Fan Yao

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GitHub: github.com/MarcusYF

EDUCATION

University of Virginia — Charlottesville, US
Ph.D. in Computer Science, Co-advised by Dr. Hongning Wang and Dr. Haifeng Xu — 2019–Current
- Research Interest: Online Learning in multi-agent environments, Bandit Algorithm, Recommender System

Peking University — Beijing, China
M.S. in Applied and Computational Mathematics, Advisor: Dr. Tiejun Li — 2013–2016
B.S. in Mathematics, double major in Philosophy — 2009–2013

EXPERIENCE

University of Chicago — Chicago, IL, US
Visiting Student at Computer Science Department   Advisor: Dr. Haifeng Xu — 2023.5-present
- Multi-agent modeling for digital content market.

Meta Research — Menlo Park, CA, US
Student Researcher at Modern Recommender System Group   Host: Dr. Qifan Wang — 2023.12-2024.7
- Deploy mechanism design solutions for improving user engagement on Instagram Reels.

Google Research — Mountain View, CA, US
Student Researcher at Forsight   Manager: Dr. Craig Boutilier, Host: Dr. Chih-wei Hsu — 2022.5-2022.9
- Work on Bayesian preference elicitation in interactive recommender systems using Concept Activation Vectors.

ByteDance — Remote in US
Research Intern at AML Lab   Manager: Dr. Chong Wang, Host: Dr. Taiqing Wang — 2021.5-2021.8
- Enhance the recommendation diversity and mitigate the Echo chamber effect of TikTok via collaborative Thompson sampling approach and gradient-based Determinantal Point Processes.

Alibaba Group — Beijing, China
Algorithm Engineer at Taobao   Manager: Dr. Xin Li — 2017.8-2019.7
- Design and maintain content recommendation system for Taobao main page, mainly focusing on deep-learning based match/ranking solution.

MANUSCRIPTS AND PREPRINTS

1. ***F. Yao**, *Y. Cheng, E. Wei, and H. Xu, "Single-Agent Poisoning Attacks Suffice to Ruin Multi-Agent Learning", *under review.*

2. *S. Ahmadi, *A. Blum, *H. Xu, ***F. Yao**, "Strategic Filtering for Content Moderation: Free Speech or Free of Distortion?", *under review.*

3. *J. Wu, *H. Xu, and ***F. Yao**, "Multi-Agent Learning for Iterative Dominance Elimination: Formal Barriers and New Algorithms", *under major revision for JMLR.*

4. Y. Cheng, **F. Yao**, X. Liu, and H. Xu, "Learning from Imperfect Human Feedback: a Tale from Corruption-Robust Dueling", arXiv preprint, arXiv:2405.11204.

5. E. Biyik, **F. Yao**, A. Haig, Y. Chow, C. Hsu, M. Ghavamzadeh, and C. Boutilier, "Preference Elicitation with Soft Attributes in Interactive Recommendation", arXiv preprint arXiv:2311.02085.

JOURNAL PUBLICATIONS

1. *R. Sundaram, *A. Vullikanti, *H. Xu, and ***F. Yao**, "Pac-Learning for Strategic Classification", **Journal of Machine Learning Research (JMLR)**, 2023.

2. **F. Yao**, F. Li, and T. Li, "Mean Field Study of a Propagation-Turnover Lattice Model for the Dynamics of Histone Marking", *Science China Physics, Mechanics & Astronomy, vol. 60, no. 2, p. 028 711*, 2017.

CONFERENCE PUBLICATIONS

1. **F. Yao**, L. Yiming, L. Jingzhou, N. Shaoliang, W. Qifan, W. Hongning, "Mechanism Design Through Exploration Control: Optimizing the Trade-Off Between User and Creator Engagement", **Neurips**, 2024.

2. **F. Yao**, Y. Liao, M. Wu, C. Li, Y. Zhu, J. Yang, J. Liu, Q. Wang, H. Xu, and H. Wang, "User Welfare Optimization in Recommender Systems with Competing Content Creators", **KDD**, 2024.

3. **F. Yao**, C. Li, D. Nekipelov, H. Wang, and H. Xu, "Human vs. Generative AI in Content Creation Competition: Symbiosis or Conflict?", **ICML**, 2024.

4. **F. Yao**, C. Li, K. Sankararaman, Y. Liao, Y. Zhu, Q. Wang, H. Wang, and H. Xu, "Rethinking Incentives in Recommender Systems: Are Monotone Rewards Always Beneficial?", **Neurips**, 2023.

5. **F. Yao**, C. Li, D. Nekipelov, H. Wang, and H. Xu, "How Bad is Top-K Recommendation under Competing Content Creators?", **ICML**, **Oral (2.4%)**, 2023.

6. M. Wu, **F. Yao**, and H. Wang, "An End-to-End Solution for Spatial Inference in Smart Buildings", **BuildSys**, **Best Paper Nomination**, 2023.

7. **F. Yao**, C. Li, D. Nekipelov, H. Wang, and H. Xu, "Learning from a Learning User for Optimal Recommendations", **ICML**, 2022. (**Spotlight** presentation at the ICML 2023 Workshop on Interactive Learning).

8. *J. Wu, *H. Xu, and ***F. Yao**, "Multi-Agent Learning for Iterative Dominance Elimination: Formal Barriers and New Algorithms", **COLT**, 2022.

9. **F. Yao**, C. Li, D. Nekipelov, H. Wang, and H. Xu, "Learning the Optimal Recommendation from Revealed Preferences", **AAAI**, 2022.

10. *R. Sundaram, *A. Vullikanti, *H. Xu, and ***F. Yao**, "Pac-Learning for Strategic Classification", **ICML**, **Oral (3%)**, 2021.

*Equal contribution; authors listed in alphabetical order.

INVITED TALKS

- Uber Research, "Learning from a Learning User for Optimal Recommendations". 2022.6
- Meta Research, "How Bad is Top-K Recommendation under Competing Content Creators?". 2023.8
- Cornell University, Seminar talk, "Understanding Competition-Driven Content Ecosystems". 2024.2
- Mila & Vector Institute, Seminar talk, "Understanding Competition-Driven Content Ecosystems". 2024.4

- Northwestern University, Midwest Workshop on Control and Game Theory, "Understanding Competition-Driven Content Ecosystems".   2024.4
- George Mason University, "Understanding Competition-Driven Content Ecosystems".   2024.6
- Cornell University, ESIF Economics and AI+ML Meeting, "Human v.s. GenAI Competition".   2024.8

AWARDS

- UVa Endowed Graduate Fellowship.   2024
- ICML Travel Award.   2022
- Graduate Teaching Award of the CS Department of UVa.   2020
- Outstanding Graduate Student Award of Peking University.   2016
- Bronze Medalist in Team Contest, Honorable Prize in Individual Contest of Applied and Computational Mathematics, Shing-Tung Yau College Student Mathematics Contests (Ranked top 6 in team nation-wide).   2012
- Gold Medalist in Chinese Mathematics Olympics (Ranked top 40 individually nation-wide).   2009

TEACHING

- **Teaching Assistant** at University of Virginia   Spring 2023
  Introduction to Algorithmic Economics
- **Teaching Assistant** at University of Virginia   Fall 2022
  Introduction to Reinforcement Learning
- **Teaching Assistant** at University of Virginia   Spring 2021
  Learning and Games
- **Teaching Assistant** at University of Virginia   Fall 2020
  Algorithms
- **Teaching Assistant** at Peking University   Spring 2016
  Linear Algebra

SERVICES

- ICML PC   2021,2022,2023,2024
- Neurips PC   2022,2023,2024
- KDD PC   2022,2023,2024
- AAAI PC   2021,2022,2023,2024
- IJCAI PC   2022,2023,2024