

PINYAN LU

Researcher

Microsoft Research Asia

<http://research.microsoft.com/en-us/people/pinyanl/>

86-10-59173005

pinyanl@microsoft.com

Education

- Tsinghua University** 09/2005-01/2009
• Ph.D. in Computer Science Beijing, P. R. China
Advisors: Prof. Andrew C. Yao and Prof. Jin-Yi Cai
Thesis: The Complexity of Counting Problems and Holographic Algorithms
- Tsinghua University** 09/2001-07/2005
• B.E. in Computer Science Beijing, P. R. China
- The 1st High School of Jiaxing** 09/1998-07/2001

Publications

1. **Non-negative Weighted #CSPs: An Effective Complexity Dichotomy.** with Jin-Yi Cai and Xi Chen, CCC 2011.
2. **The Complexity of Weighted Boolean #CSP Modulo k .** with Heng Guo, Sangxia Huang, and Mingji Xia, STACS 2011.
3. **Dichotomy for Holant* Problems of Boolean Domain.** with Jin-yi Cai and Mingji Xia, SODA 2011.
4. **On the Approximability of Budget Feasible Mechanisms.** with Ning Chen and Nick Gravin, SODA 2011.
5. **Envy-free Pricing with General Supply Constraints.** with Sungjin Im and Yajun Wang, WINE 2010.
6. **From Holant To #CSP And Back: Dichotomy For Holant^c Problems.** with Jin-Yi Cai and Sangxia Huang, ISAAC 2010.
7. **Holographic Algorithms with Matchgates Capture Precisely Tractable Planar #CSP.** with Jin-Yi Cai and Mingji Xia, FOCS 2010.
8. **On Tractable Exponential Sums.** with Jin-Yi Cai, Xi Chen and Richard Lipton, FAW 2010.
9. **Graph Homomorphisms with Complex Values: A Dichotomy Theorem.** with Jin-Yi Cai and Xi Chen, ICALP 2010.
10. **Asymptotically Optimal Strategy-Proof Mechanisms for Two-Facility Games.** with Xiaorui Sun, Yajun Wang and Zeyuan Allen Zhu, ACM EC 2010.
11. **On 2-Player Randomized Mechanisms for Scheduling.** WINE 2009.
12. **Tighter Bounds for Facility Games.** with Yajun Wang and Yuan Zhou, WINE 2009.
13. **Holant Problems and Counting CSP.** with Jin-Yi Cai and Mingji Xia, STOC 2009.

14. **A Computational Proof of Complexity of Some Restricted Counting Problems.** with Jin-Yi Cai and Mingji Xia, TAMC 2009.
15. **Worst-Case Nash Equilibria in Restricted Routing.** with Changyuan Yu, WINE 2008.
16. **Randomized Truthful Mechanisms for Scheduling Unrelated Machines.** with Changyuan Yu, WINE 2008.
17. **Signature Theory in Holographic Algorithms.** with Jin-Yi Cai, ISAAC 2008.
18. **Holographic Algorithms by Fibonacci Gates and Holographic Reductions for Hardness.** with Jin-Yi Cai and Mingji Xia, FOCS 2008.
19. **An Improved Randomized Truthful Mechanism for Scheduling Unrelated Machines.** with Changyuan Yu, STACS 2008.
20. **Holographic Algorithms with Unsymmetric Signatures.** with Jin-Yi Cai, SODA 2008.
21. **On Block-wise Symmetric Signatures for Matchgates.** with Jin-Yi Cai, FCT 2007.
22. **Holographic Algorithms: The Power of Dimensionality Resolved.** with Jin-Yi Cai, ICALP 2007.
23. **Holographic Algorithms: From Art to Science.** with Jin-Yi Cai, STOC 2007.
24. **Bases Collapse in Holographic Algorithms.** with Jin-Yi Cai, CCC 2007.
25. **On the Theory of Matchgate Computations.** with Jin-Yi Cai and Vinay Choudhary, CCC 2007.
26. **On Symmetric Signatures in Holographic Algorithms.** with Jin-Yi Cai, STACS 2007.
27. **Truthful Auctions with Optimal Profit.** with Shang-Hua Teng and Changyuan Yu, WINE 2006.
28. **Simulating Undirected st -Connectivity Algorithms on Uniform JAGs and NNJAGs.** with jialin zhang, Chung Keung Poon, Jin-Yi Cai, ISAAC 2005.

Honors and Awards

- **Best Paper Award in ISAAC 2010**
Received a best paper award, given by the program committee of ISAAC 2010 for the paper “From Holant To #CSP And Back: Dichotomy For Holant^c Problems.”.
- **Best Paper Award in FAW 2010**
Received a best paper award, given by the program committee of the Fourth International Frontiers of Algorithmics Workshop (FAW 2010) for the paper “On Tractable Exponential Sums”.
- **Excellent PhD Thesis Award 2009**
Received a Excellent PhD Thesis Award from Tsinghua University for the PhD thesis “The Complexity of Counting Problems and Holographic Algorithms”.

- **Microsoft Research Fellowship 2008**
Microsoft Research Asia Fellowship Program is designed to empower and encourage PhD students in the Asia-Pacific region to realize their potential in computer science-related research as well as recognizing and awarding outstanding PhD students.
- **Best Paper Award in ICALP 2007**
Received a best ICALP paper award, given by the European Association for Theoretical Computer Science (EATCS) for the paper “Holographic Algorithms: The Power of Dimensionality Resolved”.
- **Tsinghua Top-Grade Scholarship 2007**
This is the highest honor for students in Tsinghua University, and is given to at most 5 outstanding students out of about 13,000 graduate students each year.

Invited Seminars and Talks

- **Holographic Algorithms Capture Precisely Tractable Planar #CSP**
Theory seminar at East China Normal Univ.. Dec.31, 2010. Shanghai, P.R. China
- **Complexity Dichotomies of Counting Problems** Dec.18, 2010
45-minutes invited talk at ICCM 2010 Beijing, P.R. China
- **Complexity Dichotomies of Counting Problems** Dec.7, 2010
Theory seminar at Nanjing Univ. Nanjing, P.R. China
- **Asymptotically Optimal Strategy-Proof Mechanisms for Two-Facility Games**
Theory seminar at MPI. Dec.4, 2010. Saarbrücken , Germany
- **Complexity Dichotomies of Holant Problems** Nov 28, 2010
Dagstuhl Seminar on Computational Counting. Dagstuhl, Germany
- **Asymptotically Optimal Strategy-Proof Mechanisms for Two-Facility Games**
Theory seminar at ITCS of Tsinghua Univ. May.13, 2010. Beijing, P.R. China
- **Asymptotically Optimal Strategy-Proof Mechanisms for Two-Facility Games**
Algorithm and Information Colloquium at CAS. Apr.14, 2010. Beijing, P.R. China
- **Asymptotically Optimal Strategy-Proof Mechanisms for Two-Facility Games**
Theory seminar at SJTU BASICS lab. Apr.1, 2010. Shanghai, P.R. China
- **The Complexity of Counting Problems and Holographic Algorithms**
Theory seminar at Peking Univ. Jul.2, 2009. Beijing, P.R. China
- **The Complexity of Counting Problems and Holographic Algorithms**
Annual Meeting of AAAC 2009. Apr.11, 2009. Hangzhou, P.R. China
- **Holographic Reduction: Design Algorithms and Prove Hardness**
China Theory Week at Tsinghua Univ. Sep.23, 2008. Beijing, P.R. China
- **Holographic Reduction: Design Algorithms and Prove Hardness**
Theory seminar at the Chinese Univ. of Hong Kong. May.5, 2008. Hong Kong

- **Randomized Truthful Mechanisms for Scheduling Unrelated Machines**
Theory seminar at HongKong Univ. of Sci. & Tech. May.2, 2008. Hong Kong
- **Holographic Algorithms with Unsymmetric Signatures** Sep.17, 2007
China Theory Week at Tsinghua Univ. Beijing, P.R. China
- **Holographic Algorithms** Aug.6, 2007
BASICS Summer School. Zhejiang, P.R. China
- **Holographic Algorithms: From Art to Science** Apr.11, 2007
China Theory Day at Tsinghua Univ. Beijing, P.R. China
- **Holographic Algorithms: From Art to Science** Feb.27, 2007
Theory seminar at TTI and Univ. of Chicago. Chicago, IL, U.S.A
- **Holographic Algorithms: From Art to Science** Feb.26, 2007
Theory Seminar at IIT. Chicago, IL, U.S.A
- **Holographic Algorithms** Feb.14, 2007
Theory Chit-Chat at Univ. of Wisconsin. Madison, WI, U.S.A
- **Holographic Algorithms: From Art to Science** Dec.8, 2006
Theory Seminar at Boston Univ. Boston, MA, U.S.A

Past and Current Intern Students at MSRA

- Liang Li (from Peking University)
- Xue Chen (from Tsinghua)
- Nick Gravin (from NTU)
- Zeyuan Zhu (from MIT)
- Lei Wang (from Georgia Institute of Technology)
- Sangxia Huang (from KTH)
- Yuan Zhou (from CMU)

Research and Teaching Experiences

- **Visiting Scholar** Jun. 2008 - Sep. 2008
University of Wisconsin-Madison Madison, WI, U.S.A
- **Teaching Assistant** Feb.2008-Jun.2008
Distributed Computing by Dr. Wei Chen Beijing, P.R. China
- **Visiting Scholar** Jun. 2007 - Jul. 2007
University of Wisconsin-Madison Madison, WI, U.S.A
- **Visiting Scholar** Sep. 2006 - Mar. 2007
University of Wisconsin-Madison Madison, WI, U.S.A

- **Visiting Student**
Microsoft Research Asia
Dec.2005 - Jun.2006
Beijing, P.R. China
- **Teaching Assistant**
Theoretical Computer Science by Prof. Andrew C. Yao
Feb.2006-Jun.2006
Beijing, P.R. China
- **Visiting Scholar**
University of Michigan-Ann Arbor
Jul.2005-Sep.2005
Ann Arbor, MI, U.S.A