Xu, Jianyu

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Machine Learning Dept,
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ACADEMIC APPOINTMENTS

2024.9-current **Postdoctoral Research Associate** in Machine Learning (MLD), **Carnegie Mellon University**
Advisor: Prof. Aarti Singh and Prof. Bryan Wilder

2024.7-2024.9 **Visiting Scholar** in Operations Management (ISOM), **HKUST** Business School, Hong Kong
Host: Prof. Xuan Wang

EDUCATION

2019.9-2024.8 **Ph.D.** in **Computer Science, University of California Santa Barbara**
Advisor: Prof. Yu-Xiang Wang
Thesis title: Dynamic pricing as an online decision-making problem
Committee: Profs. Erik Eyster, Daniel Lokshtanov, Ambuj Singh, Yu-Xiang Wang

2015.8-2019.7 **B.S.** in **Measurement and Control**, **Tsinghua University, China**
Advisor: Prof. Guoqi Li
With honor of *Excellent Undergraduate Student*

RESEARCH INTERESTS

I am broadly interested in **online learning** and decision-making under uncertainty:

Theoretic foundations:

- Generative online learning with provable guarantees.
- Online optimization with non-convex structures.
- Dynamic pricing algorithms for complex markets.

Applications:

- AI-driven decision support for high-stakes healthcare applications.
- AI-assisted mathematical reasoning and automated theorem proving.

SELECTED PUBLICATIONS [Google Scholar]

(* for equal contributions.)

Preprints & Working Papers:

- **Xu, Jianyu**, Vidhi Jain, Bryan Wilder, Aarti Singh, "Contextual Bandits with Online Arm Generation."
  arxiv preprint, arXiv 2509.25777. (*in submission).*
- **Xu, Jianyu**, Xuan Wang, Yu-Xiang Wang, Jiashuo Jiang, "Pricing and resource allocation for multiple suppliers and customers."
  arxiv preprint, arXiv 2501.18049. (*in submission)*
- **Xu, Jianyu**, Hanwen Zhang, Liang Ling, Lei Deng, Yuan Xie, and Guoqi Li. "*NP*-hardness of tensor network contraction ordering."
  arxiv preprint, arXiv 2310.06140.

Conference Papers:

- **Xu, Jianyu**, Yining Wang, Xi Chen, and Yu-Xiang Wang, "Pricing with adversarial inventory levels." in *WINE* 2025. *(Full version forwarding to OR)*
- **Xu, Jianyu**, and Yu-Xiang Wang. "Contextual pricing with heteroscedastic elasticities. " in *ICML* 2024 ***(Spotlight Presentation, Top 3%)***.
- **Xu, Jianyu**, Dan Qiao, and Yu-Xiang Wang, "Doubly Fair Dynamic Pricing." in *AISTATS 2023*.
- **Xu, Jianyu**, and Yu-Xiang Wang, "Towards Agnostic Feature-based Dynamic Pricing: Linear Policies vs Linear Valuation with Unknown Noise." in *AISTATS 2022*. ***(Plenary Oral Presentation, Top 3%)***.
- **Xu, Jianyu**, and Yu-Xiang Wang, "Logarithmic Regret in Feature-based Dynamic Pricing." in *NeurIPS 2021*. ***(Spotlight Presentation, Top 3%)***.
- Chen, Wenhu, Ming Yin, Max Ku, Pan Lu, Yixin Wan, Xueguang Ma, **Jianyu Xu**, Xinyi Wang, and Tony Xia. "TheoremQA: A Theorem-driven Question Answering Dataset." in *EMNLP 2023*.

Journal Papers:

- Dheeraj Baby*, **Jianyu Xu***, and Yu-Xiang Wang, "Non-stationary Contextual Pricing with Safety Constraints." in *Transactions on Machine Learning Research*, 2023.
- Liang, Ling, **Jianyu Xu**, Lei Deng, Mingyu Yan, Xing Hu, Zheng Zhang, Guoqi Li, and Yuan Xie. "Fast Search of the Optimal Contraction Sequence in Tensor Networks." *IEEE Journal of Selected Topics in Signal Processing* 15, no. 3 (2021): 574-586. ***(Cover Paper)***
- **Xu, Jianyu**, Ling Liang, Lei Deng, Changyun Wen, Yuan Xie, and Guoqi Li. "Towards a polynomial algorithm for optimal contraction sequence of tensor networks from trees." *Physical Review E* 100, no. 4 (2019): 043309.
- **Xu, Jianyu**, Guoqi Li, Changyun Wen, Kun Wu, and Lei Deng. "Towards a unified framework of matrix derivatives." *IEEE Access* 6 (2018): 47922-47934.

AWARDS AND HONORS

2022 & 23 & 25	NeurIPS Top Reviewer Awards (Top 8%)
2018	Nomination for *Special Scholarship* of Tsinghua University
2016 & 17 & 18	Comprehensive Scholarship, Tsinghua University
2013 & 14	Silver Medals, 29th & 30th Chinese Mathematical Olympiad (CMO)
2014	Provincial Champion (1st /20,000+), Chinese Mathematical Contest (CMC)

PRESENTATIONS

Conference and Simposium:

- *Contextual Bandits with Online Arm Generation*, Midwest ML Symposium 2025, Chicago
- *Pricing with Adversarial Inventories*, INFORMS 2024, Seattle
- *Online Dynamic Pricing with Inventory-Censored Demands*, ITA 2024, San Diego
- *Dynamic Pricing with Procedural and Substantive Fairness*, INFORMS 2023, Phoenix
- *Linear Contextual Dynamic Pricing*, INFORMS 2022, Indianapolis
- *Towards Agnostic Feature-based Dynamic Pricing: Linear Policies vs Linear Valuation with Unknown Noise*, plenary oral presentation on AISTATS 2022, Virtual

- *Logarithmic Regret in Feature-Based Dynamic Pricing*, spotlight presentation on NeurIPS 2021, Virtual

Seminars:

- *Decisions and ML in Maternal Health*. In
  - NSF AI Institute for Societal Decision Making (AI-SDM), Mar 2025
  - CMU MLD reading group, Feb 2025.
- *Dynamic Pricing and Decision-Making*. In
  - Center of Statistics Sciences, Academy of Mathematics, Jan 2024
  - LAMDA Lab, Nanjing University, Mar 2023
  - Ant Finance Group, Jul 2021

Tutorials:

- *Maternal Health Chatbot*. Jul 2025
- *LLM for In-Context Exploration & Exploitation.* Feb 2025
- *Introduction to Zeroth-order Optimization.* Feb 2024.
- *Benign Overfitting*. Feb 2023.
- *Introduction to Minimax Risk Theory*. Mar 2022.
- *Dynamic Pricing in Different Valuation Models*. Mar 2021.
- *Dynamic Pricing in High-Dimensions*. Nov 2020.

INTERNSHIP

2022.6-2022.9 **Applied Scientist Intern** at **Amazon** Pricing Sciences & Research, Seattle
Supervisor: Dr. Pau Pereira
Developed multi-armed bandit algorithms for Amazon Retail pricing systems to escalate long-term free cash flow. Built up real-world demand simulator and train it on million-scale (daily sales records) data.

2021.7-2021.10 **Research Intern** at **AntGroup** Strategic Pricing & Promotion, Beijing & Hangzhou
Supervisor: Lihong Gu
Develop algorithms to attract new/sleeping/lost customers with personalized-value coupons.

TEACHING ASSISTANTSHIP

2024 Spring CS 40, *Foundations of Computer Science*, Dept. CS, UCSB
2020 Spring CS 165A, *Artificial Intelligence,* Dept. CS, UCSB
2020 Winter CS 165A, *Artificial Intelligence,* Dept. CS, UCSB
2019 Fall CS 8, *Introduction to Computer Science,* Dept. CS, UCSB

STUDENT MENTORSHIP

2023-2024 Jiayue Chen, Undergraduate student in FinMath at UCSB (now M.S. in CS at UChicago)
2024-current Vidhi Jain, Master student in Machine Learning at CMU
2025-current Smriti Jha, Master student in ECE at CMU

ACADEMIC SERVICES

2024- Area Chair, *ICML*
2022 Session Chair, *NeurIPS*
2022- Journal Reviewer, *Management Science, JASA, JMLR, MathOR*
2021- Conference Reviewer, *NeurIPS, AISTATS, ICML, ICLR*

ACADEMIC REFERENCES

Aarti Singh (Postdoc advisor)
Professor
Machine Learning Department
Carnegie Mellon University
aarti@andrew.cmu.edu

Yu-Xiang Wang (PhD advisor)
Associate Professor
Halıcıoğlu Data Science Institute & CSE
University of California San Diego
yuxiangw@ucsd.edu

Bryan Wilder (Postdoc advisor)
Assistant Professor
Machine Learning Department
Carnegie Mellon University
bwilder@andrew.cmu.edu

Xi Chen (Research collaborator)
Professor
Department of Technology, Operations, and Statistics
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Yining Wang (Research collaborator)
Associate Professor
Operations Management Area
Naveen Jindal School of Management
University of Texas at Dallas
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