

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

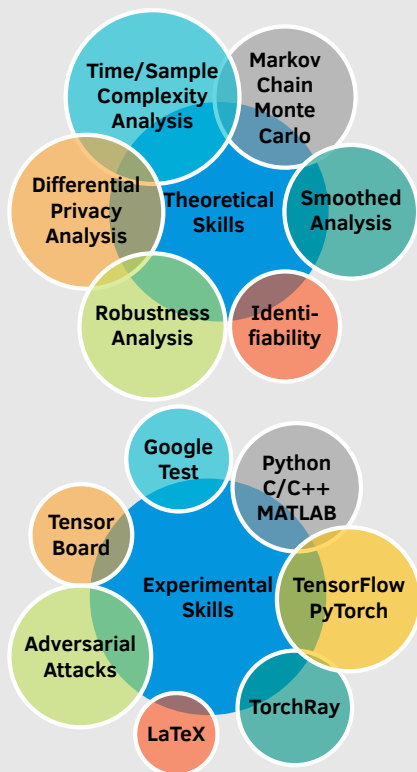
Differential Privacy

Computational Social Choice

Robust and Explainable AI

Quantum Computation

Skills



Services and Awards

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

Conference Reviewer: *NeurIPS* (20-23), *AAAI* (21&22), *ICML* (22-24), *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, Mountain View 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

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

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

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

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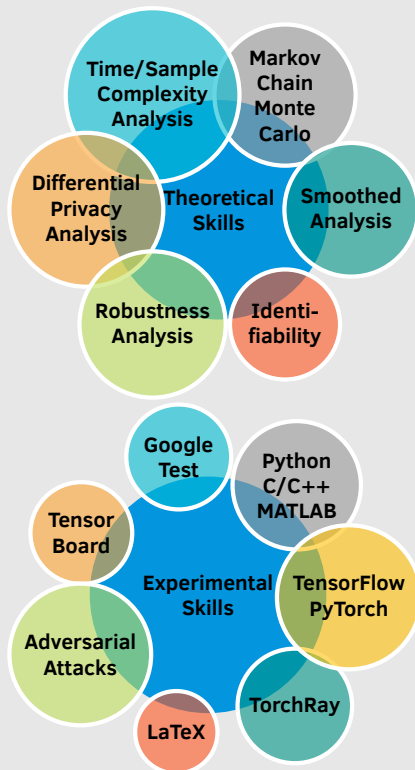
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RPI Presidential Graduate Research Fellowship

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 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, X. 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

X. 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*, *TMLR*, *ACM ToIS*, and *Sankhya B*

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