
with Andrew Goldberg, Anna Karlin, and Mike Saks.

Competitiveness via Consensus. *SODA 2003*
with Andrew Goldberg.

Envy-Free Auctions for Digital Goods. *EC 2003*
with Andrew Goldberg.

[8] International Workshop on Internet and Network Economics.
[9] Workshop on Algorithms and Data Structures.
[10] Symposium on Theoretical Aspects of Computer Science.

Refereed Conference Papers (cont.)

Truthful and Competitive Double Auctions. *ESA*[11] *2002*
with Kaustubh Deshmukh, Andrew Goldberg, and Anna Karlin.

Competitive Generalized Auctions. *STOC 2002*
with Amos Fiat, Andrew Goldberg, and Anna Karlin.

Characterizing History Independent Data Structures. *ISAAC*[12] *2002*
with Edwin Hong, Alexander Mohr, William Pentney, and Emily Rocke.

Competitive Auctions and Digital Goods. *SODA 2001*
with Andrew Goldberg and Andrew Wright.

Competitive Auctions for Multiple Digital Goods. *ESA 2001*
with Andrew Goldberg.

On Algorithms for Efficient Data Migration. *SODA 2001*
with Joe Hall, Anna Karlin, Jared Saia, and John Wilkes.

An Experimental Study of Data Migration Algorithms. *WAE*[13] *2001*
with E. Anderson, J. Hall, M. Hobbes, A. Karlin, J. Saia, R. Swaminathan, and J. Wilkes.

Plenary Lectures

Workshop. New Trends in Mechanism Design II, CFEM, Copenhagen. *2013*

Conference. Workshop on Internet and Network Economics, Singapore. *2011*

Workshop. New Trends in Mechanism Design, CFEM, Copenhagen. *2011*

Workshop. Advances in Algorithmic Game Theory, CWI, Amsterdam. *2010*

Conference. Behavioral and Quantitative Game Theory, Newport Beach. *2010*

[11] European Symposium on Algorithms.
[12] International Symposium on Algorithms and Computation.
[13] Workshop on Algorithm Engineering.