

Liu Zhonglin

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 Liu-Zhonglin(Joe)

EDUCATION

• The University of Hong Kong

Bachelor of Science, major in Mathematics and Economics

◦ GPA: 0/4.3

Sept 2022 - August 2026

Hong Kong, China

• National University of Singapore

HKU Worldwide Undergraduate Student Exchange Programme

Jan 2025 - May 2025

Singapore

◦ Relevant Coursework: Linear Algebra II (A+), Complex Analysis I (A+), Fourier Analysis and Approximation (A), Dynamical Systems (A-).

RESEARCH EXPERIENCE

• Machine Learning Methods in Online Portfolio Selection Problems

2023-2024

Supervisor: Prof. Ching Wai Ki (HKU)

This project investigated the integration of machine learning models, specifically LSTM and XGBoost, to predict asset prices for Online Portfolio Selection strategies.



• A Comparative Study of Algorithms for the Travelling Salesman Problem

2024-2025

Supervisor: Prof. Zang Wenan (HKU)

Compared classical heuristics against hybrid reinforcement learning models for the Euclidean TSP, demonstrating that an Actor-Critic agent integrated with classical methods achieves competitive performance.



• Inferring Progressive Disconnection in Alzheimer's Disease with PBNs

2025

Supervisor: Prof. Zhang Louxin (NUS)

Developed a novel Probabilistic Boolean Network (PBN) framework to model effective connectivity in fMRI data, identifying a progressive disconnection of DMN-to-MTL pathways in Alzheimer's disease.



• A PBN-RL-XAI Framework for Therapeutic Discovery in Melanoma

2025

Independent Research

Developed an integrated PBN-RL-XAI framework to discover therapeutic strategies for immunotherapy-resistant melanoma, identifying a novel 'hit-and-run' inhibition therapy.



• Game-Theoretic Model of Sequential Drug Approval (Ongoing)

2025 - Present

Supervised by: Prof. Hong Ming Tan & Prof. Jussi Keppo (NUS)

Investigating a sequential game to analyze a firm's optimal R&D and submission strategies when facing a loss-averse regulator.

PUBLICATIONS AND MANUSCRIPTS

- [1] Liu, Z., Zhao, Y., Lyu, B., & Ching, W.-K. (2025). [Integrating Machine Learning Methods for the Prediction in Online Portfolio Selection Problems](#). In *Proceedings of the International Conference on Applied Research in Business, Management and Economics*, Vol. 2, pp. 17-28. Diamond Scientific Publishing. DOI: 10.33422/bmeconf.v2i1.1015.
- [2] Liu, Z. (2024). [A Comparative Study of Classical and Reinforcement Learning Algorithms for the Travelling Salesman Problem](#). Unpublished capstone project report.

WORK/PROJECT EXPERIENCE

• Enhancing Mathematical Understanding via Manim

2022- Present

Team Leader & Main Producer

Hong Kong

- Utilized Manim to create animated educational videos illustrating mathematical concepts. In charge of managing workflows and distributing tasks.
- Served as the main producer for videos that were broadcast across the HKU campus via U-Vision, enhancing mathematical understanding for the university community. Example of my work: [Maths in a minute – 2025 - A very mathematical year](#).

• Bank of China

August 2024

Credit Analyst Intern

China

- Analyzed industry credit reports and prepared detailed financial summaries to support client credit evaluations.

• Department of Mathematics, The University of Hong Kong

Oct 2023 – Dec 2023; Feb 2024 – May 2024

Student Teaching Assistant

Hong Kong

- Assisted in teaching fundamental concepts of mathematics and multivariable calculus, conducting revision classes to improve student performance.
- Developed video tutorials using Manim to visually simplify and explain complex mathematical concepts.

• Essence Brilliant Limited






August 2023

Education Content Developer


Hong Kong

- Created dynamic educational videos using Python and Manim to explain complex topics.
- Managed team task distribution and facilitated communication between internal and external stakeholders.

HONORS AND AWARDS

- **Summer Research Fellowship** 2023-2024
The University of Hong Kong 
- **C.V. Starr Scholarships** 2025
The University of Hong Kong 
- **HKU Recognition Award for Distinguished Service to the Community** 2025
The University of Hong Kong 
 - Awarded Project: Enhancing Mathematical Understanding: A Students as Partners (SAP) Project in Animation and Engagement.
- **Hong Kong Chiu Chow Chamber of Commerce Rayson Huang Memorial Student Enrichment Award** 2025
The University of Hong Kong 
- **Undergraduate Research Fellowship Programme with Research Internship Award** 2025-2026
The University of Hong Kong 

EXTRACURRICULAR

- **Volunteer** 2023
Mission for Migrant Workers (MFMW) 
 - Organized and supported community events, including charity raffles and the provision of free health services for migrant workers.