

Qianyang Chen

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Education

PhD Candidate (Complex Systems)

School of Computer Science, Faculty of Engineering

University of Sydney, Australia

Jul 2023 – Current

- Research topic: *On Guided Self-organisation and Collective Intelligence*

Master of Engineering (Mechatronics)

With Distinction

University of Melbourne, Australia

Feb 2017 – Dec 2019

- WAM: 82.8/100
- 2019 W.S Robinson Prize – Melbourne School of Engineering
- 2019 Melbourne Water Women in Water Scholarship
- 2018 Jack Wynhoven Scholarship
- 2017 Dean's Honours List – Melbourne School of Engineering

Bachelor of Actuarial Studies

With Vice Chancellor's Commendation for Academic Excellence

Macquarie University, Australia

Feb 2011 – Dec 2013

- GPA: 4.0/4.0
- 2013 Faculty of Business and Economics Merit Certificate
- 2012 Ho Kam-chiu Statistics Prize for overall proficiency in 200-level statistics
- 2012 Department of Economics Prize
- 2012 Faculty of Business and Economics Merit Certificate
- 2011 Faculty of Business and Economics Merit Certificate

Publications

- [1] Q. Chen, N. Ay, and M. Prokopenko, "Generalizing thermodynamic efficiency of interactions: Inferential, information-geometric and computational perspectives," *arXiv preprint arXiv:2509.10102*, 2025, <https://arxiv.org/abs/2509.10102>
- [2] Q. Chen and M. Prokopenko, "Why collective behaviours self-organize to criticality: A primer on information-theoretic and thermodynamic utility measures," *Royal Society Open Science*, vol. 12, no. 6, p. 241655, 2025
- [3] R. Wood, F. King, R. Esmay, Q. Chen, L. Schneider, E. Dotte-Sarout, S. Fallon, K. Fryirs, R. Gillespie, and R. Blong, "The size inherited age effect on radiocarbon dates of alluvial deposits: Redating charcoal fragments in a sand-bed stream, Macdonald River, NSW, Australia," *Radiocarbon*, pp. 1–14, 2023
- [4] R. Blong, K. Fryirs, R. Wood, F. King, L. Schneider, E. Dotte-Sarout, S. Fallon, R. Gillespie, Q. Chen, and R. Esmay, "Inherited age of floating charcoal fragments in a sand-bed stream, Macdonald River, NSW, Australia: Implications for radiocarbon dating of sediments," *The Holocene*, vol. 33, no. 9, pp. 1154–1159, 2023
- [5] R. Blong, F. Riede, and Q. Chen, "A fuzzy logic methodology for assessing the resilience of past communities to tephra fall: A Laacher See eruption 13,000 year BP case," *Volcanica*, vol. 1, no. 1, pp. 63–84, 2018

Workshops & Conferences

- Jun 2025: *Santa Fe Institute Complex Systems Summer School*. Santa Fe, NM, United States.
- Feb 2025: *Eleventh International Conference on Guided Self-Organization: Machine Learning in Embodied Agents*. Tübingen, Germany.
- Nov 2024: *Centre for Complex Systems Seminar: Disordered System Approaches for Self-Assembling Memristive Neuromorphic Materials*. Sydney, Australia.

- Nov 2024: *Centre for Complex Systems Workshop 2024*. Sydney, Australia.
- Nov 2024: *Workshop on Critical Phenomena and Topological Data Analysis* (presented talk). Newcastle, Australia.
- Oct 2024: *Research Seminar Data Science Foundations* (presented talk via Zoom). Institute for Data Science Foundations, Hamburg University of Technology, Hamburg, Germany.
- Aug 2024: *Emerging Aspirations in Complex Systems Workshop* (presented talk, *Best Presentation Award*). Sydney, Australia.

Work & Project

Mindray Bio-medical Electronics Co., Ltd

Data Scientist

*Aug 2021 – Dec 2022
Shenzhen, China*

- Develop and deploy early-warning systems for device failure
- Predictive modeling for employee attrition risk

Assistive Lower-limb Exoskeleton (Research & Development)

University of Melbourne, Melbourne, Australia

*Feb 2019 – Nov 2019
Melbourne, Australia*

- Design movement trajectories and control schemes
- Design evaluation metrics for stability and motion efficiency
- Develop pilot interface

Peter MacCallum Cancer Centre

Research Intern

*Nov 2018 – Feb 2019
Melbourne, Australia*

- Using MinION DNA sequencer to acquire and analyse time series DNA reads
- Researching algorithms to perform DNA read matching

Aon

Actuarial Analyst

*Feb 2014 – Jul 2017
Australia; Singapore*

- Catastrophe modelling for insurance risk assessment
- Actuarial pricing for reinsurance programs
- General client liaising and project management

Teaching & Mentoring

University of Sydney

Tutor

*Feb 2024 – Current
Sydney, Australia*

- COMP5048 Visual Analytics
- COMP9123 Data Structures and Algorithms
- COMP2123/COMP9123 Data Structures and Algorithms

*Semester 2, 2025
Semester 1, 2025
Semester 1&2, 2024*

University of Melbourne

Tutor

*Jul 2017 – Dec 2017
Melbourne, Australia*

- ACTL30004 Actuarial Statistics

Semester 2, 2017

Macquarie University

Peer Assisted Learning Facilitator

*Feb 2013 – Dec 2013
Sydney, Australia*

- AFIN252 Applied Financial Analysis and Management

Semester 1&2, 2013