

Yuan Zhou

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CURRENT POSITION	Assistant Professor Computer Science Department Indiana University at Bloomington	Luddy Hall Bloomington IN 47405, USA
EDUCATION	Ph.D. in Computer Science, Carnegie Mellon University <i>Pittsburgh, Pennsylvania, USA, 2009 – 2014</i> Advisors: Prof. Venkatesan Guruswami and Prof. Ryan O'Donnell	
	M.Sc. in Computer Science, Carnegie Mellon University <i>Pittsburgh, Pennsylvania, USA, 2009 – 2013</i>	
	B.Eng. in Computer Science, Tsinghua University <i>Beijing, China, 2005 – 2009</i> Tsinghua University – Microsoft CS Pilot Class (Led by Professor Andrew C.C. Yao) GPA: 94.1/100, Rank 1/130	
RESEARCH INTERESTS	My research interests encompass <i>operations research & management, machine learning theory, and theoretical computer science</i> , with an emphasis on the following topics. Stochastic optimization Decision under uncertainty (e.g. bandit decision problems) Process flexibility for supply chain & management Analysis of linear programming/semidefinite programming relaxations Approximation algorithms and inapproximability for discrete optimization problems	
PROFESSIONAL APPOINTMENTS	Assistant Professor Computer Science Department Indiana University at Bloomington	2016.08 – present
	Adjunct Assistant Professor Department of Industrial and Enterprise Systems Engineering University of Illinois Urbana-Champaign	2018.05 – present
	Visiting Assistant Professor Shanghai University of Finance and Economics	2017.06 – present
	Instructor in Applied Mathematics Mathematics Department Massachusetts Institute of Technology	2014.08 – 2016.06
PUBLICATIONS	Note: in papers related to theoretical computer science and operations research, authors are usually listed in alphabetical order.	
MANUSCRIPTS	On Asymptotically Tight Tail Bounds for Sums of Geometric and Exponential Random Variables Yaonan Jin, Yingkai Li, Yining Wang, Yuan Zhou	
	Dynamic Assortment Selection under the Nested Logit Models Xi Chen, Yining Wang, Yuan Zhou	

Near-Optimal Policies for Dynamic Multinomial Logit Assortment Selection Models
Yining Wang, Xi Chen, Yuan Zhou

Tight Bounds for Collaborative PAC Learning via Multiplicative Weights
Jiecao Chen, Qin Zhang, Yuan Zhou

Error Reduction in Off-Policy Evaluation and Learning from Logged Bandit Feedback

Yuan Xie, Boyi Liu, Qiang Liu, Zhaoran Wang, Yuan Zhou, Jian Peng

Optimal Maximum Gap Estimation in the Multi-armed Bandit
Chao Tao, Yuan Zhou, Xi Chen, Assaf Zeevi

SELECTED JOURNAL PUBLICATIONS **Optimal Design of Process Flexibility for General Production Systems**

Xi Chen, Tengyu Ma, Jiawei Zhang, Yuan Zhou

Operations Research (to appear)

Optimal Sparse Designs for Process Flexibility via Probabilistic Expanders

Xi Chen, Jiawei Zhang, Yuan Zhou

Operations Research 63-5 (2015), pp. 1159-1176

SELECTED
CONFERENCE
PUBLICATIONS

Best Arm Identification in Linear Bandits with Linear Dimension Dependency

Chao Tao, Saúl Blanco Yuan Zhou

ICML 2018, Proceedings of the 35th International Conference on Machine Learning

Adaptive Multiple-Arm Identification

Jiecao Chen, Xi Chen, Qin Zhang, Yuan Zhou

ICML 2017, Proceedings of the 34th International Conference on Machine Learning

Parameterized Algorithms for Constraint Satisfaction Problems Above Average with Global Cardinality Constraints

Xue Chen, Yuan Zhou

SODA 2017, Proceedings of the 28th annual ACM-SIAM Symposium on Discrete Algorithms

Satisfiability of Ordering CSPs Above Average Is Fixed-Parameter Tractable

Konstantin Makarychev, Yury Makarychev, Yuan Zhou

FOCS 2015, Proceedings of the 56th Annual Symposium on Foundations of Computer Science

Optimal PAC Multiple Arm Identification with Applications to Crowdsourcing

Yuan Zhou, Xi Chen, Jian Li

ICML 2014, the 31st International Conference on Machine Learning

Hardness of Robust Graph Isomorphism, Lasserre Gaps, and Asymmetry of Random Graphs

Ryan O'Donnell, John Wright, Chenggang Wu, Yuan Zhou

SODA 2014, Proceedings of the 25th annual ACM-SIAM Symposium on Discrete Algorithms

Hypercontractive inequalities via SOS, with an application to Vertex-Cover

Manuel Kauers, Ryan O'Donnell, Li-Yang Tan, Yuan Zhou

SODA 2014, Proceedings of the 25th annual ACM-SIAM Symposium on Discrete Algorithms

Approximability and proof complexity

Ryan O'Donnell, Yuan Zhou

SODA 2013, Proceedings of the 24th annual ACM-SIAM Symposium on Discrete Algorithms

Hypercontractivity, Sum-of-Squares Proofs, and their Applications

Boaz Barak, Fernando Brandão, Aram Harrow, Jonathan Kelner, David Steurer, Yuan Zhou
STOC 2012, Proceedings of the 44th annual ACM Symposium on Theory of Computing Conference

Invited to *SIAM Journal on Computing*

Polynomial integrality gaps for strong SDP relaxations of Densest k -Subgraph

Aditya Bhaskara, Moses Charikar, Venkatesan Guruswami, Aravindan Vijayaraghavan, Yuan Zhou

SODA 2012, Proceedings of the 23th annual ACM-SIAM Symposium on Discrete Algorithms

Approximation Algorithms and Hardness of the k -Route Cut Problem

Julia Chuzhoy, Yury Makarychev, Aravindan Vijayaraghavan, Yuan Zhou

SODA 2012, Proceedings of the 23th annual ACM-SIAM Symposium on Discrete Algorithms

To appear in *ACM Transactions on Algorithms*

Tight Inapproximability Bounds for Almost-satisfiable Horn SAT and Exact Hitting Set

Venkatesan Guruswami, Yuan Zhou

SODA 2011, Proceedings of the 22th annual ACM-SIAM Symposium on Discrete Algorithms

Theory of Computing 8, pp. 239–267 (2012)

ADDITIONAL
PUBLICATIONS

Constant Factor Lasserre Gaps for Graph Partitioning Problems

Venkatesan Guruswami, Ali Kemal Sinop, Yuan Zhou

SIAM Journal on Optimization 24–4 (2014), pp. 1698–1717

Optimal strong parallel repetition for projection games on low threshold rank graphs

Madhur Tulsiani, John Wright, Yuan Zhou

ICALP 2014, Proceedings of the 41st International Colloquium on Automata, Languages and Programming

The Fourier Entropy-Influence Conjecture for certain classes of Boolean functions

Ryan O’Donnell, John Wright, Yuan Zhou

ICALP 2011, Proceedings of the 38th International Colloquium on Automata, Languages and Programming

Hardness of Max-2Lin and Max-3Lin over integers, reals, and large cyclic groups

Ryan O’Donnell, Yi Wu, Yuan Zhou

CCC 2011, Proceedings of the 26th annual IEEE Conference on Computational Complexity

ACM Transactions on Computation Theory 7(2), Article 9 (May 2015)

Locally Testable Codes and Cayley Graphs

Parikshit Gopalan, Salil Vadhan, Yuan Zhou

ITCS 2014, Proceedings of the 5th Innovations in Theoretical Computer Science conference

Approximation Schemes via Sherali-Adams Hierarchy for Dense Constraint Satisfaction Problems and Assignment Problems

Yuichi Yoshida, Yuan Zhou

ITCS 2014, Proceedings of the 5th Innovations in Theoretical Computer Science conference

Linear programming, width-1 CSPs, and robust satisfaction

Gabor Kun, Ryan O’Donnell, Suguru Tamaki, Yuichi Yoshida, Yuan Zhou

ITCS 2012, Proceedings of the 3rd Innovations in Theoretical Computer Science conference

Finding almost-perfect graph bisections

Venkatesan Guruswami, Yury Makarychev, Prasad Raghavendra, David Steurer, Yuan Zhou

ITCS 2011, Proceedings of the 2nd Innovations in Theoretical Computer Science conference

Optimal lower bounds for locality sensitive hashing (except when q is tiny)

Ryan O'Donnell, Yi Wu, Yuan Zhou

ITCS 2011, Proceedings of the 2nd Innovations in Theoretical Computer Science conference
ACM Transactions on Computation Theory 6(1), Article 5 (March 2014)

Deterministic Coupon Collection and Better Strong Dispersers

Raghu Meka, Omer Reingold, Yuan Zhou

RANDOM 2014, the 18th International Workshop on Randomization and Computation

Approximating bounded occurrence ordering CSPs

Venkatesan Guruswami, Yuan Zhou

APPROX 2012, Proceedings of the 15th International Workshop on Approximation, Randomization, and Combinatorial Optimization

Black-box reduction in mechanism design

Zhiyi Huang, Lei Wang, Yuan Zhou

APPROX 2011, Proceedings of the 14th International Workshop on Approximation, Randomization, and Combinatorial Optimization

Surviving Rates of Graphs with Bounded Treewidth for the Firefighter Problem

Leizhen Cai, Yongxi Cheng, Elad Verbin, Yuan Zhou

SIAM Journal on Discrete Mathematics 24(4), pp. 1322–1335 (2010)

Tighter Bounds for Facility Games

Pinyan Lu, Yajun Wang, Yuan Zhou

WINE 2009, Proceedings of the 5th International Workshop on Internet and Network Economics

On the α -Sensitivity of Nash Equilibria in PageRank-Based Network Reputation Games

Wei Chen, Shang-Hua Teng, Yajun Wang, Yuan Zhou

FAW 2009, Proceedings of the 3rd International Workshop on Frontiers in Algorithmics
Invited to *Theoretical Computer Science*

TALKS GIVEN

School of Economics and Management, Tsinghua University, **Stochastic Optimization with Applications to Management**, 2018.06

Nanjing Theory Day, **Data Driven Algorithms for Assortment Planning**, 2018.05

Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign, **Stochastic Optimization with Applications to Management**, 2018.01

Nanjing University, **Parameterized Algorithms for Constraint Satisfaction Problems Above Average with Global Cardinality Constraints**, 2017.06

Computer Science Department, Indiana University at Bloomington, **Optimal Sparse Designs for Process Flexibility via Probabilistic Expanders**, 2016.10

Shanghai University of Finance and Economics, **Optimal Sparse Designs for Process Flexibility via Probabilistic Expanders**, 2016.07

ISMP 2015, **Optimal Sparse Designs for Process Flexibility via Probabilistic Expanders**, 2015.07

Computer Science Department, Indiana University at Bloomington, **Understanding the Power of Convex Relaxation Hierarchies: Effectiveness and Limitations**, 2014.03

Institute for Computational and Experimental Research in Mathematics, Brown University,

Hardness of Robust Graph Isomorphism, Lasserre Gaps, and Asymmetry of Random Graphs, 2014.02

Computer Science Department, Dartmouth College, **Understanding the Power of Convex Relaxation Hierarchies: Effectiveness and Limitations**, 2014.02

ITCS 2014, **Approximation Schemes via Sherali-Adams Hierarchy for Dense Constraint Satisfaction Problems and Assignment Problems**, 2014.01

ITCS 2014, **Locally Testable Codes and Cayley Graphs**, 2014.01

SODA 2014, **Hypercontractive inequalities via SOS, and Frankl-Rödl graph**, 2014.01

Institute for Interdisciplinary Information Sciences, Tsinghua University, **Approximability and proof complexity**, 2014.01

Nanjing University, **Optimal PAC Multiple Arm Identification with Applications to Crowdsourcing**, 2013.12

Institute for Interdisciplinary Information Sciences, Tsinghua University, **Optimal PAC Multiple Arm Identification with Applications to Crowdsourcing**, 2013.12

Microsoft Research Asia, **Optimal PAC Multiple Arm Identification with Applications to Crowdsourcing**, 2013.12

Academy of Mathematics and Systems Science, Chinese Academy of Sciences, **Hardness of Robust Graph Isomorphism, Lasserre Gaps, and Asymmetry of Random Graphs**, 2013.12

Institute of Computing Technology, Chinese Academy of Sciences, **Hardness of Robust Graph Isomorphism, Lasserre Gaps, and Asymmetry of Random Graphs**, 2013.12

Microsoft Research Redmond, **Hardness of Robust Graph Isomorphism, Lasserre Gaps, and Asymmetry of Random Graphs**, 2013.11

The Chinese University of Hong Kong, **Approximability and proof complexity**, 2013.01

SODA 2013, **Approximability and proof complexity**, 2013.01

Purdue University Theory Seminar, **Approximating k -route cuts**, 2012.09

APPROX 2012, **Approximating bounded occurrence ordering CSPs**, 2012.08

The Microsoft Research–University of Washington Experience Theory Project, **Approximability and proof complexity**, 2012.08

Theory Seminar at IBM Almaden Research Center, **Approximability and proof complexity**, 2012.07

STOC 2012, **Hypercontractive norms, Sum-of-Squares Proofs, and their applications**, 2012.05

SODA 2012, **Polynomial integrality gaps for strong SDP relaxations of Densest k -Subgraph**, 2012.01

Theory Lunch at Carnegie Mellon University, **Approximating k -route cuts**, 2011.12

Microsoft Research Asia, **Approximating k -route cuts**, 2011.10

Institute of Computing Technology, Chinese Academy of Sciences, **Approximating k -route cuts**, 2011.10

Yangtze Microsoft Colloquium on Theoretical Computer Science, **Approximating k -route cuts**, 2011.10

China Theory Week 2011, **Approximating k -route cuts**, 2011.10

CCC 2011, **Hardness of Solving Sparse Linear Equations over Integers (and Large Cyclic Groups)**, 2011.06

Theory Lunch at Carnegie Mellon University, **Finding Almost-Perfect Graph Bisections**, 2011.04

SODA 2011, **Tight Bounds on the Approximability of Almost-satisfiable Horn SAT and Exact Hitting Set**, 2011.01

Yangtze Microsoft Colloquium on Theoretical Computer Science, **Optimal lower bounds for Locality Sensitive Hashing (except when q is tiny)**, 2011.01

ITCS 2011, **Optimal lower bounds for Locality Sensitive Hashing (except when q is tiny)**, 2011.01

ITCS 2011, **Finding Almost-Perfect Graph Bisections**, 2011.01

Theory Lunch at Carnegie Mellon University, **Tight Bounds on the Approximability of Almost-satisfiable Horn SAT**, 2010.12

Theory Seminar at University of Chicago, **Tight Bounds on the Approximability of Almost-satisfiable Horn SAT**, 2010.06

WINE 2009, **Tighter Bounds for Facility Games**, 2009.12

Theory Lunch at Carnegie Mellon University, **Tighter Bounds for Facility Games**, 2009.12

Microsoft Research Asia Theory Group Seminar, **The existence of α -sensitive Nash equilibria in PageRank games**, 2008.11

TEACHING

CSCI B503 Algorithm Design and Analysis IU-Bloomington, Fall 2017
Course evaluation: 91% of the students rate the quality of this class as outstanding.

CSCI B490 Competitive Programming IU-Bloomington, Fall 2017

CSCI B503 Algorithm Design and Analysis IU-Bloomington, Spring 2017
Course evaluation: 60% of the students rate the quality of this class as outstanding.

CSCI B609 A Theorist's Toolkit IU-Bloomington, Fall 2016
Course evaluation: 100% of the students rate the quality of this class as outstanding.

18.434 Undergraduate Seminar in Theoretical Computer Science MIT, Spring 2016
Course evaluation: 6.8/7.0

6.006 Introduction to Algorithms MIT, Spring 2015
Course evaluation: 4.9/7.0

Coach and Science Committee Member of Chinese Olympiad in Informatics
2005, 2006, 2007

PROFESSIONAL
SERVICES

Program committee member for the following conferences
– ITCS 2018, Innovations in Theoretical Computer Science conference

Reviewer for the following journals

- SIAM Journal on Computing
- Theory of Computing
- Algorithmica
- INFORMS Journal on Computing
- Theoretical Computer Science
- Management Science
- Operations Research Letters
- Journal of Computer Science and Technology

Reviewer for the following conferences

- STOC, ACM Symposium on Theory of Computing
- FOCS, IEEE Symposium on Foundations of Computer Science
- SODA, SIAM-ACM Symposium on Discrete Algorithms
- CCC, IEEE Conference on Computational Complexity
- ICALP, International Colloquium on Automata, Languages, and Programming
- ITCS, Innovations in Theoretical Computer Science conference
- ESA, European Symposium on Algorithms
- APPROX/RANDOM, International Workshop on Approximation, Randomization, and Combinatorial Optimization
- FSTTCS, Conference on Foundations of Software Technology and Theoretical Computer Science
- STACS, International Symposium on Theoretical Aspects of Computer Science
- ISAAC, International Symposium on Algorithms and Computation
- FAW, International Workshop on Frontiers in Algorithmics
- CATS, Computing: the Australasian Theory Symposium

Reviewer for the following grant agencies

- The Research Grants Council, Hong Kong

SELECTED AWARDS
AND HONORS

Invited young researcher at the 1st Heidelberg Laureate Forum, 2013

Simons Graduate Fellowship in Theoretical Computer Science, 2012

ACM International Collegiate Programming Contest, World Finals, KTH(Royal Institute of Technology, Sweden), 2nd Place, 2009

National Scholarship, 1st Prize. Offered by the Chinese Ministry of Education, Tsinghua University, 2007 and 2008

Tsinghua-Samsung Scholarship, 1st Prize, 2006

International Olympiad in Informatics, Poland, Gold Medal (1st Place and full mark), 2005

REFERENCES

Available upon request