

SHUWEN CHAI

EDUCATION

- Northwestern University** Evanston, IL
Ph.D. student in Computer Science Advisor: Miklos Z. Racz September 2022 – present
- GPA: **4.00 /4.00**
- Renmin University of China** Beijing, China
Major: Statistics, Bachelor of Science September 2018 – July 2022
- GPA: **3.80/4.00**
- The University of Hong Kong** Hong Kong, China
School of Science (Exchange Student) January 2021 – June 2021
- GPA: **4.15/4.30**

PAPERS IN PREPARATION

1. **Efficient Graph Matching for Correlated Stochastic Block Models.** Shuwen Chai, Miklos Racz.
 - Motivation: Exact community recovery is possible for Correlated Stochastic Block Models (CSBM) when it is information-theoretical impossible for each of the SBM individually. A previous work [Racz & Sridhar 22] established the information-theoretical threshold for exact recovery on CSBM, with an inefficient exact graph matching middle step.
 - We prove an efficient graph matching algorithm for CSBM, which immediately implies an efficient exact community recovery algorithm for CSBM in the proper regime.
2. **Phase Transitions of Label Propagation Algorithm on Stochastic Block Models.** Shuwen Chai, Sophia Pi, Miklos Racz.
 - Label Propagation Algorithm (LPA) is a simple yet widely used clustering algorithm, while its theoretical behavior on SBMs is less studied. Experimental results show some phase transitions behavior on the convergence of algorithm, depending on the label propagation rounds and edge densities in the SBM. We are working on theoretically establishing thresholds for some interesting behaviors.

EARLIER PROJECTS

3. **Differentially Private Multi-Source Domain Adaptation.** *Summer Intern Report, 2021.* Shuwen Chai, Boyu Wang.
4. [Contrastive Active Learning under Class Distribution Mismatch.](#) *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2022.* Pan Du, Hui Chen, Suyun Zhao, Shuwen Chai, Hong Chen, Cuiping Li. (Also appeared on [ICCV, 2021](#))
5. [One-shot Neural Backdoor Erasing via Adversarial Weight Masking.](#) *Advances in Neural Information Processing Systems (NeurIPS), 2021.* Shuwen Chai, Jinghui Chen.
 - The key idea behind our method is to formulate this into a min-max optimization problem: first, adversarially recover the trigger patterns and then (soft) mask the network weights that are sensitive to the recovered patterns.

TEACHING

- **Teaching Assistant**, [Introduction to Theory of Computation](#), Northwestern University (2023 Fall)
- **Teaching Assistant**, The Practice of Market Research, Renmin University of China (2022 Fall)
- **Teaching Assistant**, Introduction to Machine Learning, Renmin University of China (2021 Spring)

ACADEMIC SERVICE

- **Reviewer**, International Conference on Artificial Intelligence and Statistics (AISTATS), 2023, 2024

PERSONAL INTERESTS

- Piano, Classical Music, Golf, and Basketball.