

Ao Liu

Ph.D., Computer Science



(+1) 518-233-4797



Personal Website



aoliu.cs@gmail.com



Google Scholar

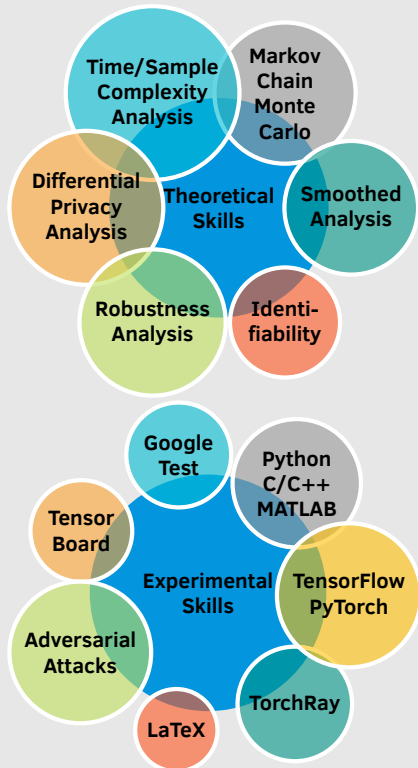


LinkedIn

Research Fields

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

Skills



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

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 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

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

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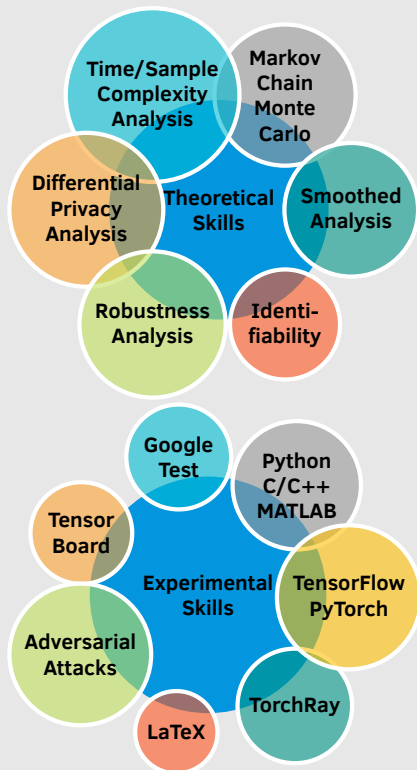


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ICML (22&23), *ICLR-23* and *IJCAI-22*

RPI-IBM AI Horizon Scholarship

RPI Presidential Graduate Research Fellowship

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+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

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

Experiences and Awards

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

Conference Reviewer: *NeurIPS* (20,21,22&23), *ICML* (22&23), *AAAI* (21&22),
ICLR-23, 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 [\[Certificate\]](#)

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