# Ming Yin

Website | LinkedIn

Vancouver, BC

## Highlights

- **In-depth knowledge** of important concepts in quantum computing, information, and advantage, including stabiliser formalism, classical simulation, and contextuality
- **Three publications** demonstrating strong skills in mathematical problem-solving and scientific computation, as well as efficient teamworking, communication skills, multitasking, and learning ability
- **Programming experience** in Python (numpy, scipy, pandas, scikit-learn), Qiskit, SageMath, C++, Git, Bash, Julia, SQL, BigQuery, MATLAB, R, and Java
- **Languages**: English (native speaker), Mandarin Chinese (conversational), and German (A level)

## Research Experience

### Quantum Computing

**Three-qubit nonlocality paradoxes: beyond GHZ** July 2026
*With Nadish de Silva, Santanil Jana* *Submitted to CMP; preprint on arXiv*

**A classification program for nonlocality paradoxes of three qubits** June 2025
*With Nadish de Silva, Santanil Jana* *Paper in EPTCS*

- Developing a complete classification of strong nonlocality quantum paradoxes of three qubits, using a combination of analytic and computational methods, helping to advance our understanding of resources for quantum advantage
- Presented at Quantum Physics and Logic 2025 & 2026, MFoQA 2026

**Fast algorithms for classical specs of stabiliser states and Clifford gates** December 2024
*With Nadish de Silva, Wilfred Salmon* *Paper in Quantum*

- Developed linear-algebraic theory for converting between different mathematical descriptions of stabiliser states and Clifford gates, which has potential applications in circuit/gate synthesis and classical simulation of quantum circuits
- Implemented our algorithms in Python and C++, benchmarked them to show their efficiency, and published a Python library to make our code available for public use

**Bases for optimising stabiliser decompositions of quantum states** July 2024
*With Nadish de Silva, Sergii Strelchuk* *Paper in QST*

- Developed the theory of linear dependencies of stabiliser states, guided by computationally generated examples, with a view to optimising stabiliser decompositions of general quantum states
- Implemented an optimisation algorithm based on this theory to find improved upper bounds on stabiliser extent, using Python wrappers for Gurobi

### Systems Biology

**Mathematical Modelling of a Cytoskeletal System** May 2022
*Supervised by Dr François Nédélec*

- Programmed a genetic algorithm in Python that used a C++ cell cytoskeleton simulation tool to determine optimal parameters for plasmid separation, helping the lab to make improvements to optimisation techniques in computational biology and demonstrating ability to tune complex systems with multiple variables

- Conducted systematic data analysis of simulation outputs, creating matplotlib heatmaps and visualisations to communicate optimal parameter ranges and algorithm effectiveness

**Modelling the Partial Migration of the Evening Grosbeak** March 2022
*Group mini-project*

- Used R to integrate public spatial data with clustering analysis to identify regional population patterns, visualise bird populations by plotting clusters and boundaries on a map, and create several mathematical models to predict current and future migratory behaviour, including the impact of rising temperatures

## Education

**PhD in Mathematics (Quantum Computing)** September 2022 – 2027
*Simon Fraser University, Burnaby, BC, Canada* *Supervisor: Dr Nadish de Silva*

**Master of Science (Part III Systems Biology)** September 2021 – July 2022
*Trinity College, University of Cambridge, UK*

**BA (Hons) in Mathematics** October 2018 – August 2021
*Trinity College, University of Cambridge, UK*

## Leadership, Teaching and Outreach

**Chinatown Organiser** May 2025 – present
*Dandelion Action and Learning Collective (Vancouver, BC)*

- Organised, facilitated, and interpreted at events aimed at building bridges between Vancouver's Chinatown and the Downtown Eastside. Worked in a team to plan and run an MMIWG workshop to teach important historical context to Chinatown residents

**Teaching Assistant** September 2022 – present
*Simon Fraser University*

- Led tutorials and workshops for undergraduate courses in introductory calculus, analysis, linear algebra, and quantum computing, helping students improve their mathematical knowledge and skills
- Graded exams for large classes to track students' progress, demonstrating ability to work meticulously and consistently for long periods of time

**Union Organiser** July 2023 – present
*Teaching Support Staff Union*

- Facilitated effective liaison between (student) workers in the Math Department and union executives through emails, meetings, and doorknocking, dealt with grievances, ensuring that workers felt supported and their interests were represented in bargaining
- Served on the Finance Committee, examining budget proposals, analysing financial statements and audit reports, and contributing recommendations of appropriate spending and saving, helping to ensure the Union's long-term financial sustainability

**Undergraduate Representative** November 2019 – November 2020
*Faculty Board of Mathematics, University of Cambridge*

- Communicated ideas between students and Faculty Board members through emails and meetings, showed initiative in researching and pushing to implement suggestions such as lecture recordings and more departmental resources

- Worked diligently during the Covid-19 pandemic to advocate for more accessible and forgiving exams, by conducting a survey that was completed by 636 undergraduate students and writing a report for the Faculty Board. Efforts were recognised by an Outstanding Student Contribution to Education Award