

Ao Liu

Ph.D., Computer Science



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Personal Website



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Google Scholar

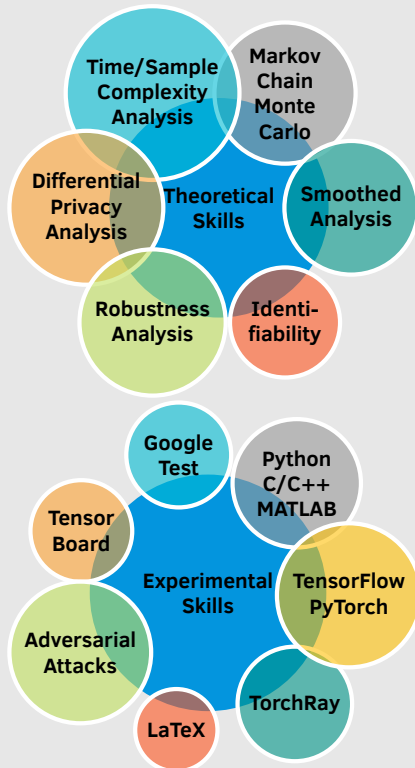


LinkedIn

Research Fields

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

Skills



Services and Awards

Journal Reviewer: *Information Sciences* and *Sankhya B*

Conference Reviewer:
NeurIPS (20-23), *AAAI* (21&22),
ICML (22&23), *ICLR-23* 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
Differential Privacy and Machine Learning Jan. 2018 – May 2023
Advisor: Lirong Xia GPA: 4.00/4.00

M.Eng., Material Engineering, Rensselaer Polytechnic Institute Troy, NY USA
Super-Resolution Microscopy and Polymer Physics Aug. 2015 – May 2018
Advisor: Chaitanya Ullal GPA: 3.83/4.00

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

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

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 Bhandwadar, Chuang Gan, Lirong Xia, and Qi Cheng Li

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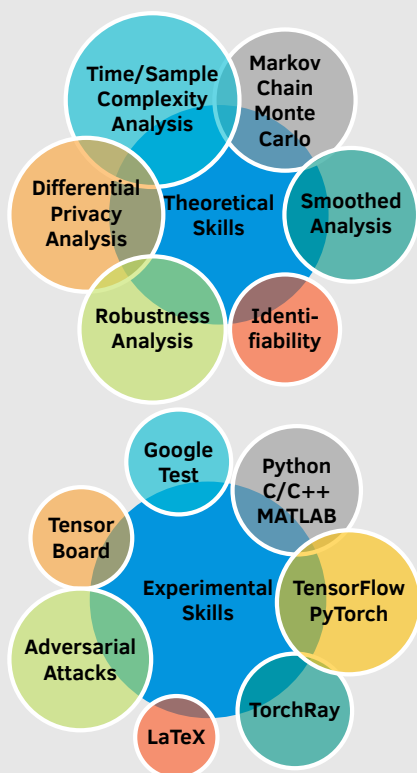


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ICML (22&23), *ICLR-23* and *IJCAI-22*

RPI-IBM AI Horizon Scholarship

RPI Presidential Graduate Research Fellowship

Accepted Papers in Material Physics

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

Thresholds of frequency selectivity of Pt/poly (3-hexylthiophene-2,5-diyl)/polyethylene oxide+Mg²⁺/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

Experiences and Awards

Journal Reviewer: *Information Sciences* and *Sankhya B*

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

Research Intern at Google, Mountain View *Summer 2022*
Project: A More Accurate Position Bias Estimator for Unbiased Learning to Rank
Host & Co-Host: Yan Zhu and Mohamed Hammad

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

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 [\[Certificate\]](#)

Member of Alpha Sigma Mu [\[Certificate\]](#) *Since 2016*
An Honor Society for Material Science & Engineering

Teaching at Rensselaer

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

Guest Lecture at CSCI 4967/6967: Economics and Computation *Apr. 2021*
Topic: The Semi-Random Likelihood of Doctrinal Paradoxes

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