Ruey-An Shiu

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https://shiurueyan.github.io/academic-site/

EDUCATION

National Taiwan University, Taipei, Taiwan Sep. 2021 – (Expected) Jan. 2026

B.S. in Mathematics, B.A. in Economics (Honor), Minor in Computer Science ***GPA:*** 4.09/4.30

- ***Advisor:*** Prof. Chun-Hsiung Hsia
- ***Thesis:*** On the Synchronization of ReLU Version of Dense Networks

University of California San Diego, California, USA Fall 2024

University of California Education Abroad Program ***GPA:*** 4.00/4.00 (Provost Honors)

2025 SLMath Summer Graduate School, California, USA Jun 9th. 2025 - Jun 20th. 2025

Statistical Optimal Transport (SLMath)

RESEARCH EXPERIENCE

2023 Undergraduate Summer Research Program, NCTS Summer 2023

- ***Advisors:*** Prof. Gi-Ren Liu, Prof. Yuan-Chung Sheu
- Leveraged Stein's method to reinforce the classical central limit theorem and its extensions, broadening the framework to cover non-Gaussian approximations.

Part-Time Research Assistance, Financial Engineering Research Lab, NTUST Aug. 2023 – Now

- ***Advisor:*** Prof. Daniel Wei-Chung Miao
- Topic: Variants of the Jump Diffusion Model.

2023 NCTS Undergraduate Research Program, NCTS Oct. 2023 – Jun. 2024

- ***Advisor:*** Prof. Chun-Hsiung Hsia
- Derived sufficient conditions for synchronization equilibria in the ReLU-modified Kuramoto model on dense networks.

Part-Time Research Assistance, Institute of Sociology, Academia Sinica Mar. 2024 – Aug.2024

Part-Time Research Assistance, College of Health, Lehigh University Aug.2024 – Now

- ***Advisor:*** Prof. Hsuan-Wei "Wayne" Lee
- Topics: Complex systems, Computational Sociology, Game Theory, Mathematical Epidemiology.

2024 Undergraduate Research Project Scholarship, NSTC Jul. 2024 – Feb. 2025

- ***Advisor:*** Prof. Daniel Wei-Chung Miao
- Enhance the Double Exponential Jump Diffusion Model with time-heterogeneous parameters to capture evolving jump characteristics and risk dynamics across different time periods.

Member of the Multi-agent Intelligence and Decision Systems Lab, UCSD Fall 2024

- ***Advisor:*** Prof. Parinaz Naghizadeh
- Formulated a multiplex opinion-dynamics model with alternating layers, proving timing-driven consensus emergence or breakdown and providing spectral conditions and convergence-rate bounds.

2025 Student Summer Research Fellowship Program, University of Chicago Summer 2025

- ***Advisor:*** Prof. Haifeng Xu
- Developed a generalized principal–agent framework grounded in approximate best-response dynamics, systematically capturing strategic interactions under information asymmetry.

CONFERENCE

- **Ruey-An Shiu** and Parinaz Naghizadeh. “Opinion Dynamics in Multi-Layer Social Networks: Consensus and Convergence in Coordination Games.” Under review in the *Annual Allerton Conference on Communication, Control, and Computing* (2025).

PUBLICATION

- **Ruey-An Shiu** and Hsuan-Wei Lee. “Shaping network structures in evolutionary games for stronger cooperation.” P*roceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences,* accepted (2025).

AWARDS

- NSTC College Student Research Creativity Award 2025
- National Taiwan University Bachelor's Thesis Award 2025
- Shih Kung-Sing Outstanding Thesis Award 2025
- National Taiwan University System Beyond Borders Scholarship 2025
- Taiwan Mathematical Society Outstanding Students Prize 2024
- Chow Hung-Ching Scholarship 2024
- Academic Achievement Award (Top 5%) Spring 2024, Fall 2023
- Finance and Mathematics Joint Scholarship 2023
- National Taiwan University Voyage of Aspirations Scholarship for Exchange Students 2023
- Asian Pacific Mathematics Olympiad (APMO) Bronze Award 2019

TEACHING EXPERIENCE

- **Teaching Assistant,** Stochastic Processes (FIN7050) Fall 2025, Fall 2024, Fall 2023
- **Teaching Assistant,** Introduction to Ordinary Differential Equations (MATH2217) Fall 2023
- **Teaching Assistant,** Introduction to Partial Differential Equations (MATH2218) Spring 2024

COMPUTATIONAL SKILLS / OTHER

- **Programming Languages:** R, Python, C++, MATLAB, Julia
- **Languages**: Mandarin (native), English (fluent)