Xu, Jianyu

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EDUCATION

2019.9-current **PhD student** in **Computer Science, University of California at Santa Barbara**
Advisor: Prof. Yu-Xiang Wang, and Prof. Zheng Zhang
GPA: **3.94**/4.0

2015.8-2019.7 **B.S.** in **Measurement and Control Technology and Instrument**, **Tsinghua University, China**
Advisor: Prof. Guoqi Li
GPA: **3.74**/4.0 Rank: 4/59

RESEARCH INTERESTS

Currently I am working on *Dynamic Pricing* problems. My interest mainly lies broadly on **statistical machine learning** and **online decision-making**.

In the past few years, I have also been working in the following fields:

- Graph Theory, Computational Complexity, and Combinatorics
- Tensor Network and Calculus

AWARDS AND HONORS

2022 NeurIPS 2022 Reviewer Award (Top 8%)
2019 Excellent Undergraduate Student Award, Tsinghua University (Top 5%)
2018 Recommendation, by Department of PI, for **Special Scholarship** of Tsinghua University
2014 Silver Medal, 30th Chinese Mathematical Olympiad (CMO)
2014 First Prize and **Provincial Champion** (1st /20,000+), Chinese High School Mathematical Contest
2013 Silver Medal, 29th Chinese Mathematical Olympiad (CMO)
2013 First Prize, National Senior High School Mathematical Contest

PUBLICATIONS [Google Scholar]

(* for equal contributions.)

Preprint and Working Papers:

- **Jianyu Xu**, Dan Qiao, and Yu-Xiang Wang, "Doubly Fair Dynamic Pricing." arXiv preprint arXiv: 2209.11837.
- **Xu, Jianyu**, Hanwen Zhang, Lei Deng, and Guoqi Li. "*NP*-hardness of tensor network contraction ordering." (*working paper*).

Conference Papers:

- **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, <3%)***
- **Xu, Jianyu**, and Yu-Xiang Wang, "Logarithmic Regret in Feature-based Dynamic Pricing." in *NeurIPS 2021.* ***(Spotlight Presentation, <3%)***

Journal Papers:

- Dheeraj Baby*, **Jianyu Xu***, and Yu-Xiang Wang, "Non-stationary Contextual Pricing with Safety Constraints." Accepted by *Transactions on Machine Learning Research*, 2022.
- 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.

INTERNSHIP

2022.06 – 2022.09 **Applied Scientist Intern at Amazon, Seattle**

In Retail Pricing Science & Research Team,
Supervised by Dr. Pau Pereira, hosted by Dr. Tara Mardan

- Develop multi-armed bandit algorithms for Amazon retail pricing systems to escalate long-term revenue.
- Apply Fourier Transformation to simulate real-world demand-to-price data for algorithm testings.

2021.07 – 2021.10 **Research Intern at AntGroup, Beijing & Hangzhou**

Supervised by Dr.Wenpeng Zhang

- Develop algorithms on attracting new/sleeping/lost customers with personalized-value coupons.
- Study “contextual bandits with knapsacks” for budget-constraint coupon pricing.

RESEARCH EXPERIENCE

2019.11 – current **Decision Making and Dynamic Pricing**

Advised by Prof. Yu-Xiang Wang, Dept. Computer Science, UCSB

- Develop algorithms for online dynamic pricing under different assumptions.
- Prove regret upper & lower bounds for these algorithms.

2018.1 – 2019.8 ***NP*-Hardness of Tensor Network Contraction Ordering**

Advised by Prof. Guoqi Li, Department of Precision Instrument, Tsinghua University
and Prof. Yuan Xie, Scalable Energy-Efficient Architecture Lab, UCSB (2018.7-2018.9)

- Given the existing problem setting to be NP-hard, propose an easier version of the problem setting.
- Prove the easiness: by pointing out a case which is polynomial in the new version, but NP-hard in the old.
- Prove the hardness: even the easier version is also NP-hard.

2017.2– 2018.2 **Computation on Matrix Function Derivatives**

Advised by Prof. Guoqi Li, Department of Precision Instrument, Tsinghua University

- Conclude 2 main approaches of calculating matrix-to-scalar function derivatives in chain rule.
- Proved their equivalence under certain conditions.

TEACHING ASSISTANTSHIP

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