

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. theory CS 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 1st UM-SJTU JIntegration Bee competition 🐝.

Shanghai, China

• **VV186 Honor Mathematics II** 🐝

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

Sep. 2020 - Dec. 2020

- 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 |
| <i>First Prize (Ranked #2) among all HK, MC and TW students in Shanghai Jiao Tong University</i> | <i>Oct. 2021</i> |
| • Undergraduate Excellent Scholarship | Shanghai, China |
| <i>Third Prize among all students in UM-SJTU Joint Institute</i> | <i>Nov. 2020</i> |
| • Bao Gang Excellent Scholarship | Shanghai, China |
| <i>Second Prize (Ranked #3) among all Taiwan students in Shanghai Jiao Tong University</i> | <i>Jun. 2020</i> |
| • Hong Kong, Macao and Taiwan Overseas Chinese Student Scholarship | Shanghai, China |
| <i>First Prize (Ranked #1) among all HK, MC and TW students in UM-SJTU Joint Institute</i> | <i>Dec. 2019</i> |