Ao Liu

Ph.D., Computer Science

(+1) 518-233-4797

Personal Website

aoliu.cs@gmail.com

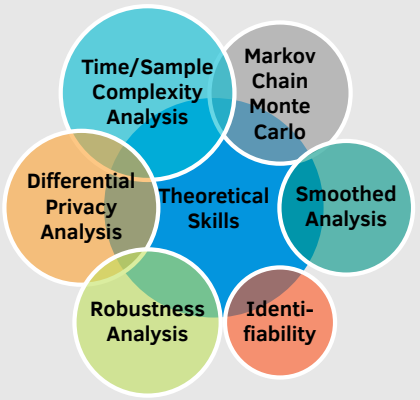
Google Scholar

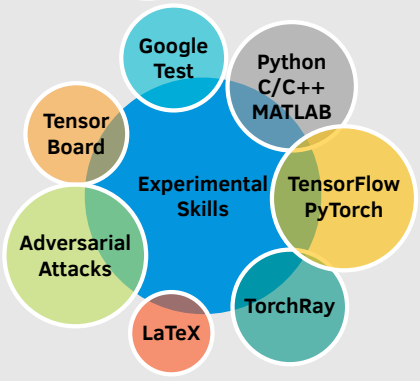
LinkedIn

Research Fields

Recommendation Systems
Learning to Rank
Differential Privacy
Computational Social Choice
Robust and Explainable AI
Quantum Computation

Skills





Services and Awards

Journal Reviewer: *Information Sciences*, *Sankhya B*, *TMLR*, and *ToIS*

Conference Reviewer: *NeurIPS (20-23)*, *AAAI (21&22)*, *ICML (22&23)*, ICLR (23&24) and *IJCAI-22*

RPI-IBM AI Horizon Scholarship

RPI Presidential Graduate Research Fellowship

Education

Ph.D., Computer Science, Rensselaer Polytechnic Institute (RPI) Troy, NY USA
Advisor: Lirong Xia GPA: 4.00/4.00 Jan. 2018 – May 2023
Thesis: *Group Decision Makings from Partial Preferences* [Link]

M.Eng., Material Engineering, Rensselaer Polytechnic Institute Troy, NY USA
Advisor: Chaitanya Ullal GPA: 3.83/4.00 Aug. 2015 – May 2018

B.S., Mathematics and Physics, Tsinghua University Beijing, China
Academic Talent Program GPA: 85/100, Rank 8/50 Aug. 2010 – May 2014
Minor in Computer Technology GPA: 84/100, 28 credits Sep. 2012 – May 2014

Work Experience

Research Software Engineer at Google, Sunnyvale ***07/2023- present***
Design and Research Efficient and Effective Recommendation Systems

Research Intern at Google, Mountain View ***Summer 2022***
Project: A More Accurate Position Bias Estimator for Unbiased Learning to Rank

Visiting Scholar at MIT-IBM Watson AI Lab ***Fall 2019 and Summer 2020***
Project: Certifiably Robust Interpretation via Rényi Differential Privacy

Accepted Papers in Computer Science

Accelerating Voting by Quantum Computation [PDF] ***UAI-23***
Ao Liu, Qishen Han, Lirong Xia, and Nengkun Yu

Certifiably Robust Interpretation via Rényi Differential Privacy ***AIJ***
Ao Liu, Xiaoyu Chen, Sijia Liu, Lirong Xia, and Chuang Gan [Link] [ArXiv]
Also in proceedings of ***AAAI-23 Journal Track*** Oral presentation

Differentially Private Condorcet Voting [PDF] ***AAAI-23***
Zhechen Li, *Ao Liu*, Lirong Xia, Yongzhi Cao, and Hanpin Wang Oral presentation

The Semi-Random Likelihood of Doctrinal Paradoxes [PDF] ***AAAI-22***
Ao Liu, and Lirong Xia

Learning Mixtures of Random Utility Models with Features from Incomplete Preferences [PDF] ***IJCAI-22***
Oral presentation
Zhibing Zhao, *Ao Liu*, and Lirong Xia

Learning to Design Fair and Private Voting Rules [PDF] ***JAIR***
Farhad Mohsin, *Ao Liu*, Pin-Yu Chen, Francesca Rossi, and Lirong Xia
Also in proceedings of ***IJCAI-23 Journal Track*** Oral presentation

How Private Are Commonly-Used Voting Rules? [PDF] ***UAI-20***
Ao Liu, Yun Lu, Lirong Xia, and Vassilis Zikas Oral presentation

Let It Snow: Adding Pixel Noise to Protect the Users Identity ***ETRA-20 Adjunct***
Brendan John, *Ao Liu*, Lirong Xia, Sanjeev Koppal, and Eakta Jain [Link]

Near-Neighbor Methods in Random Preference Completion [PDF] ***AAAI-19***
Ao Liu, Qiong Wu, Zhenming Liu, and Lirong Xia Oral presentation

Learning Plackett-Luce Mixture from Partial Preferences [PDF] ***AAAI-19***
Ao Liu, Zhibing Zhao, Chao Liao, Pinyan Lu, and Lirong Xia Oral presentation

Differential Privacy for Eye-Tracking Data [PDF] ***ETRA-19***
Ao Liu, L. Xia, A. Duchowski, R. Bailey, K. Holmqvist, and E. Jain Oral presentation

Non-Archival Papers in Computer Science

Smoothed Differential Privacy [PDF] ***Under Review***
Ao Liu, Yu-Xiang Wang, and Lirong Xia

Trading Off Voting Axioms for Privacy [PDF] ***Under Review***
Zhechen Li, *Ao Liu*, Lirong Xia, Yongzhi Cao, and Hanpin Wang

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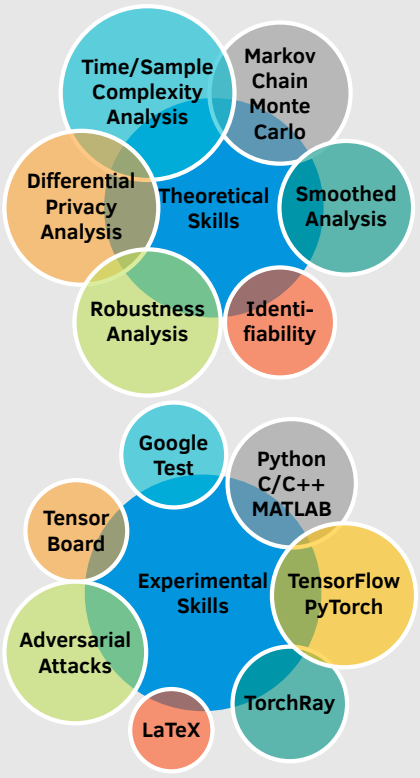

Services and Awards

Journal Reviewer: *Information Sciences*, *Sankhya B*, *TMLR*, and *ToIS*

Conference Reviewer: *NeurIPS (20-23)*, *AAAI (21&22)*, *ICML (22&23)*, ICLR (23&24) and *IJCAI-22*

RPI-IBM AI Horizon Scholarship

RPI Presidential Graduate Research Fellowship

Truthful Information Elicitation from Hybrid Crowd [PDF] ***Under Review***
Qishen Han, Sikai Ruan, *Ao Liu*, Farhad Mohsin, Lirong Xia, and Yuqing Kong

Group Decisions from Natural Language-Based Preferences [PDF] ***COMSOC-21***
Farhad Mohsin, L. Luo, W. Ma, I. Kang, Z. Zhao, *Ao Liu*, R. Vaish, and Lirong Xia

Patents

Certifiably Robust Interpretation ***US 2022/0067505 A1***
Ao Liu, Sijia Liu, Bo Wu, Lirong Xia, Qi Cheng Li, and Chuang Gan

Interpretation Maps with Guaranteed Robustness ***US 2021/0383497 A1***
Ao Liu, Sijia Liu, Abhishek Bhandwaldar, Chuang Gan, Lirong Xia, and Qi Cheng Li

Accepted Papers in Material Physics

Simulation of pulse responses of lithium salt-doped poly-ethyleneoxide [Link] ***J. Polym. Sci. B: Polymer Physics*** Cover paper finalist *Apr. 2016*
Ao Liu, F. Zeng, Y. Hu, S. Lu, W. Dong, X. Li, C. Chang, and D. Guo

Thresholds of frequency selectivity of Pt/poly (3-hexylthiophene-2,5-diyl)/polyethylene oxide+Mg^{2+}/Pt heterojunctions [Link] ***Solid State Ionics*** *Feb. 2016*
F. Zeng, S. Lu, W. Dong, *Ao Liu*, X. Li, and C. Chang

Effect of heavy-ion on frequency selectivity of semiconducting polymer/electrolyte heterojunction [Link] ***RSC Advances*** *Nov. 2015*
W. Dong, F. Zeng, S. Lu, X. Li, C. Chang, *Ao Liu*, F. Pan, and D. Guo

Excitatory post-synaptic current and synaptic plasticity of semiconducting polymer/electrolyte system [Link] ***NVMTS-15*** *Oct. 2015*
F. Zeng, F. Li, J. Zhang, Y. Hu, W. Dong, S. Lu, and *Ao Liu*

Influence of ionic size to the pulse responses of semiconducting polymer/electrolyte hetero-junctions [Link] ***NVMTS-15*** *Oct. 2015*
F. Li, F. Zeng, J. Zhang, Y. Hu, W. Dong, S. Lu, and *Ao Liu*

Frequency-dependent learning achieved using semiconducting polymer/electrolyte composite cells [Link] ***Nanoscale*** *Sep. 2015*
W. Dong, F. Zeng, S. Lu, *Ao Liu*, X. Li, and F. Pan

Controlling Ion Conductance and Channels to Achieve Synaptic-like Frequency Selectivity [Link] ***Nano-Micro Letters*** *Dec. 2014*
S. Lu., F. Zeng, W. Dong, *Ao Liu*, X. Li, and J. Luo

Optical fiber sensor based on the short-range surface plasmon polariton mode [Link] ***Chinese Optics Letters*** *Jan. 2014*
X. Wang, F. Liu, *Ao Liu*, B. Fan, K. Cui, X. Feng, W. Zhang, and Y.Huang

Services, Awards, and Teaching

Journal Reviewer: Information Sciences, Sankhya B, TMLR, and IEEE ToIS

Conference Reviewer: NeurIPS (20,21,22&23), ICML (22&23), AAAI (21&22), ICLR (23&24), and IJCAI-22

RPI-IBM AI Horizon Scholarship ***Sep. 2019 – May 2022***
Supported by Rensselaer-IBM Artificial Intelligence Research Collaboration

RPI Presidential Graduate Research Fellowship ***Sep. 2016 – May 2017***
A One-Year Fellowship for Outstanding Graduate Students [Certificate]

Teaching Assistant of *CSCI 4150: Introduction to AI* ***Spring 2023***
Instructor: Lirong Xia

Guest Lecture at *CSCI 4967/6967: Economics and Computation* ***Apr. 2021***

Teaching Assistant of *MATH 1020: Calculus II* ***Fall 2017***
Instructor: David A. Schmidt