Fang-Yi Yu

fangyiyu@seas.harvard.edu
http://www-personal.umich.edu/~fayu/

Research Interests

I am interested in the theoretical aspect of multi-agent systems. My work studies how multi-agent systems interact with information and explores how these systems can solve social problems, including learning, cooperation, and communication. My research focuses on 1) *information elicitation*, where each agent's information is correlated and used to acquire and aggregate their information; 2) *social and economic networks*, where each agent's actions only directly impact those around it. My recent and forthcoming work also looks into 3) *dynamics of learning with multiple agents* where each agent's decision affects data they aim to predict and each other.

Research Experience

Harvard University *Jun. 2020 – present*
Postdoctoral fellow at Harvard School of Engineering and Applied Sciences
- Host: Yiling Chen, Gordon McKay Professor of Computer Science

University of Michigan *Sep. 2019 – May. 2020*
Postdoctoral research fellow at School of Information
- Host: Grant Schoenebeck, Assistant Professor of Information

Education

University of Michigan *2014 – 2019*
Ph.D. in Computer Science and Engineering Division
- Advisor: Grant Schoenebeck, Assistant Professor of Computer Science

National Taiwan University *2009 – 2013*
B.S. in Electrical Engineering and Mathematics (double major)

Publications

Unless specified otherwise, authorship is alphabetical. Conference proceedings are the main publication venue in Computer Science.

Selected Papers

[1] Information Elicitation from Rowdy Crowds
Grant Schoenebeck, Fang-Yi Yu, Yichi Zhang
The 30th Web Conference (WWW 2021)

[2] Learning and Strongly Truthful Multi-Task Peer Prediction: A Variational Approach
Grant Schoenebeck, Fang-Yi Yu
The 12th Innovations in Theoretical Computer Science Conference (ITCS 2021)

[3] Escaping Saddle Points in Constant Dimensional Spaces: an Agent-based Modeling Perspective
Grant Schoenebeck, Fang-Yi Yu
The 21st ACM Conference on Economics and Computation (EC 2020)

[4] Consensus of Interacting Particle Systems on Erdös-Rényi Graphs
Grant Schoenebeck, Fang-Yi Yu
The 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2018)

Manuscripts

[5] Optimal Scoring Rule Design
Yiling Chen, Fang-Yi Yu

[6] Subspace Differential Privacy
Jie Gao, Ruobin Gong, Fang-Yi Yu

Additional Peer Reviewed Papers

[7] The Limits of Multi-task Peer Prediction
Shuran Zheng (first author), Fang-Yi Yu, Yiling Chen
The 22th ACM Conference on Economics and Computation (EC 2021)

[8] Cooperation in Threshold Public Projects with Binary Actions
Yiling Chen, Biaoshuai Tao, Fang-Yi Yu
The 30th International Joint Conference on Artificial Intelligence (IJCAI 2021)

[9] Timely Information from Prediction Markets
Grant Schoenebeck, Chenkai Yu, Fang-Yi Yu
The 20th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2021)

[10] Two Strongly Truthful Mechanisms for Three Heterogeneous Agents Answering One Question
Grant Schoenebeck, Fang-Yi Yu
The 16th International Conference on Web and Internet Economics (WINE 2020)

[11] Limitations of Greed: Influence Maximization in Undirected Networks Re-visited
Grant Schoenebeck, Biaoshuai Tao, Fang-Yi Yu
The 19th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2020)

[12] Information Elicitation Mechanisms for Statistical Estimation
Yuqing Kong, Grant Schoenebeck, Biaoshuai Tao, Fang-Yi Yu
The 34th International Conference on Artificial Intelligence (AAAI 2020)

[13] Think Globally, Act Locally: On the Optimal Seeding for Nonsubmodular Influence Maximization
Grant Schoenebeck, Biaoshuai Tao, Fang-Yi Yu
The 23th International Conference on Randomization and Computation (RANDOM 2019)

[14] The Volatility of Weak Ties: Co-evolution of Selection and Influence in Social Networks
Jie Gao, Grant Schoenebeck, Fang-Yi Yu
The 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2019)

[15] Cascades and Myopic Routing in Nonhomogeneous Kleinberg's Small World Model
Jie Gao, Grant Schoenebeck, Fang-Yi Yu
The 13th International Conference on Web and Internet Economics (WINE 2017)

[16] Engineering Agreement: The Naming Game with Asymmetric and Heterogeneous Agents
Jie Gao, Bo Li, Grant Schoenebeck, Fang-Yi Yu
The 30th International Conference on Artificial Intelligence (AAAI 2017)

[17] Complex Contagions on Configuration Model Graphs with a Power-Law Degree Distribution
Grant Schoenebeck, Fang-Yi Yu
The 12th Conference on Web and Internet Economics (WINE 2016)

[18] Sybil Detection Using Latent Network Structure
Aaron Snook, Grant Schoenebeck, Fang-Yi Yu
The 17th ACM Conference on Economics and Computation (EC 2016)

[19] General Threshold Model for Social Cascades: Analysis and Simulations
Jie Gao, Golnaz Ghasemiesfeh, Grant Schoenebeck, Fang-Yi Yu
The 17th ACM Conference on Economics and Computation (EC 2016)

Invited Talks

Robust and Strongly Truthful Multi-task Peer Prediction Mechanisms for Heterogeneous Agents
The 6th Highlights of Algorithms 2021

Escaping Saddle Points in Constant Dimensional Spaces: an Agent-based Modeling Perspective
2020 Junior Theorists Workshop, Northwestern 2020

Learning and Strongly Truthful Multi-Task Peer Prediction: A Variational Approach
EconCS Seminar, Harvard 2020

Robust and Strongly Truthful Multi-task Peer Prediction Mechanisms for Heterogeneous Agents
The 70th Midwest Theory Day 2019

Dynamics on Graphs with Community Structures
Santa Fe Institute 2019

Think Globally, Act Locally: On the Optimal Seeding for Nonsubmodular Influence Maximization
Seeding and value of network information in social network applications, INFORMS 2019

Generalized Kleinberg's Small World Model
IDSS, MIT 2019

Opinion formation, stochastic gradient descent, and gradient-like systems
Algorithms & Complexity Seminar, MIT 2019

Teaching

EECS 376 Foundation of theoretical computer science, University of Michigan Fall 2018
- Undergrad-level, 500 students
- Graduate Student Instructor: Design homework and lecture notes, and host discussion section every week

EECS 574 Computational complexity, University of Michigan Fall 2016
- Graduate-level, 30 students
- Graduate Student Instructor: Design homework, and host discussion section every week

Services and Outreach

Program Committee
- Association for the Advancement of Artificial Intelligence Conference on Artificial Intelligence (AAAI) 2022
- Conference on Web and Internet Economics (WINE) 2021
- Association for the Advancement of Artificial Intelligence Conference on Artificial Intelligence (AAAI) 2021

External Reviewers for EC, WINE, AAAI, IJCAI, WWW, ICALP, FUN, SoCG, ICDCS

Chief of Academic and Curriculum section for EEcamp, National Taiwan University 2012

Awards

Finalists, CSE Graduate Student Honors Competition, University of Michigan 2018

Presidential Award, National Taiwan University 2012, 2013