Haoqi Zhang

CONTACT INFORMATION

Harvard University
School of Engineering and Applied Sciences
Maxwell Dworkin 219
33 Oxford Street
Cambridge, MA 02138

(917) 445-2626
hq@eecs.harvard.edu
http://eecs.harvard.edu/~hq

RESEARCH INTERESTS

My research interests are in artificial intelligence, microeconomics, optimization, preference elicitation, and applied machine learning. In particular I am interested in understanding how to influence people's behavior by effectively designing their environment.

Some big questions I am interested in:

- Why do people behave like they do?
- How can we promote desirable behaviors?
- What are the relations among environment, preferences, and behavior?

EDUCATION

Harvard University, Cambridge, Massachusetts
Ph.D. in Computer Science, expected June 2012
Advisor: David C. Parkes

Harvard College, Cambridge, Massachusetts
A.B. in Computer Science and Economics, June 2007

RESEARCH

Harvard University, Cambridge, Massachusetts

Environment Design September 2006 to Present

I consider settings in which agents act with respect to their preferences in their environments. An interested party observes the agents' behavior, but does not know the agents' preferences and cannot elicit the information directly. The interested party can interact multiple times with the agents, and aims to induce desired behaviors by changing limited aspects of the environment.

Airport landing slots June 2005 to June 2006

I adopted and evaluated the hybrid clock proxy auction design for allocating takeoff and landing slots to airlines to reduce congestion and delays. I developed a working implementation of the hybrid auction, constructed an evaluation framework, proposed budget-constrained variations of the auction, and constructed methods for pricing vouchers.

PUBLICATIONS

Haoqi Zhang, David C. Parkes, and Yiling Chen. Policy Teaching Through Reward Function Learning. In *Proceedings of the 10th ACM Electronic Commerce Conference (EC'09)*, Stanford, CA, 2009.

Haoqi Zhang, Yiling Chen, and David C. Parkes. A General Approach to Environment Design with One Agent. In *Proceedings of the 21st International Joint Conference on Artificial Intelligence (IJCAI-09)*, Pasadena, CA, 2009.

Pavithra Harsha, Cynthia Barnhart, David C. Parkes, and Haoqi Zhang. Strong Activity Rules for Iterative Combinatorial Auctions. In *Computers & Operations Research*, 2009 (To appear).

Haoqi Zhang and David C. Parkes. Value-based Policy Teaching with Active Indirect Elicitation. In *Proceedings of the 23rd AAAI Conference on Artificial Intelligence (AAAI'08)*, Chicago, IL, 2008. Oral presentation and poster paper.

Haoqi Zhang and David C. Parkes. Enabling Environment Design via Active Indirect Elicitation. In *the 4th Multidisciplinary Workshop on Advances in Preference Handling*, Chicago, IL, 2008.

Haoqi Zhang. Policy Teaching through reward function learning. *Harvard University Lamont Library*, 2007. Thomas Temple Hoopes Prize Winning Thesis.

Invited talks

A General Approach to Environment Design. *Harvard Cooperation Group, Berkman Center for Internet and Society, Cambridge, MA*, October 2009.

Policy Teaching Through Reward Function Learning. *10th ACM Electronic Commerce Conference (EC'09)*, Stanford, CA, July 2009.

A General Approach to Environment Design with One Agent. *21st International Joint Conference on Artificial Intelligence (IJCAI-09)*, Pasadena, CA, July 2009.

Enabling Environment Design via Active Indirect Elicitation. *MIT Economics Theory Lunch, Cambridge, MA*, October 2008.

Value-based Policy Teaching with Active Indirect Elicitation. *23rd AAAI Conference on Artificial Intelligence (AAAI'08)*, Chicago, IL, July 2008.

Enabling Environment Design via Active Indirect Elicitation. *4th Multidisciplinary Workshop on Advances in Preference Handling*, Chicago, IL, July 2008.

Teaching

Teaching Consultant, School of Engineering and Applied Sciences (SEAS), 2009.

Department Teaching Fellow, School of Engineering and Applied Sciences, 2008–2009.
I led teaching conference sessions for all new science teaching fellows and conducted practice teaching and individual followup viewings for all new teaching fellows within SEAS. I created a teaching practicum course and organized a new professional development seminar series. I also provided support for teaching fellows through individual consultation and viewing and discussion of section videos.

Head Teaching Fellow, Introduction to Optimization, Spring 2008 and Spring 2009.
I created this new course on linear optimization and their applications in collaboration with David Parkes. I designed the course syllabus and outline, created problem sets and team assignments, and wrote solutions and grading standards. I taught a weekly section and guest lectured four classes. I also implemented an interactive course website with polls, blogs, and bulletin boards for active feedback from students and led weekly staff meetings.

Co-instructor, SEAS Teaching Practicum, Fall 2009.
I created this new course to help undergraduate and graduate students gain effective skills for teaching applied sciences. John Girash from the Derek Bok Center and I led weekly seminars and facilitated students' development as teachers through a process of observation, practice, feedback, discussion, and reflection.

Co-Head Teaching Fellow, Introduction to Computer Science I, Fall 2006.

Teaching Fellow, Introduction to Computer Science II, Spring 2005 and Spring 2006.

Teaching Fellow, Introduction to Computer Science I, Fall 2005.

Service

Student co-organizer, ACM Conference on Electronic Commerce, 2010.

Committee member, SEAS Internal task force on student life and advising, 2009.

Organizer and moderator, Graduate Fellowship Discussion Panel, Fall 2008, 2009.

Reviewer, *Journal of Autonomous Agents and Multi-Agent Systems*, 2009.

Reviewer, *Journal of Artificial Intelligence Research*, 2009.

Organizer and founder, SEAS Professional Development Seminar Series, Spring 2009.

Organizer and presenter, Derek Bok Center Teaching Conference, 2008–2009.

Organizer, Harvard EconCS seminars, 2007-2008.

Awards

Derek C. Bok Award for Excellence in Graduate Student Teaching of Undergraduates, Harvard University, 2009.

Certificate of Distinction in Teaching, received 5 times from 2005-2009.

NSF Graduate Research Fellowship, 2008.

NDSEG Graduate Fellowship, 2008.

CRA Outstanding Undergraduate Award Honorable Mention, 2007.

Thomas Temple Hoopes Prize for senior thesis at Harvard, 2007.

Work Experience

Microsoft, Redmond, Washington
Program Manager June 2006 to August 2006

Working with my mentor Jody Biggs and researchers from Microsoft Research, I provided methods for enhancing click through adjustment, developed an online learning framework for ad qualities, and constructed an alternative positional auction mechanism with some desirable properties. I also designed a testing and research framework for click through prediction.

Graduate Courses

Computer Science: Computational Mechanism Design, Multi-agent Learning and Implementation, Social Computing, Multi-agent Systems, Randomized Algorithms and Probabilistic Analysis, Probabilistic Reasoning, Biologically-inspired Distributed and Multi-agent Systems, Algorithms at the End of the Wire.

Economics: Microeconomic Theory, Market Design, Game Theory, Dynamic Contracts and Games, Experimental Economics.

CS Skills

C, C++, Java, Lisp, Scheme, Python, Perl, LaTeX, ...