Bo Waggoner

Curriculum vitae
Postdoctoral Fellow, The Warren Center
University of Pennsylvania
May 2017

Contact

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Levine Hall 361
3330 Walnut St
Philadelphia, PA 19104

Areas

Theoretical computer science; algorithmic game theory; mechanism design; artificial intelligence, theoretical machine learning.

Keywords

Information elicitation, information aggregation, crowdsourcing/human computation, auction theory, market design, fair division, voting.
Randomness and algorithms: online matching algorithms, differential privacy, property testing and learning of distributions.

Education

Harvard University 2011 - 2016
PhD, Computer Science
Advisor: Yiling Chen
Thesis: **Acquiring and Aggregating Information from Strategic Sources**
Siebel Scholar (2015-16)

Duke University 2007 - 2011
B.S. Mathematics/Computer Science
magna cum laude, with High Distinction
Duke Mathematics *PRUV* Fellow (2010-11)
Atlantic Coast Conference Scholar-Athlete of the Year,
Indoor Track and Field (2010), Cross-Country (2010)
COSIDA Academic All-America, Cross Country/Track and Field

Appointments

University of Pennsylvania August 2016 - present
Postdoctoral Fellow
The Warren Center for Network and Data Sciences
Supervisors: Michael Kearns, Aaron Roth.

Intern, Microsoft Research Summer 2015
Host: Brendan Lucier, New England (Cambridge MA).
Topics: data marketplaces; signalling in games.

Intern, Google Research Summer 2013
Host: Aranyak Mehta, Mountain View CA.
Topics: approximation algorithms, auction design, online matching.

Intern, Google Research Summer 2012
Host: Aranyak Mehta, Mountain View CA.
Topics: crowdsourcing and maximum-likelihood; online matching; auction theory.

Research Assistant, Duke University Summer 2011
Advisor: Vincent Conitzer
Topic: false-name manipulations in voting settings.

PRUV Fellow, Duke University Summer 2010 - Summer 2011
Advisor: Elizabeth Bouzarth
Topic: modeling the foot in motion. A model and simulation of the dynamics of impact, stance, and takeoff in barefoot running. (Senior thesis.)

*Publications**

Multi-Observation Elicitation.
Sebastian Casalaina-Martin, Tom Morgan, Rafael Frongillo, and Bo Waggoner.
Proceedings of the Thirtieth Annual Conference on Learning Theory (COLT 2017).

The Complexity of Stable Matchings under Substitutable Preferences.
Yuan Deng, Debmalya Panigrahi, and Bo Waggoner.
Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence (AAAI 2017).

Informational Substitutes.
Yiling Chen and Bo Waggoner.
Proceedings of the Fifty-Sixth Annual IEEE Symposium on Foundations of Computer Science (FOCS 2016).

Descending Price Optimally Coordinates Search.
Robert Kleinberg, E. Glen Weyl, and Bo Waggoner.
Proceedings of the Seventeenth ACM Conference on Economics and Computation (EC 2015).

A Market Framework for Eliciting Private Data.
Bo Waggoner, Rafael Frongillo, and Jacob Abernethy.
Proceedings of the Twenty-Ninth Annual Conference on Neural Information Processing Systems (NIPS 2015).

Low-Cost Learning via Active Data Procurement.
Jacob Abernethy, Yiling Chen, Chien-Ju Ho, and Bo Waggoner.
Proceedings of the Sixteenth ACM Conference on Economics and Computation (EC 2015).

Fair Information Sharing for Treasure Hunting.
Yiling Chen, Kobbi Nissim, and Bo Waggoner.
Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI 2015).

ℓ_p Testing and Learning of Discrete Distributions.
Bo Waggoner.
Proceedings of the Sixth Conference on Innovations in Theoretical Computer Science (ITCS 2015).

Online Stochastic Matching with Unequal Probabilities.
Aranyak Mehta, Bo Waggoner, and Morteza Zadimoghaddam.
Proceedings of the Twenty-Sixth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2015).

Output Agreement Mechanisms and Common Knowledge.
Bo Waggoner and Yiling Chen.
Proceedings of the Second AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2014).

Designing Markets for Daily Deals.
Yang Cai, Mohammad Mahdian, Aranyak Mehta, and Bo Waggoner.
Proceedings of the Ninth Conference on Web and Internet Economics (WINE 2013).

Evaluating Resistance to False-Name Manipulation in Elections.
Bo Waggoner, Lirong Xia, and Vincent Conitzer.
Proceedings of the Twenty-Sixth AAAI Conference on Artificial Intelligence (AAAI 2012).

** In most venues listed, author order is generally alphabetical by convention of the field.*
Conference proceedings listed above are archival for publication purposes.

Invited Talks

TCS+ Series November 9, 2016
Online: https://sites.google.com/site/plustcs/
Title: *Informational Substitutes*

University of Colorado, Boulder September 27, 2016
Machine Learning and Statistics Seminar
Title: *What Dice Are These?*

University of Pennsylvania March 16, 2016
Theory Group
Title: *Some Approaches for Information Acquisition and Aggregation*

Microsoft Research NYC October 14, 2015
Title: *Low-Cost Learning via Active Data Procurement*

Duke University September 9, 2015
CSEcon Group
Title: *Low-Cost Learning via Active Data Procurement*

Teaching

Harvard CS 236r: Prediction, Learning, and Games Spring 2016
Position: Teaching Fellow.
Professor: Yiling Chen.

Harvard CS 284r: Incentives and Information in Networks Fall 2013
Position: Teaching Fellow.
Professor: Yaron Singer.

Harvard CS 121: Introduction to Theory of Computation Fall 2012
Position: Teaching Fellow.
Professor: Salil Vadhan.

Guest Teaching or Lectures

UPenn NETS 412: Algorithmic Game Theory (one class) Spring 2017
Prof. Yiling Chen

Harvard CS 236r: Prediction, Learning, and Games (two classes) Spring 2016
Prof. Yiling Chen

Harvard Applied Math 121: Intro to Optimization (two classes) Fall 2014
Prof.s Yiling Chen and David Parkes

Harvard CS 284r: Incentives and Info in Networks (one class) Fall 2013
Prof. Yaron Singer

Harvard CS 121: Intro to Theory of Computation (one class) Fall 2012
Prof. Salil Vadhan

Service

Co-Organizer, Workshop on Forecasting
at the 2017 ACM Conference on Economics and Computation (EC)
with Rafael Frongillo and David Rothschild.
http://www.bowaggoner.com/ec-forecasting/

Co-Organizer, Tutorial on Elicitation
at the 2016 ACM Conference on Economics and Computation (EC)
with Rafael Frongillo.
https://sites.google.com/site/informationelicitation/

Technical Blog "The Tiger's Stripes"
http://www.bowaggoner.com/blog/
Dedicated to accessible tutorials on research or fundamentals in math, computer science, and game theory.

Program Committee
International Joint Conference on Artificial Intelligence (IJCAI), International Conference on Autonomas Agents and Multiagent Systems (AAMAS), AAAI Conference on Artificial Intelligence (AAAI), International Conference on Machine Learning (ICML), Advances in Neural Information Processing Systems (NIPS).

Referee/Reviewer
ACM-SIAM Symposium on Discrete Algorithms (SODA); ACM Conference on Economics and Computation (EC); ACM WSDM Conference; AAAI Conference on Artificial Intelligence (AAAI); International Symposium on Algorithmic Game Theory (SAGT); International Conference on Machine Learning (ICML); ACM Symposium on Theory of Computing (STOC); Conference on Learning Theory (COLT); International Joint Conference on Artificial Intelligence (IJCAI); International World Wide Web Conference (WWW); IEEE Symposium on Foundations of Computer Science (FOCS); Advances in Neural Information Processing Systems (NIPS); Foundations and Tends in Theoretical Computer Science (Fn-TCS).

Conference Student Volunteer/Organizer
Conference on Web and Internet Economics (WINE) 2013, in Cambridge MA.

Research Group Organizer / "Czar"
Harvard EconCS group, 2012-13, and AI Research Group, 2013-14.

Online Computer Science Community
Regular contributor to question-and-answer sites {cs,cstheory,math}.stackexchange.com, mathoverflow.net.

Miscellanea

Doctoral Dissertation Award - Honorable Mention
Association for Computing Machinery's Special Interest Group on Electronic Commerce (ACM-SIGEcom).

Siebel Scholarship
Funded final year of doctoral studies via the Siebel Scholars Foundation.

Undergraduate Honors Thesis
Modeling the Foot in Motion.
Advisor: Elizabeth Bouzarth. A computational model/simulation of the motion of the foot and ankle in barefoot running, analyzing the impact of stride mechanics on internal forces and mechanics.

ACM International Collegiate Programming Competition (ICPC)
World Finalist, 2011. Member of 80th-place team from Duke University.

Columnist, *The Chronicle*
Contributor for Duke's daily independent newspaper, 2008.

Competitive Distance Running
Qualifier, 2016 USA Olympic Trials, marathon, via 1:04:50 half-marathon performance.
Currently represents the Boston Athletic Association (BAA) on roads, track, cross-country.
Personal records: 4:06.8 mile, 14:06 5k, 29:14 10k.

Division I Athletics

Member and captain of three varsity athletic teams at Duke:

Cross-Country	4-time All-ACC, placing 5th as a senior; 2010 ACC Scholar-Athlete of the Year; led team to 21st place at the 2010 NCAA Championships.
Indoor Track	All-ACC; 2010 ACC Scholar-Athlete of the Year; Duke school records in 3000m and 5000m.
Outdoor Track	NCAA Finalist and 21st place at the 2011 NCAA Championships in the 10000m.

2010 COSIDA Academic All-America in Cross-Country/Track and Field.