

Zhiyi Huang

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Department of Computer Science
The University of Hong Kong

Research Interests

Theoretical Computer Science
Algorithmic Game Theory
Differential Privacy
Online Algorithms

Education and Experience

2014 – present *Assistant Professor*, Computer Science, the University of Hong Kong
2013 – 2014 *Postdoctoral Research Fellow*, Computer Science, Stanford University
Mentor: Tim Roughgarden
2013 *Ph.D.*, Computer and Information Science, University of Pennsylvania
Advisors: Sampath Kannan, Aaron Roth
2011, 2012 *Research Intern*, Microsoft Research Redmond
Mentor: Nikhil R. Devanur
2008 *B.E.*, Computer Science and Technology, Tsinghua University (“Yao Class”)

Selected Honors

2014 *Early Career Award*, Research Grant Council of Hong Kong
2013 *Morris and Dorothy Rubinoff Dissertation Award*, University of Pennsylvania
2012 – 2013 *Simons Graduate Fellowship in Theoretical Computer Science*
2008 – 2012 *Doctoral Fellowship*, University of Pennsylvania
2008 *Bachelor Thesis Award*, Tsinghua University
2007 *Sohu Scholarship*, Tsinghua University
2006 *Scholarship for Academic Excellency*, Tsinghua University
2005 *Xianglu Scholarship*, Tsinghua University
2004 *Yukang Zhou Scholarship*, Tsinghua University
2004 *Gold Medal*, International Mathematical Olympiad, Athens, Greece
2004 *Silver Medal*, Russian Mathematical Olympiad, Cheboksary, Russia
2004 *Gold Medal*, Chinese Mathematical Olympiad, Macau, China

Surveys

Zhiyi Huang
Online primal dual: beyond linear programs
ACM SIGACT News, Volume 45 Issue 4, December 2014

Zhiyi Huang
Privacy preserving auctions
Encyclopedia of Algorithms 2014

Journal Publications

Deeparnab Chakrabarty and Zhiyi Huang
Recognizing coverage functions
In submission

Nikhil R. Devanur, Zhiyi Huang, Nitish Korula, Vahab Mirrokni, and Qiqi Yan
Whole-page optimization and submodular welfare maximization with online bidders
In submission

Tanmoy Chakraborty, Zhiyi Huang, and Sanjeev Khanna
Dynamic and non-uniform pricing strategies for revenue maximization
SIAM Journal on Computing (**SICOMP**), special issue for FOCS 2009

Conference Publications

(Unless stated otherwise, authors are sorted in alphabetical order.)

Zhiyi Huang, Yishay Mansour, and Tim Roughgarden
Making the most of your samples
16th ACM Conference on Economics and Computation (**EC 2015**)

Yossi Azar, Nikhil R. Devanur, Zhiyi Huang, and Debmalya Panigrahi
Non-clairvoyant online scheduling to minimize energy
27th ACM Symposium on Parallelism in Algorithms and Architectures (**SPAA 2015**)

Xiaoxi Zhang, Zhiyi Huang, Chuan Wu, Zongpeng Li, and Francis C.M. Lau
(by contribution)
Online auctions in IaaS clouds: welfare and profit maximization with server costs
ACM SIGMETRICS 2015

Zhiyi Huang, and Anthony Kim
Welfare maximization with production costs: a primal dual approach
26th ACM-SIAM Symposium on Discrete Algorithms (**SODA 2015**)

Justin Hsu, Zhiyi Huang, Aaron Roth, Tim Roughgarden, and Zhiwei Steven Wu
Private matchings and allocations
46th Annual Symposium on the Theory of Computing (**STOC 2014**)

Zhiyi Huang and Aaron Roth

Exploiting metric structure for efficient private query release

25th ACM-SIAM Symposium on Discrete Algorithms (**SODA 2014**)

Nikhil R. Devanur and Zhiyi Huang

Primal dual gives optimal energy efficient online algorithms

25th ACM-SIAM Symposium on Discrete Algorithms (**SODA 2014**)

Nikhil R. Devanur, Zhiyi Huang, Nitish Korula, Vahab Mirrokni, and Qiqi Yan

Whole-page optimization and submodular welfare maximization with online bidders

14th ACM Conference on Electronic Commerce (**EC 2013**)

Invited to ACM Transactions on Economics and Computation (**TEAC**), special issue for EC 2013

Yang Cai and Zhiyi Huang

Simple and nearly optimal multi-item auctions

24th ACM-SIAM Symposium on Discrete Algorithms (**SODA 2013**)

Zhiyi Huang and Sampath Kannan

The exponential mechanism for social welfare: private, truthful, and nearly optimal

53rd Annual IEEE Symposium on Foundations of Computer Science (**FOCS 2012**)

Deeparbab Chakrabarty and Zhiyi Huang

Testing coverage functions

39th International Colloquium on Automata, Languages and Programming (**ICALP 2012**)

Zhiyi Huang, Sampath Kannan, and Sanjeev Khanna

Algorithms for the generalized sorting problem

52nd Annual IEEE Symposium on Foundations of Computer Science (**FOCS 2011**)

Xiaohui Bei and Zhiyi Huang

Bayesian incentive compatibility via fractional assignments

22nd ACM-SIAM Symposium on Discrete Algorithms (**SODA 2011**)

Zhiyi Huang, Lei Wang, and Yuan Zhou

Black-box reductions in mechanism design

14th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (**APPROX 2011**)

Zhiyi Huang and Sampath Kannan

Sampling from constrained multivariate distribution

15th International Workshop on Randomization and Computation (**RANDOM 2011**)

Tanmoy Chakraborty, Zhiyi Huang, and Sanjeev Khanna

Dynamic and non-uniform pricing strategies for revenue maximization

50th Annual IEEE Symposium on Foundations of Computer Science (**FOCS 2009**)

Invited to SIAM Journal on Computing (**SICOMP**), special issue for FOCS 2009

Sudipto Guha and Zhiyi Huang

Revisiting the direct sum theorem and space lower bounds in random order streams

36th International Colloquium on Automata, Languages and Programming (**ICALP 2009**)

Shiteng Chen, Zhiyi Huang, and Sampath Kannan
Reconstructing numbers from pairwise function values
20th International Symposium on Algorithms and Computation (ISAAC 2009)
Invited to Algorithmica, special issue for ISAAC 2009

Working Papers

T-H. Hubert Chan, Zhiyi Huang, Ning Kang
Online convex covering and packing problems

Justin Hsu, Zhiyi Huang, Aaron Roth, and Zhiwei Steven Wu
Jointly private convex programming

Nikhil R. Devanur, Miro Dudik, Zhiyi Huang, and David Pennock
Budget constraints in prediction markets

Zhiyi Huang, Nikhil R. Devanur, and David Malec
Sequential auctions of identical items with budget-constrained bidders

Theses

Zhiyi Huang
New techniques for computation over private data
Doctoral dissertation, advised by Prof. Sampath Kannan and Prof. Aaron Roth, 2013

Zhiyi Huang
On constructing web directory based on user behavior (in Chinese)
Bachelor thesis, advised by Prof. Yiqun Liu and Prof. Shaoping Ma, 2008

External Grant

2014 – 2017 *Privacy-preserving mechanisms in economic markets*
HKU27200214E, Research Grant Council of Hong Kong, Early Career Scheme

Selected Talks (excluding conference presentations)

Online primal dual: beyond linear programs
– Hong Kong Theory Day, January, 2015

Making the most of your samples
– Berkeley EconCS Seminar, March, 2014

Primal dual gives optimal energy efficient online algorithms
– Stanford Theory Lunch, February, 2014

Privacy-preserving auctions

- Dagstuhl Seminar on Electronic Markets and Auctions, November, 2013
- EC Workshop on Privacy and Economics, June, 2013
- UW-MSR Theory Center, August, 2012.
- Microsoft Research, Redmond, July, 2012.
- Hong Kong University of Science and Technology, May, 2012.
- The Chinese University of Hong Kong, April, 2012.
- University of Pennsylvania, December, 2011.

Whole-page optimization and submodular welfare maximization with online bidders

- MSR Asia, May, 2013
- Shanghai Jiaotong University, May, 2013

(Generalized) online bipartite matching with free-disposal

- Shanghai Jiao Tong University, May, 2013.
- Microsoft Research Asia, May, 2013.

How to compute over private data?

- The University of Hong Kong, March, 2013
- The Hong Kong University of Science and Technology, March, 2013
- Microsoft Research, Redmond, February, 2013
- Microsoft Research, Silicon Valley, January, 2013
- Microsoft Research, New England, January, 2013

Exploiting metric structure for efficient private query release

- DIMACS, October, 2012.

Bayesian incentive compatibility via fractional assignments

- China Theory Week, Tsinghua University, September, 2011
- University of Pennsylvania, May, 2010.

Dynamic and non-uniform pricing strategies for revenue maximization

- University of Pennsylvania, October, 2009.

Professional Services

Program committee: EC 2015, ISAAC 2015

Teaching

2015 Spring CSIS0250/COMP3250A Design and Analysis of Algorithms

Patents

Energy-efficient job scheduling. (US 2014/0380321 A1)

Real-time prediction market. (US 2014/0379462 A1)