

EDUCATION

Zhejiang University, Hangzhou, China

Sep 2020 – Now

- **Ph.D. in Control Science, GPA: 4.0/4.0**
- **Supervisor:** Jiming Chen, Peng Cheng.

Zhejiang University, Hangzhou, China

Sep 2016 – June 2020

- **B.E. in Control Science and Engineering, GPA: 3.85/4.0**

RESEARCH INTEREST

- My research interest is developing and analyzing decision-making algorithms with theoretical guarantees, e.g., online bandits and reinforcement learning under the constraints of privacy, security or uncertainty.

RESEARCH EXPERIENCE

Stability of Weighted Majority Voting under Estimated Weights

2021 – 2022

- We introduce an important property of *Weighted Majority Voting* (WMV): *stability of correctness*. Stability of correctness measures the difference between the decision accuracy that the decision maker believes he can achieve and the accuracy he actually achieves. We prove stability of correctness absolutely holds for WMV.
- We then introduce another important property of WMV: *stability of optimality*. Stability of optimality measures the difference between the actual accuracy of decisions made using trust values, and those made using trustworthiness values. We find a relatively tight upper bound on the stability of optimality, meaning that, although using (unbiased) trust values is suboptimal compared to using the true trustworthiness values, the difference is small.
- We also provide an overview of how sensitive decision accuracy is to the changes in trust and trustworthiness.

Adaptive Hierarchical Decomposition for Range Query under Local Differential Privacy

Oct 2019 – Sep 2020

- We propose an Adaptive Hierarchical Decomposition (AHEAD) protocol to provide the privacy-preserving range query, which adaptively and dynamically controls the built tree structure, so that the injected noise is well controlled for maintaining high utility.
- We derive a guideline for properly choosing parameters for AHEAD so that the overall utility can be consistently competitive while satisfying LDP.
- Leveraging multiple real and synthetic datasets, we extensively show the effectiveness of AHEAD in both low and high-dimensional range query scenarios, as well as its advantages over the state-of-the-art methods.

WORK EXPERIENCE

- **Algorithm Intern:** Alibaba Local Service, Shanghai.

Mar 2020 – Jan 2021

- **Visiting Student:** Singapore University of Technology and Design, advised by Xingyin Wang.

Jul 2019 – Sep 2019

SELECTED HONOURS AND AWARDS

- Outstanding Graduate Student Award of Zhejiang University Oct 2021
- Alibaba Annual Excellent Academic Intern Mar 2021
- Outstanding Graduates Award of Zhejiang University Jun 2020
- Academic Scholarship of Zhejiang University (won three times) 2017–2019
- National Encouragement scholarship (won three times) 2017–2019
- Five-star Youth Volunteer Title, Zhejiang University Dec 2018

PUBLICATIONS

- **Shaojie Bai**, Dongxia Wang, Muller Tim, Jiming Chen, Peng Cheng. 2023. *Stability of Weighted Majority Voting under Estimated Weights*. In Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS '23).
- Linkang Du, Zhikun Zhang, **Shaojie Bai**, Changchang Liu, Shouling Ji, Peng Cheng, and Jiming Chen. 2021. *AHEAD: Adaptive Hierarchical Decomposition for Range Query under Local Differential Privacy*. In Proceedings of the 2021 ACM SIGSAC Conference on Computer and Communications Security (CCS '21).
- Han Zheng, Yan Zhang, Lan Zhang, Hao Xia, **Shaojie Bai**, Guobin Shen, Xiangyang Li. 2021. *GraFin: An Applicable Graph-based Fingerprinting Approach for Robust Indoor Localization*. In Proceedings of the 27th International Conference on Parallel and Distributed Systems (ICPADS '21).