Ao Liu

Ph.D., Computer Science

(+1) 518-233-4797

Personal Website

aoliu.cs@gmail.com

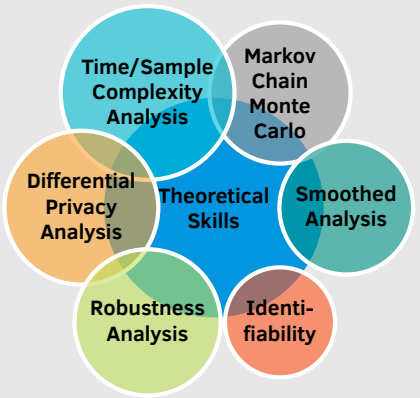
Google Scholar

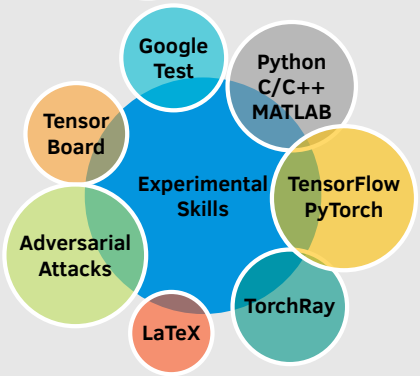
LinkedIn

Research Fields

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

Skills





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***

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***
Zhibing Zhao, *Ao Liu*, and Lirong Xia Oral presentation

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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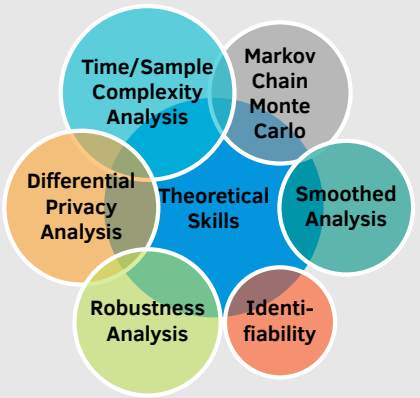

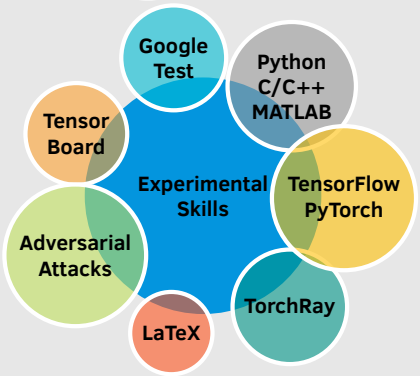

Truthful Information Elicitation from Hybrid Crowd [PDF] ***Under Review***
Qishen Han, Sikai Ruan, *Ao Liu*, Farhad Mohsin, Lirong Xia, and Yuqing Kong

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
Ao Liu, F. Zeng, Y. Hu, S. Lu, W. Dong, X. Li, C. Chang, and D. Guo *Apr. 2016*

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

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

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

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

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

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

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

Services, Awards, and Teaching

Journal Reviewer: Information Sciences, Sankhya B, and TMLR

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