

# Liu Zhonglin





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 Liu-Zhonglin(Joe) |

## EDUCATION

- The University of Hong Kong** Sept 2022 - August 2026  
*Bachelor of Science, major in Mathematics and Economics*  
Hong Kong, China
  - GPA: X.XX / 4.3
- National University of Singapore** Jan 2025 - May 2025  
*HKU Worldwide Undergraduate Student Exchange Programme*  
Singapore
  - Relevant Coursework: Linear Algebra II (A+), Complex Analysis I (A+), Fourier Analysis and Approximation (A), Dynamical Systems (A-).

## RESEARCH/PROJECT 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 of LOXL2. 

## 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 Unpublished capstone project report.
- [P.1] Inventor 1, Your Name, Inventor 3, et al. (Year). **Title of Patent**. Patent Office, Patent No. XXXXXXXXXX. Registration Date: Date, Grant Date: Date, Publication Date: Date.
- [J.1] Author 1, Your Name, Author 3, et al. (Year). **Title of Journal Article**. *Journal Name*, Vol. XX, Issue X, pp. XXX-XXX. DOI: XX.XXXX/XXXXX.XXXX.XXXXXXX

## WORK EXPERIENCE

- 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 foundational 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

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- **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

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- **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.