

## SHUWEN CHAI

### EDUCATION

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#### Northwestern University

Ph.D. candidate in Computer Science    Advisor: Miklós Z. Rácz

Evanston, IL

September 2022 – present

- GPA: **4.00 /4.00**

#### Renmin University of China

Major: Statistics, Bachelor of Science

Beijing, China

September 2018 – July 2022

- GPA: **3.80/4.00**

#### The University of Hong Kong

School of Science

Hong Kong, China

January 2021 – June 2021

- GPA: **4.15/4.30**

### RESEARCH INTEREST

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My main research interest lies in the intersection of Statistics and Theoretical Computer Science. The common goals in my recent and ongoing works are working towards the establishment of statistical-computational gaps, developing efficient algorithms or testing procedure to solve estimation or detection problems, etc. I mostly work on various topics related to random networks, including but not limited to

- beyond worst case analysis for NP-hard problems (e.g. graph matching on correlated stochastic block models)
- dynamic evolving networks that mimic real-world dynamics (e.g. preferential attachment graphs)
- dynamic process on the network (e.g. Susceptible-Infected process motivated by epidemiology).

I am also interested in and have worked on confidence intervals, hypothesis testing and trustworthy machine learning. One specific type of hypothesis testing I am actively thinking about is the changepoint detection on both dynamic evolving networks and the dynamic process on a network.

### PUBLICATIONS

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1. **Efficient Graph Matching for Correlated Stochastic Block Models.** *Advances in Neural Information Processing Systems (NeurIPS)*, 2024. Shuwen Chai, Miklós Rácz.
2. **One-shot Neural Backdoor Erasing via Adversarial Weight Masking.** *Advances in Neural Information Processing Systems (NeurIPS)*, 2022. Shuwen Chai, Jinghui Chen.
3. **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.

### MANUSCRIPTS AND WORKING PROJECTS

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4. **Adaptive Robust Confidence Intervals in Efron's Gaussian Two-Groups Model**, with Chao Gao and Qiaosen Wang. *To be submitted in early 2026*.
5. **Community Recovery and Changepoint Detection on Preferential Attachment Block Models**, with Miklós Rácz, 2026+.
6. **From Weak Recovery to Exact Recovery: Matching a Growing Number of Correlated Regular Stochastic Block Models**, with Miklós Rácz and Jifan Zhang, 2026+.

### AWARDS

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- **Best Reviewer Award**, International Conference on Artificial Intelligence and Statistics (AISTATS) 2025.

### ACADEMIC SERVICE

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I have served as a (sub)reviewer for the following conferences: SODA 2026, APPROX 2025, NeurIPS 2025, and AISTATS (2023-2026).

### TEACHING

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#### Teaching Assistant

- Discrete Mathematics for Computer Science, Northwestern University (2024 & 2025 Fall).

Department of Computer Science, Northwestern University, 2233 Tech Drive, Evanston IL 60208

- Introduction to Theory of Computation, Northwestern University (2023 Fall).
- The Practice of Market Research, Renmin University of China (2022 Fall).
- Introduction to Machine Learning, Renmin University of China (2021 Spring).

## TALKS AND POSTERS

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- (Poster) *Adaptive Robust Confidence Intervals in Efron's Two-Groups Model*, IDEAL workshop on Inference in High Dimensions: Algorithms and Statistics, Evanston IL, USA, Oct. 2025.
- (Poster) *Adaptive Robust Confidence Intervals in Efron's Two-Groups Model*, NITMB-IDEAL Fall 2025 Kickoff Event, Chicago IL, USA, Oct. 2025.
- (Talk) *Efficient Graph Matching for Correlated Stochastic Block Models*, Theory Group Seminar, Northwestern University, Evanston IL, USA, May 2025.
- (Talk) *Efficient Graph Matching for Correlated Stochastic Block Models*, International Conference on Statistics and Data Science, Nice, France, Dec. 2024.
- (Poster) *Efficient Graph Matching for Correlated Stochastic Block Models*, Conference on Neural Information Processing Systems, Vancouver BC, Canada, Dec. 2024.
- (Poster) *One-shot Neural Backdoor Erasing via Adversarial Weight Masking*, Conference on Neural Information Processing Systems, New Orleans LA, USA, Dec. 2022.