Pingbang Hu

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Research Interest

Machine Learning
Explainable Machine Learning, Trustworthy Machine Learning, Algorithmic Fairness, Graph Learning, Statistical Learning Theory

Theoretical Computer Science
Fast Graph Algorithm, Approximation Algorithm, Computational Complexity, Hardness of Approximation

Education

University of Illinois Urbana-Champaign — **Illinois**
Ph.D. Student in Information Science, School of Information Science — *Aug. 2023 – Present*
- **Advisor**: Jiaqi Ma

University of Michigan — **Michigan**
B.Sc. in Computer Science, College of Engineering — *Aug. 2021 – May 2023*
- Graduate with **Summa Cum Laude**
- **Minor**: Mathematics, College of Literature, Science, and the Arts

National Yang Ming Chiao Tung University — **Hsinchu, Taiwan**
Visiting Scholar — *Jan. 2020 – Jul. 2020*

Shanghai Jiao Tong University — **Shanghai, China**
B.Eng. in Electrical and Computer Engineering, UM-SJTU Joint Institute — *Aug. 2019 – Aug. 2023*
- **Minor**: Computer Science, UM-SJTU Joint Institute

Research and Industry Experience

Sugiyama Laboratory, National Institute of Informatics — **Tokyo, Japan**
Research Intern — *May 2024 – Aug. 2024*
- **Advisor**: Mahito Sugiyama

Theory of Computation Laboratory, University of Michigan — **Michigan**
Undergraduate Researcher — *Mar. 2022 – Present*
- **Advisor**: Thatchaphol Saranurak
- Design the first almost linear time algorithm on finding minimal balanced separator.

SURE Program, University of Michigan — **Michigan**
Undergraduate Researcher — *May 2022 – Apr. 2023*
- **Advisor**: Wei Hu
- Theoretical analysis on intrinsic dimension under isoperimetry assumptions.

FORESEER Research Group, University of Michigan — **Michigan**
Undergraduate Research Assistant — *Dec. 2021 – Jan. 2023*
- **Advisor**: Jiaqi Ma
- Prove the asymptotic separability of a 1-layer GCN on node classification tasks.

Chief Noob — **Shanghai, China**
Backend Developer — *Oct. 2020 – June 2021*

Peer-Reviewed Conference Publications

(* denotes equal contribution)

[C1] Yuzheng Hu*, **Pingbang Hu***, Han Zhao, Jiaqi Ma, "Most Influential Subset Selection: Challenges, Promises, and Beyond". In *Proceedings of the 38th Advances in Neural Information Processing Systems* (NeurIPS 2024) (25.8% accepted rate)

[C2] Junwei Deng*, Ting-Wei Li*, Shiyuan Zhang, Yijun Pan, Hao Huang, Xinhe Wang, **Pingbang Hu**, Xingjian Zhang, Jiaqi Ma, "`dattri`: A Library for Efficient Data Attribution". In *Proceedings of the 38th Advances in Neural Information Processing Systems Datasets and Benchmarks Track* (NeurIPS 2024) (**Spotlight**)

Pre-prints and Technical Reports (* denotes equal contribution)

[P1] **Pingbang Hu**, Mahito Sugiyama, "Pseudo-Non-Linear Data Augmentation via Energy Minimization". *Preprint*

[P2] Xinhe Wang, **Pingbang Hu**, Junwei Deng, Jiaqi Ma, "Adversarial Attacks on Data Attribution". *Preprint* 📄

[P3] Yiwen Tu*, **Pingbang Hu***, Jiaqi Ma, "Towards Reliable Empirical Machine Unlearning Evaluation: A Game-Theoretic View". *In submission* 📄

[T1] **Pingbang Hu**, "Travel the Same Path: A Novel TSP Solving Strategy". *Technical Report* 📄

Teaching Experience

Instructional Aide, University of Michigan **Michigan**
Hold discussion and office hour weekly, design assignment and exam problems, grade and guide projects.
- **Introduction to Cryptography**: An upper-level course on the main undergraduate CS track. *Winter 2023*
- **Randomness and Computation**: A graduate-level course on the M.S. CS theory track. *Fall 2022*

Teaching Assistant, Shanghai Jiao Tong University **Shanghai, China**
Hold discussion and office hour weekly, design and grade assignments and exams.
- **Honor Mathematics III**: An undergraduate-level course on the main B.Eng. ECE track. *Summer 2021*
  - **Competition**: Hold the 1st UM-SJTU JIntegration Bee competition.
- **Honor Mathematics II**: An undergraduate-level course on the main B.Eng. ECE track. *Fall 2020*

Honors and Awards

Excellent Internship Evaluation **Tokyo, Japan**
Best internship evaluation result in National Institute of Informatics *Aug. 2024*

Hong Kong, Macao and Taiwan Overseas Chinese Student Scholarship **Shanghai, China**
First Prize (Ranked #2) among all HK, MC and TW students in Shanghai Jiao Tong University *Oct. 2021*

Undergraduate Excellent Scholarship **Shanghai, China**
Third Prize among all students in UM-SJTU Joint Institute *Nov. 2020*

Bao Gang Excellent Scholarship **Shanghai, China**
Second Prize (Ranked #3) among all Taiwan students in Shanghai Jiao Tong University *June 2020*

Hong Kong, Macao and Taiwan Overseas Chinese Student Scholarship **Shanghai, China**
First Prize (Ranked #1) among all HK, MC and TW students in UM-SJTU Joint Institute *Dec. 2019*

Professional Service

Conference Reviewer
ICML 2024, IEEE BigData 2023, ICLR 2025, AAAI 2025