



Ao Liu

Ph.D., Computer Science



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Personal Website



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Google Scholar

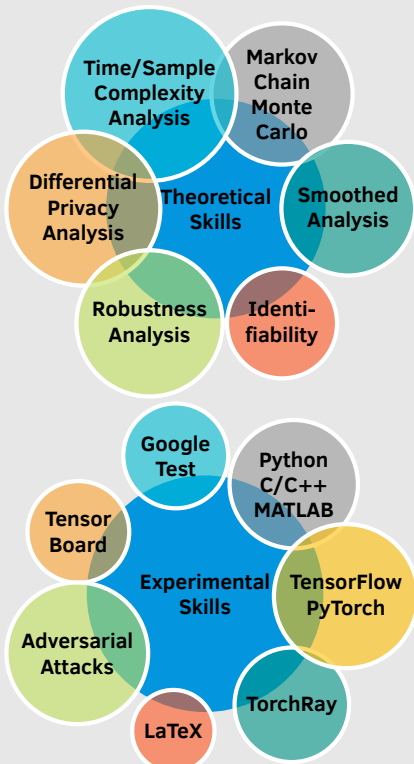


LinkedIn

Research Fields

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

Skills



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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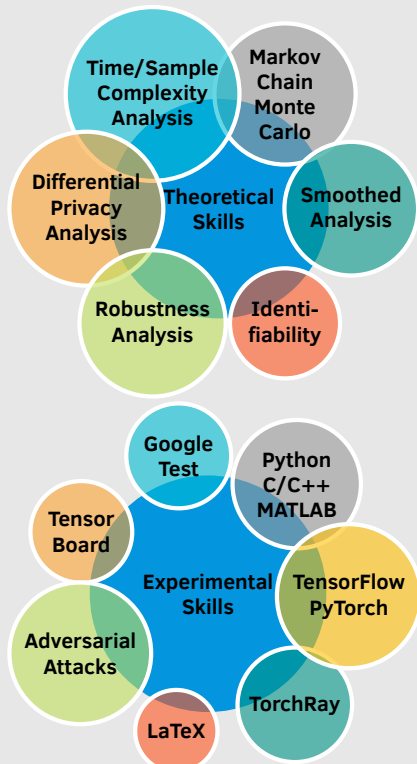


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Robust and Explainable AI
Quantum Computation

Skills



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 Bhandwaladar, 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

Solid State Ionics

(3-hexylthiophene-2,5-diyl)/polyethylene oxide+Mg²⁺/Pt heterojunctions [Link]

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

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, 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