

Ruey-An Shiu

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

EDUCATION

National Taiwan University, Taipei, Taiwan

Sep. 2021 – (Expected) Jun. 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.

Part-Time Research Assistance, Department of Economics, NTU

Sep. 2025 – Now

- **Advisor:** [Prof. Hung-Jen Wang](#)
- Topic: Extended the stochastic frontier model by incorporating flexible distributional assumptions and model averaging techniques, providing more robust efficiency estimation in empirical applications.

CONFERENCE

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

PUBLICATION

- **Ruey-An Shiu** and Hsuan-Wei Lee. “Shaping network structures in evolutionary games for stronger cooperation.” *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, accepted (2025).
- **Ruey-An Shiu** and Chun-Hsiung Hsia. “On the Synchronization of ReLU Version of Dense Networks.” *Under review in the Chaos, Solitons & Fractals*, (2025).

AWARDS

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| • 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

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| • 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)