

# Jennifer Wortman Vaughan

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## Research Interests

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My research interests are in machine learning and algorithmic economics. I am especially interested in the interaction between humans and algorithms, and have often studied this interaction in the context of prediction markets and other crowdsourcing systems. My passion is for AI that augments, rather than replaces, human abilities. A big fraction of my work has been theoretical, but I've begun incorporating more experiments into my research in order to better understand and model human behavior in technological systems. I occasionally speak about societal issues around AI, and lately I've been dabbling in fair and interpretable machine learning.

## Education

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### University of Pennsylvania, Philadelphia, PA

Ph.D., Computer and Information Science, August 2009  
Dissertation: *Learning from Collective Preferences, Behavior, and Beliefs*  
Advisor: Michael Kearns

M.S.E., Computer and Information Science, August 2006

### Stanford University, Stanford, CA

M.S., Computer Science (Specialization in AI), September 2004

### Boston University, Boston, MA

B.A., Computer Science, Magna Cum Laude, May 2002

## Employment

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### Microsoft Research, New York, NY

Senior Researcher, Microsoft Research New York City, September 2015–Present  
Researcher, Microsoft Research New York City, October 2012–September 2015

### University of California, Los Angeles, Los Angeles, CA

Adjunct Assistant Professor, Computer Science Department, July 2014–June 2016  
Assistant Professor (on leave), July 2009–September 2010 and September 2012–June 2014  
Assistant Professor (active), Computer Science Department, September 2010–September 2012

### Harvard University, Cambridge, MA

Computing Innovation Fellow (Postdoc), September 2009–August 2010

**Google**, New York, NY  
Intern, Research Group, June 2008–September 2008

**Yahoo!**, New York, NY  
Intern, Yahoo! Research, May 2007–August 2007

**SiteAdvisor**, Boston, MA  
Consultant, May 2005–November 2005

**Stanford University**, Stanford, CA  
Research Assistant, March 2003–August 2004

**Intuit**, Waltham, MA  
Developer (part time/summer position in college), May 2000–August 2002

## Teaching Experience

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### Instructor

**CS 112: Modeling Uncertainty in Information Systems**, UCLA, Spring 2011 and 2012  
Upper division undergraduate course covering the basics of probability, Markov chains, and statistical inference. Previously titled *Computer System Modeling Fundamentals*.

**CS 260: Machine Learning Theory**, UCLA, Fall 2010 and 2011  
New graduate course designed in Fall 2010. Covers the theoretical foundations of machine learning, including the PAC model, online learning, SVMs, and boosting.

**CS 269: Mathematical Frameworks for Social Computing**, UCLA, Winter 2012  
Seminar-style course exploring theoretical models and algorithms for social computing.

### Co-Instructor/Mentor

**Data Science Summer School**, Microsoft Research, New York City, Summer 2015  
Intensive eight-week hands-on introduction to data science for college students in the New York City area aimed at increasing diversity in computer science.

### Teaching Assistant

CSE 112: Networked Life, University of Pennsylvania, Spring 2006  
CIS 520: Artificial Intelligence and Machine Learning, University of Pennsylvania, Fall 2005

### Guest Lecturer

Designing the Digital Economy, internal Microsoft course, 2017  
Networks, Crowds, and Markets, NYU Stern, Spring 2013  
Introduction to Data Science, Columbia University, Fall 2013

## Journal Articles

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**Adaptive Contract Design for Crowdsourcing Markets: Bandit Algorithms for Repeated Principal-Agent Problems**. Chien-Ju Ho, Aleksandrs Slivkins, and Jennifer Wortman Vaughan. *Journal of Artificial Intelligence Research*, 55:317–359, 2016.

**Belief Aggregation with Automated Market Makers.** Rajiv Sethi and Jennifer Wortman Vaughan. *Computational Economics*, 48(1):155–178, 2016.

**An Axiomatic Characterization of Wagering Mechanisms.** Nicolas S. Lambert, John Langford, Jennifer Wortman Vaughan, Yiling Chen, Daniel Reeves, Yoav Shoham, and David M. Pennock. *Journal of Economic Theory*, 156:389–416, 2015.

**Computational social science and social computing.** (Guest editorial) Winter Mason, Jennifer Wortman Vaughan, and Hanna Wallach. *Machine Learning Journal (Special Issue on Computational Social Science and Social Computing)*, 95(3):257–260, 2014.

**Efficient Market Making via Convex Optimization, and a Connection to Online Learning.** Jacob Abernethy, Yiling Chen, and Jennifer Wortman Vaughan. *ACM Transactions on Economics and Computation*, 1(2):Article 12, 2013.

**A Theory of Learning from Different Domains.** Shai Ben-David, John Blitzer, Koby Crammer, Alex Kulesza, Fernando Pereira, and Jennifer Wortman Vaughan. *Machine Learning Journal (Special Issue on Learning from Multiple Sources)*, 79(1–2):151–175, 2010.

**The True Sample Complexity of Active Learning.** Maria-Florina Balcan, Steve Hanneke, and Jennifer Wortman Vaughan. *Machine Learning Journal (Special Issue on COLT 2008)*, 80(2–3):111–139, 2010.

**Maintaining Equilibria During Exploration in Sponsored Search Auctions.** John Langford, Lihong Li, Yevgeniy Vorobeychik, and Jennifer Wortman. *Algorithmica (Special Issue on Internet Markets)*, 58(4): 990–1021, 2010.

**Behavioral Experiments on Biased Voting in Networks.** Michael Kearns, Stephen Judd, Jinsong Tan, and Jennifer Wortman. *Proceedings of the National Academy of Sciences*, 106(5):1347–1352, 2009.

**Learning from Multiple Sources.** Koby Crammer, Michael Kearns, and Jennifer Wortman. *Journal of Machine Learning Research*, 9:1757–1774, 2008.

**Regret to the Best Vs. Regret to the Average.** Eyal Even-Dar, Michael Kearns, Yishay Mansour, and Jennifer Wortman. *Machine Learning Journal (Special Issue on COLT 2007)*, 72(1–2):21–37, 2008.

## Magazine and Newsletter Articles

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**Incentives and the Crowd.** Jennifer Wortman Vaughan. *ACM XRDS (Crossroads)*, 24(1):42–46, September 2017.

**Mathematical Foundations of Social Computing.** Yiling Chen, Arpita Ghosh, Michael Kearns, Tim Roughgarden, and Jennifer Wortman Vaughan. *Communications of the ACM*, 9(12):102–108, December 2016.

**Incentivizing High Quality Crowdsourcing.** Chien-Ju Ho, Aleksandrs Slivkins, Siddharth Suri, and Jennifer Wortman Vaughan. *ACM SIGecom Exchanges*, 14(2), December 2015. (Based on the WWW 2015 paper.)

**Online Decision Making in Crowdsourcing Markets: Theoretical Challenges.** Aleksandrs Slivkins and Jennifer Wortman Vaughan. *ACM SIGecom Exchanges*, 12(2), December 2013.

**Connections Between Markets and Learning.** Yiling Chen and Jennifer Wortman Vaughan. *ACM SIGecom Exchanges*, 9(1), June 2010. (Based on the EC 2010 paper.)

**Censored Exploration and the Dark Pool Problem.** Kuzman Ganchev, Michael Kearns, Yuriy Nemyyaka, and Jennifer Wortman Vaughan. *Communications of the ACM*, Research Highlights, May 2010. (Invited, based on the UAI 2009 paper.)

## Conference Publications

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**Incentive-Compatible Forecasting Competitions.** Jens Witkowski, Rupert Freeman, Jennifer Wortman Vaughan, David Pennock, and Andreas Krause. To appear in the *Thirty-Second AAAI Conference on Artificial Intelligence* (AAAI 2018).

**A Decomposition of Forecast Error in Prediction Markets.** Miroslav Dudík, Sébastien Lahaie, Ryan Rogers, and Jennifer Wortman Vaughan. *Advances in Neural Information Processing Systems 30* (NIPS 2017).

**Oracle-Efficient Learning and Auction Design.** Miroslav Dudík, Nika Haghtalab, Haipeng Luo, Robert E. Schapire, Vasilis Syrgkanis, and Jennifer Wortman Vaughan. *58th Annual IEEE Symposium on Foundations of Computer Science* (FOCS 2017).

**The Double Clinching Auction for Wagering.** Rupert Freeman, David M. Pennock, and Jennifer Wortman Vaughan. *18th ACM Conference on Economics and Computation* (EC 2017).

**Bounded Rationality in Wagering Mechanisms.** David M. Pennock, Vasilis Syrgkanis, and Jennifer Wortman Vaughan. *32nd Conference on Uncertainty in Artificial Intelligence* (UAI 2016).

**The Possibilities and Limitations of Private Prediction Markets.** Rachel Cummings, David M. Pennock, and Jennifer Wortman Vaughan. *17th ACM Conference on Economics and Computation* (EC 2016).

**The Communication Network Within the Crowd.** Ming Yin, Mary Gray, Siddharth Suri, and Jennifer Wortman Vaughan. *Twenty-Fifth International World Wide Web Conference* (WWW 2016).

**Integrating Market Makers, Limit Orders, and Continuous Trade in Prediction Markets.** Hoda Heidari, Sébastien Lahaie, David Pennock, and Jennifer Wortman Vaughan. *Sixteenth ACM Conference on Economics and Computation* (EC 2015).

**Incentivizing High Quality Crowdwork.** Chien-Ju Ho, Aleksandrs Slivkins, Siddharth Suri, and Jennifer Wortman Vaughan. *Twenty-Fourth International World Wide Web Conference* (WWW 2015).

**Nominee for the Best Paper Award (8 papers out of 929 submissions).**

**Market Makers with Decreasing Utility for Information.** Miroslav Dudík, Rafael Frongillo,

and Jennifer Wortman Vaughan. *Thirtieth Conference on Uncertainty in Artificial Intelligence* (UAI 2014).

**A General Volume-Parameterized Market Making Framework.** Jacob Abernethy, Rafael Frongillo, Xiaolong Li, and Jennifer Wortman Vaughan. *Fifteenth ACM Conference on Economics and Computation* (EC 2014).

**Removing Arbitrage from Wagering Mechanisms.** Yiling Chen, Nikhil R. Devanur, David Pennock, and Jennifer Wortman Vaughan. *Fifteenth ACM Conference on Economics and Computation* (EC 2014).

**Adaptive Contract Design for Crowdsourcing Markets: Bandit Algorithms for Repeated Principal-Agent Problems.** Chien-Ju Ho, Aleksandrs Slivkins, and Jennifer Wortman Vaughan. *Fifteenth ACM Conference on Economics and Computation* (EC 2014).

**An Axiomatic Characterization of Adaptive-Liquidity Market Makers.** Xiaolong Li and Jennifer Wortman Vaughan. *Fourteenth ACM Conference on Electronic Commerce* (EC 2013).

**Cost Function Market Makers for Measurable Spaces.** Yiling Chen, Michael Ruberry, and Jennifer Wortman Vaughan. *Fourteenth ACM Conference on Electronic Commerce* (EC 2013).

**Adaptive Task Assignment for Crowdsourced Classification.** Chien-Ju Ho, Shahin Jabbari, and Jennifer Wortman Vaughan. *Thirtieth International Conference on Machine Learning* (ICML 2013).

**Designing Informative Securities.** Yiling Chen, Mike Ruberry, and Jennifer Wortman Vaughan. *Twenty-eighth Conference on Uncertainty in Artificial Intelligence* (UAI 2012).

**Online Task Assignment in Crowdsourcing Markets.** Chien-Ju Ho and Jennifer Wortman Vaughan. *Twenty-sixth AAAI Conference on Artificial Intelligence* (AAAI 2012).

**An Optimization-Based Framework for Automated Market-Making.** Jacob Abernethy, Yiling Chen, and Jennifer Wortman Vaughan. *Twelfth ACM Conference on Electronic Commerce* (EC 2011).

**Evolution with Drifting Targets.** Varun Kanade, Leslie G. Valiant, and Jennifer Wortman Vaughan. *Twenty-third Annual Conference on Learning Theory* (COLT 2010).

**Regret Minimization with Concept Drift.** Koby Crammer, Eyal Even-Dar, Yishay Mansour, and Jennifer Wortman Vaughan. *Twenty-third Annual Conference on Learning Theory* (COLT 2010).

**A New Understanding of Prediction Markets Via No-Regret Learning.** Yiling Chen and Jennifer Wortman Vaughan. *Eleventh ACM Conference on Electronic Commerce* (EC 2010).

**Censored Exploration and the Dark Pool Problem.** Kuzman Ganchev, Michael Kearns, Yuriy Nevmyvaka, and Jennifer Wortman Vaughan. *Twenty-fifth Conference on Uncertainty in Artificial Intelligence* (UAI 2009).

**Winner of a Best Student Paper Award.**

**Complexity of Combinatorial Market Makers.** Yiling Chen, Lance Fortnow, Nicolas Lambert, David Pennock, and Jennifer Wortman. *Ninth ACM Conference on Electronic Commerce* (EC 2008).

**Self-Financed Wagering Mechanisms for Forecasting.** Nicolas Lambert, John Langford, Jennifer Wortman, Yiling Chen, Daniel Reeves, Yoav Shoham, and David Pennock. *Ninth ACM Conference on Electronic Commerce* (EC 2008).

**Winner of an Outstanding Paper Award.**

**Learning from Collective Behavior.** Michael Kearns and Jennifer Wortman. *Twenty-first Annual Conference on Learning Theory* (COLT 2008).

**The True Sample Complexity of Active Learning.** Maria-Florina Balcan, Steve Hanneke, and Jennifer Wortman. *Twenty-first Annual Conference on Learning Theory* (COLT 2008).

**Winner of a Best Student Paper Award.**

**Exploration Scavenging.** John Langford, Alexander Strehl, and Jennifer Wortman. *25th International Conference on Machine Learning* (ICML 2008).

**Privacy-Preserving Belief Propagation and Sampling.** Michael Kearns, Jinsong Tan, and Jennifer Wortman. *Advances in Neural Information Processing Systems 20* (NIPS 2007).

**Learning Bounds for Domain Adaptation.** John Blitzer, Koby Crammer, Alex Kulesza, Fernando Pereira, and Jennifer Wortman. *Advances in Neural Information Processing Systems 20* (NIPS 2007).

**Maintaining Equilibria During Exploration in Sponsored Search Auctions.** Jennifer Wortman, Yevgeniy Vorobeychik, Lihong Li, and John Langford. *Third International Workshop on Internet and Network Economics* (WINE 2007).

**Sponsored Search with Contexts.** Eyal Even-Dar, Michael Kearns, and Jennifer Wortman. *Third International Workshop on Internet and Network Economics* (WINE 2007).

**Regret to the Best Vs. Regret to the Average.** Eyal Even-Dar, Michael Kearns, Yishay Mansour, and Jennifer Wortman. *Twentieth Annual Conference on Learning Theory* (COLT 2007).

**Winner of a Best Student Paper Award.**

**Learning from Multiple Sources.** Koby Crammer, Michael Kearns, and Jennifer Wortman. *Advances in Neural Information Processing Systems 19* (NIPS 2006).

**Risk-Sensitive Online Learning.** Eyal Even-Dar, Michael Kearns, and Jennifer Wortman. *Seventeenth International Conference on Algorithmic Learning Theory* (ALT 2006).

**Learning from Data of Variable Quality.** Koby Crammer, Michael Kearns, and Jennifer Wortman. *Advances in Neural Information Processing Systems 18* (NIPS 2005).

**Run the GAMUT: A Comprehensive Approach to Evaluating Game-Theoretic Algorithms.** Eugene Nudelman, Jennifer Wortman, Yoav Shoham, and Kevin Leyton-Brown. *Third International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2004).

## Selected Workshop Papers

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My research has appeared in many lightly peer-reviewed, non-archival workshops including:

Many iterations of the New York Computer Science and Economics (NYCE) Day  
Many iterations of the New York Academy of Sciences Machine Learning Symposium  
NIPS Workshop on Machine Learning for the Developing World, December 2017  
NIPS Workshop on Transparent & Interpretable ML in Safety Critical Envs., December 2017  
NIPS Workshop on Prioritising Online Content, December 2017  
3rd EC Workshop on Algorithmic Game Theory and Data Science, June 2017  
CHI Workshop on Designing for Uncertainty in HCI, May 2017  
Conference on Digital Experimentation @ MIT, October 2016  
2nd Annual International Conference on Computational Social Science (IC2S2), June 2016  
ICML Workshop on Theory and Practice of Differential Privacy, June 2016  
Conference on Digital Experimentation @ MIT, October 2015  
5th EC Workshop on Social Computing and User Generated Content, June 2015  
NIPS Workshop on Crowdsourcing: Theory, Algorithms, and Applications, December 2013  
NSF/NBER/CEME Seminar in Math. Economics and General Equilibrium, October 2013  
3rd EC Workshop on Social Computing and User Generated Content, June 2013  
AAAI Fourth Human Computation Workshop (HCOMP 12), July 2012  
ICML Workshop on Markets, Mechanisms, and Multi-agent Models, June 2012  
NIPS Workshop on Domain Adaptation, December 2011  
NIPS Workshop on Comp. Social Science and the Wisdom of Crowds, December 2010  
NIPS Workshop on Advances in Ranking, December 2009  
NIPS Workshop on Principles of Learning Problem Design, December 2007  
DIMACS Workshop on the Boundary between Econ. Theory and CS, October 2007  
Third Workshop on Sponsored Search Auctions at WWW, May 2007  
NIPS Workshop on On-line Trading of Exploration and Exploitation, December 2006  
15th International Conference on Game Theory at Stony Brook, July 2004

## Selected Invited Talks

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### **Building Fair and Transparent AI (And Why You Should Care)**

Institute for Human Rights and Business briefing event, New York, NY, December 2017

### **Manipulating and Measuring Model Interpretability**

NIPS Interpretable Machine Learning Symposium (*Invited*), Long Beach, CA, Dec. 2017

### **Nine Things I Wish I Had Known the First Time I Came to NIPS**

12th Annual Women in Machine Learning Workshop (*Opening address*), Long Beach, CA, December 2017

### **The Role of Human Computation in AI, The Human Components of Machine Learning, or other similar variants**

NYU NLP and Text as Data Speaker Series, New York, NY, November 2007

Spotify Research Seminar, New York, NY, November 2007

Yale Data Science Workshop on Computational Social Science (*Keynote*), New Haven, CT, October 2017

Broadening Participation in Data Mining (*Keynote*), Halifax, NS, August 2017

Microsoft Research NYC 5th Anniversary Celebration, New York, NY, May 2017

**Self-Financed Wagering Mechanisms: What's Been Done and What's to Come**

EC Workshop on Forecasting (*Invited*), Cambridge, MA, June 2017

**Crowd Behavior and Implications on Research**

CU Boulder Computer Science Colloquium, Boulder, CO, May 2017

**The Role of Human Computation in Artificial Intelligence (short version)**

AI: The Economic and Policy Implications panel on AI and Machine Learning 101, Technology Policy Institute, Washington, DC, Sept. 2016

**The Communication Network Within the Crowd**

NIPS Workshop on Crowdsourcing and ML (*Invited*), Barcelona, Spain, December 2016  
Bloomberg Data Science Seminar, New York, NY, August 2016

**The Past, Present, and Future of Women in Machine Learning**

10th Annual Women in Machine Learning Workshop (*Opening address*), joint with Hanna Wallach and Amy Greenwald, Montreal, QC, December 2015

**Crowdsourcing Your Data**

Strata session on Hardcore Data Science (*Invited*), New York, NY, September 2015

**Integrating Market Makers, Limit Orders, and Continuous Trade in Prediction Markets**

International Symposium on Mathematical Programming (*Invited*), Pittsburgh, PA, July 2015

**Incentivizing High Quality Crowdwork**

NYU Machine Learning Seminar, New York, NY, February 2015  
NIPS Workshop on Crowdsourcing and ML (*Invited*), Montreal, QC, December 2014

**Market Making with Decreasing Value of Information**

NIPS Workshop on Trans. ML and E-Commerce (*Invited*), Montreal, QC, December 2014  
CMU-MSR Mindswap on the Interface Between CS and Econ, New York, NY, April 2014

**An Optimization-Based Framework for Automated Market-Making, Combinatorial Prediction Markets via Convex Cost Functions, or other variants**

New York Area Theory Day (*Invited*), Columbia, New York, NY, April 2015  
Duke Machine Learning Seminar, Durham, NC, October 2014  
Yahoo! Research, New York, NY, May 2014  
NYU Courant Machine Learning Seminar, New York, NY, November 2012  
LA Machine Learning Meetup, hosted by eHarmony, Santa Monica, CA, July 2012  
Microsoft Research, New York, NY, July 2012  
LogicBlox, Atlanta, GA, June 2012  
Google Research, New York, NY, May 2012  
Symantec Research Labs, Culver City, CA, April 2012  
SoCal Symposium on Network Econ and Game Theory, Pasadena, CA, November 2011  
Microsoft Research Algorithms and Game Theory Seminar, Cambridge, UK, June 2011  
Caltech Social and Information Sciences Lab Seminar, Pasadena, CA, February 2011



University of Southern California, CS Colloquium, Los Angeles, CA, January 2011  
Caltech Rigorous Systems Research Group Seminar, Pasadena, CA, November 2010

### **Aggregating Human Predictions Via Markets**

AAAI 3rd Human Computation Workshop (*Invited*), San Francisco, CA, August 2011

### **A New Understanding of Prediction Markets Via No-Regret Learning**

Harvard Center for Research on Computation and Society, Cambridge, MA, April 2010  
UC Berkeley, Berkeley, CA, April 2010

### **Censored Exploration and the Dark Pool Problem**

UCLA, Statistics Department Seminar, Los Angeles, CA, February 2011  
Boston University, Computer Science Colloquium, Boston, MA, February 2010  
UMass, Amherst, Machine Learning Lunch, Amherst, MA, December 2009  
Brown University, Machine Learning Reading Group, Providence, RI, November 2009  
UMass, Boston, Computer Science Colloquium, Boston, MA, November 2009  
Microsoft Research New England, Econ Reading Group, Cambridge, MA, October 2009  
Harvard University, EconCS Seminar, Cambridge, MA, October 2009

### **Learning from Collective Preferences, Behavior, and Beliefs**

Harvard University, Theory of Computation/EconCS Seminar, Cambridge, MA, May 2009  
UCLA, Computer Science Colloquium, Los Angeles, CA, April 2009  
University of Michigan, CSE Colloquium, Ann Arbor, MI, April 2009  
New York University, Computer Science Colloquium, New York, NY, April 2009  
Toyota Technological Institute at Chicago, Chicago, IL, March 2009  
Cornell University, Computer Science Colloquium, Ithaca, NY, March 2009  
Yahoo! Research, Santa Clara, CA, March 2009  
UC Berkeley, Center for Intelligence Systems Seminar, Berkeley, CA, February 2009  
Duke University, Computer Science Colloquium, Durham, NC, February 2009  
Microsoft Research New England, Cambridge, MA, January 2009

### **Learning from Collective Behavior**

Rutgers University, Computer Science Colloquium, Piscataway, NJ, March 2008

### **Regret to the Best Vs. Regret to the Average**

Yahoo! Research, New York, NY, January 2007

### **Selected Press**

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Featured in “The Women Changing the Face Of AI,” Fast Company, August 2016

Interviewed for season 2, episode 1 of Talking Machines (podcast), January 2016

### **Awards and Honors**

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**Presidential Early Career Award for Scientists and Engineers (PECASE)**, “the highest honor bestowed by the United States Government on science and engineering professionals in the early stages of their independent research careers,” 2012

**Symantec Term Chair in Computer Science**, UCLA, 2011–2015

**NSF Faculty Early Career Development (CAREER) Award**, 2011–2014

**NSF Computing Innovation Fellowship**, 2009–2010

**Morris & Dorothy Rubinoff Award (Co-winner)**, presented to “a graduate degree candidate whose dissertation has resulted in or could lead to innovative applications of computer technology,” University of Pennsylvania, 2009

### **Paper Awards**

**Nominee, Best Paper Award** (8 papers out of 929 submissions), 24th International World Wide Web Conference, 2015

**Best Student Paper Award**, 25th Conference on Uncertainty in Artificial Intelligence, 2009

**Student Paper Award, Second Place**, New York Academy of Sciences Third Annual Symposium on Machine Learning, 2008

**Outstanding Paper Award**, Ninth ACM Conference on Electronic Commerce, 2008

**Best Student Paper Award**, 21st Annual Conference on Learning Theory, 2008

**Student Paper Award, First Place**, New York Academy of Sciences Second Annual Symposium on Machine Learning, 2007

**Best Student Paper Award**, 20th Annual Conference on Learning Theory, 2007

**Phi Beta Kappa**, Boston University, 2002

**Academic Achievement Award in Computer Science**, Boston University, 2002

**Boston Scholars Scholarship**, Merit-based full-tuition scholarship, 1998–2002

### **Selected Funding**

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#### **For Research Projects**

**CAREER: Learning- and Incentives-Based Techniques for Aggregating Community-Generated Data**, National Science Foundation, IIS-1054911, Role: PI, 2011–2015

**CIFellows Project: Crowdsourcing for Science Education**, Computing Research Association, CIF-B-17, Role: PI/Mentor for postdoctoral fellow Ricky Sethi, 2010–2011

**CIFellowship: Foundational Understanding of Learning from the Collective and Problems in Learning and Reasoning**, Computing Research Association, CIF-246, Role: Postdoctoral fellow with mentors Yiling Chen and Leslie Valiant (Harvard), 2009–2010

#### **For Events**

**Theoretical Foundations of Social Computing**, CCC visioning workshops program, Role: Co-organizer with Yiling Chen, Arpita Ghosh, and Tim Roughgarden, 2015

**Collaborative Research: Workshop for Women in Machine Learning**, National Science Foundation, IIS-1036868, Role: PI with co-PI Hanna Wallach, 2010–2014

## Patents Filed

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**Computer-Based Data Collection Using a Prediction Market with a Liquidity Reducing Cost Function.** With Miro Dudík and Rafael Frongillo. US patent filed November 2014.

**Computer System for Multiple User, Multiple Event Real-Time Online Wagering.** With Yiling Chen, Nikhil Devanur, and David Pennock. US patent filed October 2014.

**System and Method for Automated Market Making.** With Jake Abernethy and Yiling Chen. US patent filed May 2012.

## Students and Postdocs Supervised

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### Doctoral Dissertations Supervised

Chien-Ju Ho, UCLA, 2010–2015, winner of the Google Outstanding Graduate Research Award at UCLA (next position: postdoc at Cornell; now an Assistant Professor in Computer Science at Washington University in St. Louis)

### Interns Mentored or Co-Mentored at Microsoft Research

Rediet Abebe, Cornell, 2017  
Forough Poursabzi Sangdeh, CU Boulder, 2017  
Manish Raghavan, Cornell, 2017  
Rupert Freeman, Duke University, 2016 and 2017  
Nika Haghtalab, Carnegie Mellon University, 2016  
Ryan Rogers, University of Pennsylvania, 2016  
Rachel Cummings, California Institute of Technology, 2015  
Ming Yin, Harvard University, 2015  
Hoda Heidari, University of Pennsylvania, 2014  
Chien-Ju Ho, UCLA, 2013 and 2014  
Alice Gao, Harvard University, 2013

### Other Students and Postdocs Supervised at UCLA

Garret Buell, MS received 2012 (next position: Software Engineer at Google)  
Xinlei Chen, Cross-disciplinary Scholars in Science and Technology summer intern, 2011 (next position upon graduation: doctoral student at CMU)  
Shahin Jabbari, doctoral student, 2011–2013 (next position: doctoral student at UPenn)  
Xiaolong Li, MS received 2012 (next position: doctoral student at UT Austin)  
Ricky Sethi, Computing Innovation Fellow, 2010–2011 (next position: postdoc at USC ISI)  
Petch Wannissorn, MS received Winter 2012 (next position: MS student in Software Management at CMU)

### Other Ph.D. Committees

**UCLA Dissertation Committees:** Nick Mastronarde (EE, 2011), Mahsan Rofouei (CS, 2012), Vidyut Samanta (CS, 2012), Michael Shindler (CS, 2011)

**UCLA Qualifying Exam Committees:** Dawn Chen (Psychology, 2012), Jihyoung Kim (CS, 2011), Brent Longstaff (CS, 2012), Bobak Mortazavi (CS, 2012), Roozbeh Mottaghi (CS, 2010), Mahsan Rofouei (CS, 2011), Vidyut Samanta (CS, 2011), Wen-Yun Yang (Bioinformatics, 2011)

**Elsewhere:** Debajyoti Ray (qualifying exam, CalTech, 2011), Michael Ruberry (Harvard, 2013)

## **Other Professional Activities and Academic Service**

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**Secretary-Treasurer**, ACM Special Interest Group on Electronic Commerce (SIGecom), elected position, July 2015–Present

### **Journal Boards and Reviews**

**Associate Editor**, ACM Transactions on Economics and Computation, 2015–Present

**Guest Editor**, Machine Learning Journal Special Issue on Computational Social Science and the Wisdom of Crowds, 2014

**Editorial Board Member**, Machine Learning Journal, 2010–Present

**Editorial Board Member**, Journal of Artificial Intelligence Research, 2010–2013

**External Reviewer**, ACM Transactions on Economics and Computation, ACM Transactions on the Web, Algorithmica, Communications of the ACM, Decision Analysis, IEEE Transactions on Neural Networks, IEEE Transactions on Signal and Information Processing over Networks, Journal of Artificial Intelligence Research, Theoretical Computer Science

### **Conference Organization and Committees**

**Co-chair**, HCOMP 2019

**Tutorials Co-chair**, NIPS 2017

**Workshops Co-chair**, ACM EC 2017 and 2018 (two-year term)

**Steering Committee**, FAT\* (2017–present)

**Publicity Co-chair**, HCOMP 2017

**Workshop Selection Committee**, NIPS 2016

**Local Arrangements Co-chair**, ACM EC 2010

**Senior/Top Level Program Committee Member/Area Chair or equivalent**, AAAI (2013), ACM EC (2015, 2016), COLT (2010, 2011), HCOMP (2015, 2016), ICML (2012), IJCAI (middle level 2015), NIPS (2013, 2014, 2016), WWW (Track Co-chair, 2018), UAI (2012)

**General Program Committee Member/Formal Reviewer or equivalent**, AAAI (2008), ACM EC (2010, 2011, 2013), AISTATS (2009, 2012), IC2S2 (2017), ICML (2007, 2008, 2009), IJCAI (2005, 2009), NIPS (2008, 2009, 2015), UAI (2008), WWW (2016, 2017)

### **Workshop Organization and Committees**

#### **Workshop Co-organizer/Co-chair**

NIPS Workshop on Learning in the Presence of Strategic Behavior, 2017

Making Better Use of the Crowd (Microsoft internal workshop), 2017

HCOMP Workshop on Mathematical Foundations of Human Computation, 2016

CCC Visioning Workshop on Theoretical Foundations of Social Computing, 2015

6th Annual New York Computer Science and Economics (NYCE) Day, 2013

NIPS Workshop on Crowdsourcing: Theory, Applications, and Algorithms, 2013

ICML Workshop on Markets, Mechanisms, and Multi-Agent Models, 2012

NIPS 2nd Workshop on Computational Social Science and the Wisdom of Crowds, 2011

NIPS Workshop on Relations Between Machine Learning Problems, 2011

NIPS Workshop on Computational Social Science and the Wisdom of Crowds, 2010

First Workshop for Women in Machine Learning (WiML), San Diego, CA, 2006

**Other Workshop Program Committees**, AAAI Human Computation Workshop (2011, 2012), EC Workshops on Social Computing and User Generated Content (2011, 2012, 2015), EC/WWW Workshop on Crowdsourcing and Online Behavioral Experiments (2015, 2016), Northeast Student Colloquium on AI (2007), SIGAI Career Network Conference (2015)

### **Tutorial Presentations**

**Making Better Use of the Crowd**, KDD 2017

**Making Better Use of the Crowd**, ACL 2017

**Crowdsourcing: Beyond Label Generation**, NIPS 2016

**Prediction, Belief, and Markets**, AAAI 2013 (with Jake Abernethy)

**Prediction, Belief, and Markets**, KDD 2012 (with Jake Abernethy)

**Learning and Markets**, Santa Cruz Machine Learning Summer School, 2012

**Prediction, Belief, and Markets**, ICML 2012 (with Jake Abernethy)

**Grant Reviewer/Panelist**, National Science Foundation (2010, 2011, 2013, 2015), U.S.-Israel Binational Science Foundation (2011)

### **Selected Departmental Service**

#### **Microsoft Research, New York City**

Organizer, MSR-NYC Postdoc Mentoring Program, 2016–Present

Organizing committee, Microsoft Research NYC 5th Anniversary Celebration, 2017

Co-organizer, MSR New England/New York Annual Retreat, 2014

#### **UCLA Computer Science**

Admission, TA, and Fellowship Committee, 2010–2011

Prospective Student Visit Day Coordinator, 2011, 2012

#### **University of Pennsylvania Computer and Information Science**

Graduate Student Representative, 2006–2007

Organizer, Machine Learning Lunch, 2006–2007

Organizer, CISTers group for female graduate students and faculty in CS, 2005–2008

### **Additional Efforts to Recruit and Retain Women in Computer Science**

**Program Co-Chair**, First Celebration of Women in Computing in Southern California (CWIC-SoCal), Santa Ana, CA, 2012

**Executive Board Member**, Workshop for Women in Machine Learning (WiML), 2009–2012 and 2014–Present

**Co-founder**, Workshop for Women in Machine Learning (WiML), held annually since 2006