

Yu-Sheng Shih

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EDUCATION

- 📅 01/2025–Present M.S. in Computer Science and Information Engineering
National Taiwan University 📍 Taipei, Taiwan
 - » Advisor: Prof. [Shang-En Huang](#)
- 📅 08/2019–06/2024 B.S. in Computer Science and Information Engineering
National Taiwan University 📍 Taipei, Taiwan
 - » Cumulative GPA: 4.05/4.3
 - » Double Major in Mathematics

RESEARCH INTERESTS

- » Graph Theory & Graph Algorithms
- » Streaming Algorithms
- » Communication Complexity & Lower Bounds
- » Extremal & Probabilistic Combinatorics
- » Combinatorial Optimization

RESEARCH PROJECTS

- » **Subgraph Detection in Streaming Models**
 - » Collaborators: Ying-Sien Wu, Yen-Chu Tsai, Prof. Meng-Tsung Tsai
 - » We study space lower bounds for detecting various subgraphs in streaming models, extending the classical triangle-detection lower bounds to broader graph families and induced or directed settings.
 - » Status: Ongoing; expected submission to CCC 2026.
- » **Coloring Problems on 3-Colorable Graphs**
 - » Collaborator: Prof. Shang-En Huang
 - » We study coloring problems of 3-colorable graphs, aiming to improve bounds for certain subclasses or reduce general cases to more tractable forms.
 - » Status: Ongoing; likely the topic of my master's thesis.
- » **Combinatorial proofs of Petrie Pieri rule and Plethystic Pieri rule**
 - » Collaborators: Saintan Wu, Prof. Sen-Peng Eu, Kuo-Han Ku
 - » We developed a combinatorial approach to interpret the Petrie value of a skewed Young tableau.
 - » [arXiv: 2509.16872](#)

TEACHING EXPERIENCE

- 🕒 09/2025-present Organizer of **TCS Study Group** in NTU
National Taiwan University ♃ Taipei, Taiwan
- 🕒 09/2021–01/2022 Teaching Assistant — **Algorithm Design and Analysis**
National Taiwan University ♃ Taipei, Taiwan

LAB EXPERIENCE

- 🕒 06/2025–Present Summer Research Intern → Research Assistant at Streaming Algorithms Lab
Academia Sinica
» *Advisor:* Professor Meng-Tsung Tsai
» Research areas: Streaming algorithms, Lower bounds.
- 🕒 01/2025–Present Master Student at Fast Graph Algorithms Lab
National Taiwan University
» *Advisor:* Professor Shang-En, Huang
» Research areas: Graph coloring algorithm.
- 🕒 02/2023–01/2025 Undergraduate Research Assistant at Statistical and Randomized Algorithms Lab
National Taiwan University
» *Advisor:* Professor Chih-Hung, Liu
» Research Areas: Randomized algorithms, Differential Privacy.

AWARDS

- » ICPC Taipei Regional — Silver Prize (2022)
- » ICPC Taipei Regional — Silver Prize (2021)
- » 60th IMO — Silver Medal (2019)
- » 59th IMO — Bronze Medal (2018)
- » 30th APMO — Bronze Medal (2018)

EXTRACURRICULAR ACTIVITIES

- 🕒 07/2025 Participant, PCMI 2025 GSS: Extremal and Probabilistic Combinatorics
IAS/PCMI ♃ Park City, Utah, USA
- 🕒 2023 Winter Quantitative Research Intern
WorldQuant Taiwan ♃ Taipei, Taiwan

LANGUAGES

- | | |
|--------------------------------|--|
| Mandarin (Native) | English (TOEFL mybest:(R,L,S,W)=(30,28,22,26)) |
| Japanese (Simple Conversation) | |

PROGRAMMING SKILLS

- » L^AT_EX, C++, Python, Rust, Linux