

# Jason D. Hartline

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## Research Interests

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**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

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**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

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**Assistant Professor.** Northwestern U., Evanston, IL. *Winter 2008 – 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

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**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

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**Ph.D. Advisees.** *since 2009*

Bach Ha, Nima Haghpanah, Darrell Hoy.

**Post-doctoral Fellows.** *since 2010*

Azarakhsh Malekian.

**Summer Students.** *since 2004*

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

## Service

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

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

special issue for 2011 papers from STOC, FOCS, and SODA conferences.

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

**Program Committee.** ACM Symposium on Theory of Computing. *present*

**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

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**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.

## Awards, Fellowships, and Grants (cont.)

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- 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

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

## Book Chapters

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

## Working Papers

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

## Journal Papers

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- Mechanism Design via Profit Extraction, Consensus, and Cross Check.** *TEAC*<sup>1</sup> 2012  
with Bach Ha.
- Derandomization of Auctions.** *Games and Economic Behavior* 2010  
with Gagan Aggarwal, Amos Fiat, Andrew Goldberg, Nicole Immorlica, and Madhu Sudan.
- Algorithms for Data Migration.** *Algorithmica* 2010  
with Eric Anderson, Joseph Hall, M. Hobbess, Anna Karlin, Jared Saia, Ram Swaminathan, and John Wilkes.

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<sup>1</sup>Transactions on Economics and Computation.

## Journal Papers (cont.)

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**Reducing Mechanism Design to Algorithm Design via Machine Learning.** *JCSS*<sup>2</sup> 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

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**Mechanism Design via Profit Extraction, Consensus, and Cross Check.** *SODA*<sup>3</sup> 2012

with Bach Ha.

**Truth, Envy, and Profit.** *EC*<sup>4</sup> 2011

with Qiqi Yan.

**Bayesian Incentive Compatibility and Matchings.** *SODA* 2011

with Robert Kleinberg and Azarakhsh Malekian.

**Bayesian Algorithmic Mechanism Design.** *STOC*<sup>5</sup> 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.** *EC* 2009

with Nikhil Devanur.

**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.

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<sup>2</sup>Journal of Computer and System Sciences

<sup>3</sup>ACM-SIAM Symposium on Discrete Algorithms.

<sup>4</sup>ACM Conference on Electronic Commerce.

<sup>5</sup>ACM Symposium on Theory of Computing.

## Refereed Conference Papers (cont.)

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- 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<sup>6</sup> 2006*  
with Shuchi Chawla, R. Ravi, and Uday Rajan.
- Mechanism Design via Machine Learning.** *FOCS<sup>7</sup> 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<sup>8</sup> 2005*  
with Vladlen Koltun.
- A Lower Bound on the Competitive Ratio of Truthful Auctions.** *STACS<sup>9</sup> 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.

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<sup>6</sup>International Workshop on Internet and Network Economics.

<sup>7</sup>IEEE Symposium on Foundations of Computer Science.

<sup>8</sup>Workshop on Algorithms and Data Structures.

<sup>9</sup>Symposium on Theoretical Aspects of Computer Science.

## Refereed Conference Papers (cont.)

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- Truthful and Competitive Double Auctions.** *ESA*<sup>10</sup> 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*<sup>11</sup> 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*<sup>12</sup> 2001  
 with E. Anderson, J. Hall, M. Hobbes, A. Karlin, J. Saia, R. Swaminathan, and J. Wilkes.

## Plenary Lectures

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- 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*

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<sup>10</sup>European Symposium on Algorithms.

<sup>11</sup>International Symposium on Algorithms and Computation.

<sup>12</sup>Workshop on Algorithm Engineering.