

## EDUCATION

- University of Illinois Urbana-Champaign** Illinois  
*Ph.D. Student in Information Science, School of Information Science* Aug. 2023 – Present
  - Advisor:** Jiaqi Ma
  - Research Area:** Theoretical Artificial Intelligence & Theoretical Computer Science
- 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 EXPERIENCE

- Finding Minimal Balanced Separators with Detection Sets** Michigan  
*College of Engineering, University of Michigan* Mar. 2022 – Present
  - Advisor:** Thatchaphol Saranurak
  - Design the first almost linear time algorithm on finding minimal balanced separator.
- Deep Learning Foundation** Michigan  
*SURE Program, College of Engineering, University of Michigan* May 2022 – Apr. 2023
  - Advisor:** Wei Hu
  - Theoretical analysis on intrinsic dimension under isoperimetry assumptions.
- Theory of Graph Neural Networks** Michigan  
*School of Information, University of Michigan* Dec. 2021 – Jan. 2023
  - Advisor:** Jiaqi Ma
  - Prove the asymptotic separability of a 1-layer GCN on node classification tasks.

## PRE-PRINTS AND TECHNICAL REPORTS

(\* denotes equal contribution)

- [P1] **Pingbang Hu**, Thatchaphol Saranurak, “Finding Minimal Balanced Separators with Detection Sets”. *Manuscript*
- [P2] **Pingbang Hu**, “Travel the Same Path: A Novel TSP Solving Strategy”. *Preprint*

## TEACHING EXPERIENCE

- EECS475 Introduction to Cryptography** Michigan  
*Instructional Aide, College of Engineering, University of Michigan* Jan. 2023 – May 2023
  - An upper-level 100+ student course on the main CS track.
  - Hold discussion and office hour weekly, design assignment and exam problems, grade and guide projects.
  - Topics:** *Historic ciphers, perfect secrecy, symmetric encryption, message authentication, cryptographic hash functions, and public key encryption.*
- EECS572 Randomness and Computation** Michigan  
*Instructional Aide, College of Engineering, University of Michigan* Aug. 2022 – Dec. 2022
  - A graduate-level 70+ student course on the M.S. CS theory track.
  - Hold discussion and office hour weekly, design assignment and exam problems, grade and guide projects.
  - Topics:** *Randomized algorithms, randomized complexity, Markov chains, random walks, expander graphs, pseudo-random generators, and hardness v.s. randomness*
- VV285 Honor Mathematics III** Shanghai, China  
*Teaching Assistant, UM-SJTU Joint Institute, Shanghai Jiao Tong University* Mar. 2021 – Aug. 2021

- An undergraduate-level 150+ student course on the main B.Eng. ECE track.
- Hold discussion and office hour weekly, design and grade assignments and exams.
- **Topics:** *Linear systems of equations, vector spaces, Gram-Schmidt orthonormalization, topology of normed spaces, vector fields, higher derivatives, integration on curves and surfaces; Stokes theorem, the inverse and implicit function theorems*
- **Competition:** Hold the 1<sup>st</sup> UM-SJTU JIntegration Bee competition 🐝.

### • VV186 Honor Mathematics II 🐝

Shanghai, China

Sep. 2020 – Dec. 2020

*Teaching Assistant, UM-SJTU Joint Institute, Shanghai Jiao Tong University*

- An undergraduate-level 200+ student course on the main B.Eng. ECE track.
- Hold discussion and office hour weekly, design and grade assignments and exams.
- **Topics:** *Logic, set theory, sequences, convergence, completeness of metric spaces, convergence and continuity, derivative, normed vector spaces, sequences of functions, series and power series, Darboux and Riemann integrals*

## HONORS AND AWARDS

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### • 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*

Jun. 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