Yiyi Cai

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Education

2026– **Stanford University**, Stanford, CA
Doctor of Philosophy, Computer Science

2025-26* **University of Cambridge**, Cambridge, UK
Master of Philosophy, Advanced Computer Science
Advisor: Tom Gur

2021-25 **California Institute of Technology**, Pasadena, CA
Bachelor of Science, Electrical Engineering
Senior Thesis: *"Improving Parameters of Asymptotically Good Quantum LDPC Codes via Stronger Product Expansion"* Advisor: John Preskill

Awards & Honors

2025 Gates Cambridge Scholarship
2025 Stanford Graduate Fellowship
2025 National Science Foundation Graduate Student Fellowship (declined)
2025 National Defense Science and Engineering Graduate Fellowship (declined)
2024 Outstanding Paper Prize at 2024 TQC
2023 Mellon Mays Undergraduate Fellowship
2023 Arthur R. Adams Summer Undergraduate Research Fellowship
2022 Doris Everhart Quantum Summer Undergraduate Research Fellowship

Research Experience

2025 – Student Researcher, Hon Hai Research Institute (Advisor: Min-Hsiu Hsieh)
2023 - 2025 Student Researcher, Institute of Quantum Information and Matter, California Institute of Technology, (Advisor: John Preskill)
2024 Quantum Computing Research Analyst, Global Technology Applied Research, JP-Morgan Chase & Co.
2022 Student Researcher, Quantum Machine Learning for High Energy Physics, California Institute of Technology (Advisor: Maria Spiropulu)
2021 - 2023 Missions Operations & Ground Data Science Intern, Lunar Trailblazer Mission, NASA & California Institute of Technology

*Expected.

Publications

Conference Proceedings

- **Yiyi Cai**, Yu Tong, and John Preskill. Stochastic Error Cancellation in Analog Quantum Simulation. *In 19th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2024)*.
- Elena Scire, Lee Bennett, Judy Adler, Sergio Fajardo-Acosta, Robert Fogg, Elise Furlan, Jacob Llamas, Peter Bahariance, **Yiyi Cai**, Trinity Chung, Garni Gharibian, Emily Hu, Julianna Jin, Matteo Kimura, Aaron Lee, Michael Mansour, Mahak Mathur, Andy Sun, Jasmine Terrones, Jingchao Zhong, and Bethany Ehlmann. Lunar trailblazer ground system development. *Proc. SPIE 13098, Observatory Operations: Strategies, Processes, and Systems X, 130981K (2024)*.

Preprints

- Akshar Ramkumar, **Yiyi Cai**, Yu Tong and Jiaqing Jiang. High-Temperature Fermionic Gibbs States are Mixtures of Gaussian States. arXiv preprint arXiv:2505.09730.
- **Yiyi Cai**. Improving Parameters of Asymptotically Good Quantum LDPC Codes via Stronger Product Expansion. Senior Thesis (Major).

Talks & Seminars

- "High-Temperature Fermionic Gibbs States are Mixtures of Gaussian States"
  Academia Sinica; Aug. 2025
- "Stochastic Error Cancellation in Analog Quantum Simulations"
  - Theory of Quantum Computation, Communication and Cryptography; Sep. 2024
  - Mellon Mays Undergraduate Fellowship Western Regional Conference; Nov. 2023
  - Caltech Summer Undergraduate Research Fellowship Seminar; Aug. 2023
- "Lunar trailblazer ground system development"
  SPIE Astronomical Telescopes + Instrumentation; Jun., 2024
- "Towards Producing realistic LHC QCD simulation using Quantum Generative Adversarial Network through a Quantum Circuit Ansatz Search"
  Caltech Summer Undergraduate Research Fellowship Seminar; Oct. 2022

Teaching

The Coding School

Teaching Assistant & Curriculum Developer

Summer 2025 Quantum Summer Institute

California Institute of Technology

Teaching Assistant

Spring 2025	IDS 157 Statistical Inference
Fall 2025	EE 111 Signal-Processing Systems and Transforms
Spring 2024	EE 10b Embedded Systems
Winter 2024	EE 10a Digital Logic
Fall 2024	EE 55 Mathematics of Electrical Engineering

Last updated: August 11, 2025