YAONAN JIN

jin.yaonan@columbia.edu

EMPLOYMENT

Huawei's Taylor Lab (Shanghai) 2023.05 – present
Researcher (Huawei's Top Minds Scheme)

EDUCATION

Columbia University 2019.09 – 2023.04
Ph.D. in Computer Science, advised by Xi Chen and Rocco Servedio
Thesis: *Bayesian Auction Design and Approximation*

Hong Kong University of Science and Technology 2017.09 – 2018.12
MPhil in Operations Research, advised by Qi Qi
Thesis: *Tight Approximation Ratio of Anonymous Pricing*

Shanghai Jiao Tong University 2013.09 – 2017.06
BEng in Computer Science

RESEARCH INTERESTS

Theoretical Computer Science

Economics and Computation

Online Algorithms

Combinatorial Optimization

INVITED ARTICLES

[S1] Yaonan Jin and Pinyan Lu
Settling the Efficiency of First Price Auction [PDF]
ACM SIGecom Exchanges, 20(2): 69–74, 2022

[S2] Yaonan Jin, Pinyan Lu, Qi Qi, Zhihao Tang, and Tao Xiao
Tight Revenue Gaps among Simple and Optimal Mechanisms [PDF]
ACM SIGecom Exchanges, 17(2): 54–61, 2019

JOURNAL PAPERS

* Names of PhD/MS/intern student authors mentored are underlined.
In Theoretical Computer Science, authors are listed alphabetically.

[J1] Yaonan Jin and Pinyan Lu
Benchmark-Tight Approximation Ratio of Simple Mechanism for a Unit-Demand Buyer
Submitted to SIAM Journal on Computing (Minor Revision)

[J2] Yaonan Jin and Pinyan Lu
First Price Auction is $1 - 1/e^2$ *Efficient* [arXiv]
Journal of the ACM, 70(5): 36:1-36:86

[J3] Xi Chen, Yaonan Jin, Tim Randolph, and Rocco Servedio
Average-Case Subset Balancing Problems [arXiv]
Submitted to Random Structures & Algorithms

[J4] Jarosław Błasiok, Peter Ivanov, Yaonan Jin, Chin Ho Lee, Rocco Servedio, and Emanuele Viola
Fourier Growth of Structured $\mathbb{F}_2$-Polynomials and Applications [arXiv] [ECCC]
Invited Paper, to appear in Theory of Computing

[J5] Yaonan Jin, Shunhua Jiang, Pinyan Lu, and Hengjie Zhang
Tight Revenue Gaps among Multi-Unit Mechanisms [arXiv]
SIAM Journal on Computing, 51(5): 1535–1579, 2022

[J6] Nick Gravin, Yaonan Jin, Pinyan Lu, and Chenhao Zhang
Optimal Budget-Feasible Mechanisms for Additive Valuations [arXiv]
ACM Transactions on Economics and Computation, 8(4): 1–15, 2020

[J7] Yaonan Jin, Pinyan Lu, Zhihao Tang, and Tao Xiao
Tight Revenue Gaps among Simple Mechanisms [arXiv]
SIAM Journal on Computing, 49(5): 927–958, 2020

CONFERENCE PAPERS

[C1] Shaofeng H.-C. Jiang, Yaonan Jin, Jianing Lou, and Pinyan Lu
Local Search for Clustering in Almost-linear Time [arXiv]
37th ACM-SIAM Symposium on Discrete Algorithms (SODA 2026)

[C2] Yiding Feng and Yaonan Jin
Beyond Regularity: Simple versus Optimal Mechanisms, Revisited [arXiv]
66th IEEE Symposium on Foundations of Computer Science (FOCS 2025)

[C3] Yaonan Jin and Pinyan Lu
Benchmark-Tight Approximation Ratio of Simple Mechanism for a Unit-Demand Buyer
65th IEEE Symposium on Foundations of Computer Science (FOCS 2024)

[C4] Xi Chen, Yaonan Jin, Tim Randolph, and Rocco Servedio
Subset Sum in Time $2^{n/2}/\mathrm{poly}(n)$ [arXiv]
27th International Workshop on Randomization and Computation (RANDOM 2023)

[C5] Yaonan Jin, Pinyan Lu, and Tao Xiao
Learning Reserve Prices in Second Price Auctions [arXiv]
14th Innovations in Theoretical Computer Science Conference (ITCS 2023)

[C6] Yaonan Jin, Daogao Liu, and Zhao Song
Super-Resolution and Robust Sparse Continuous Fourier Transform in Any Constant Dimension: Nearly Linear Time and Sample Complexity [arXiv]
34th ACM-SIAM Symposium on Discrete Algorithms (SODA 2023)

[C7] Yaonan Jin and Pinyan Lu
The Price of Stability for First Price Auction [arXiv]
34th ACM-SIAM Symposium on Discrete Algorithms (SODA 2023)

[C8] Yaonan Jin and Pinyan Lu
First Price Auction is $1 - 1/e^2$ *Efficient* [arXiv]
63rd IEEE Symposium on Foundations of Computer Science (FOCS 2022)

[C9] Xi Chen, Yaonan Jin, Tim Randolph, and Rocco Servedio
Average-Case Subset Balancing Problems [arXiv]
33rd ACM-SIAM Symposium on Discrete Algorithms (SODA 2022)

[C10] Jarosław Błasiok, Peter Ivanov, Yaonan Jin, Chin Ho Lee, Rocco Servedio, and Emanuele Viola
Fourier Growth of Structured $\mathbb{F}_2$-Polynomials and Applications [arXiv] [ECCC]
25th International Workshop on Randomization and Computation (RANDOM 2021)

[C11] Yaonan Jin, Shunhua Jiang, Pinyan Lu, and Hengjie Zhang
Tight Revenue Gaps among Multi-Unit Mechanisms [arXiv]
22nd ACM Conference on Economics and Computation (EC 2021)

[C12] Yaonan Jin, Weian Li, and Qi Qi
On the Approximability of Simple Mechanisms for MHR Distributions [PDF]
15th Conference on Web and Internet Economics (WINE 2019)

[C13] Nick Gravin, Yaonan Jin, Pinyan Lu, and Chenhao Zhang
Optimal Budget-Feasible Mechanisms for Additive Valuations [arXiv]
20th ACM Conference on Economics and Computation (EC 2019)

[C14] Yaonan Jin, Pinyan Lu, Qi Qi, Zhihao Tang, and Tao Xiao
Tight Approximation Ratio of Anonymous Pricing [arXiv]
51st ACM Symposium on Theory of Computing (STOC 2019)

[C15] Yaonan Jin, Pinyan Lu, Zhihao Tang, and Tao Xiao
Tight Revenue Gaps among Simple Mechanisms [arXiv]
30th ACM-SIAM Symposium on Discrete Algorithms (SODA 2019)

MANUSCRIPTS

[M1] Houshuang Chen, Yaonan Jin, Pinyan Lu, and Chihao Zhang
The Query Complexity of Uniform Pricing [arXiv]

[M2] Sayan Bhattacharya, Martín Costa, Ermiya Farokhnejad, Shaofeng H.-C. Jiang, Yaonan Jin, and Jianing Lou
Fully Dynamic Euclidean k-Means [arXiv]

[M3] Houshuang Chen, Yaonan Jin, Pinyan Lu, and Chihao Zhang
Tight Regret Bounds for Fixed-Price Bilateral Trade [arXiv]

[M4] Yaonan Jin, Yingkai Li, Yining Wang, and Yuan Zhou
On Asymptotically Tight Tail Bounds for Sums of Geometric and Exponential Random Variables [arXiv]

GRANTS

- Huawei, Computing System Theory and Technology
  Title: *Welfare and Revenue Guarantees of Practical Auctions*
  Period: 2024.01 – 2025.12, Amount: 3,526,000 CNY

TALKS GIVEN

- *Markets as Approximation Algorithms: Their Design and Analysis*
  - HKU, School of Computing and Data Science, November 2025
  - HKUST, Department of Computer Science and Engineering, September 2025
  - CUHK-Shenzhen, School of Data Science, September 2025
- *Tight Regret Bounds for Fixed-Price Bilateral Trade*
  - SUFE ITCS Workshop, June 2025
  - Huawei's Taylor Lab, Theory Seminar, May 2025
  - CUHK, Theory Seminar, April 2025
  - HKUST, IEDA+CS, Theory Seminar, April 2025

  - HKU, Theory Seminar, April 2025
- *Local Search for Clustering in Almost-linear Time*
  - **Invited Talk**, HCP 2025, Augst 2025
- *Beyond Regularity: Simple versus Optimal Mechanisms, Revisited*
  - New York University Shanghai, Theory Seminar, October 2025
  - City University of Hong Kong, Theory Seminar, April 2025
  - Nanyang Technological University, Theory Seminar, November 2024
  - National University of Singapore, Department of Economics, November 2024
  - HKUST-Guangzhou, Information Hub, November 2024
  - Shanghai Jiao Tong University, Theory Seminar, November 2024
  - Huawei's Taylor Lab, Theory Seminar, November 2024
- *Benchmark-Tight Approximation Ratio of Simple Mechanism for a Unit-Demand Buyer*
  - National University of Singapore, Theory Seminar, November 2024
  - HKUST, IEDA, Theory Seminar, August 2024
  - **Invited Talk**, IJTCS 2024, July 2024
  - SUFE ITCS Workshop, June 2024
  - Renmin University of China, Gaoling School of Artificial Intelligence, December 2023
  - Chinese Academy of Sciences, Theory Seminar, December 2023
  - Tsinghua University, Yau Mathematical Sciences Center, December 2023
  - University of Science and Technology of China, Theory Seminar, December 2023
  - Huawei's Taylor Lab, Theory Seminar, November 2023
- *Bayesian Auction Design and Approximation*
  - Columbia Ph.D. Thesis Defense, April 2023
  - Columbia Ph.D. Thesis Proposal, January 2023
- *The Price of Stability for First Price Auction*
  - SODA 2023, January 2023
- *Learning Reserve Prices in Second Price Auctions*
  - ITCS 2023, January 2023
- *First Price Auction is* $1 - 1/e^2$ *Efficient*
  - **Invited Tutorial**, COCOON 2024, August 2024
  - Tsinghua University, Institute for Interdisciplinary Information Sciences, December 2023
  - University of Science and Technology of China, Theory Seminar, December 2023
  - Shanghai Jiao Tong University, Theory Seminar, December 2023
  - Fudan University, School of Data Science, Novenber 2023
  - **Invited Talk**, EC 2023 "Highlights beyond EC" Sessions, July 2023

- Chinese Academy of Sciences, Theory Seminar, December 2022
- TCS+ Talk, November 2022
- FOCS 2022, October 2022
- Harvard EconCS Seminar, October 2022
- UPenn Theory Seminar, October 2022
- Princeton Theory Seminar, October 2022
- Columbia Theory Seminar, September 2022

- *Bayesian Multi-Unit Revenue Maximization*
  - Columbia Ph.D. Candidacy Exam, May 2022
- *Tight Revenue Gaps among Multi-Unit Mechanisms*
  - EC 2021, July 2021
- *On the Approximability of Simple Mechanisms for MHR Distributions*
  - WINE 2019, December 2019
- *Optimal Budget-Feasible Mechanisms for Additive Valuations*
  - EC 2019, June 2019
  - SUFE Theory Seminar, April 2019
- *Tight Approximation Ratio of Anonymous Pricing*
  - China Computer Federation, TCS Ph.D. Forum, June 2021
  - STOC 2019, June 2019
  - SUFE Theory Seminar, April 2019
  - HKUST, IEDA, Reading Group, December 2018
- *Tight Revenue Gaps among Simple Mechanisms*
  - Northwestern Theory Seminar, March 2019
  - SODA 2019, January 2019
  - HKU Theory Seminar, December 2018
  - SUFE Theory Seminar, December 2017
  - HKUST, IEDA, Reading Group, October 2017

PROFESSIONAL SERVICES

Program Committee

- WWW 2026, WINE 2025, EC 2025

Journal Reviewer

- SIAM Journal on Computing, Algorithmica, Artificial Intelligence, ACM Transactions on Economics, Operations Research Letters

Conference Reviewer

- STOC, SODA, EC, ITCS, ISAAC, WWW, WINE, SAGT

Service to Huawei's Taylor Lab

- Panelist: Huawei Collaborative Research Project (with University Faculty), 6 panels
- Theory seminar organizer, 2023.05 – present

SELECTED HONORS

Featured in Huawei 2024 Annual Report (p. 68) [PDF] for Research Highlights on [C3] 2025

Invited Survey [S1] in ACM SIGecom Exchanges for Research Highlights on [C8] 2022

Invited Survey [S2] in ACM SIGecom Exchanges for Research Highlights on [C14][C15] 2019

National Scholarship (1st Prize), Shanghai Jiao Tong University 2014

TEACHING EXPERIENCES

Columbia University

- COMS 4246: Introduction to Computational Complexity — Fall 2020
  Graduate course in complexity theory (TA for Xi Chen)
- COMS 4995: Incentives in Computer Science — Spring 2020
  Graduate course in algorithmic economics (TA for Tim Roughgarden)

Shanghai University of Finance and Economics

- 1665/101389: Discrete Mathematics — Spring 2019
  Undergraduate course in discrete mathematics (TA for Nick Gravin)
- 0008/213583: Mathematical Tools and Efficient Algorithms — Summer 2018
  Graduate course in graph and algebraic algorithms (TA for Richard Peng)

Hong Kong University of Science and Technology

- IEDA 3300: Industrial Data Systems — Fall 2018
  Undergraduate course in database (TA for Qi Qi)
- IEDA 3300: Industrial Data Systems — Spring 2018
  Undergraduate course in database (TA for Qi Qi)

Shanghai Jiao Tong University

- CS 358: Data Structures — Fall 2016
  Undergraduate course in data structures (TA for Yong Yu)
- CS 358: Data Structures — Fall 2015
  Undergraduate course in data structures (TA for Yong Yu)