Po-Wei (George) Huang

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Education

University of Oxford **Oct 2024 – Present**

DPhil in Mathematics (Mathematical Physics)

- Research group: Quantum information and computation
- Advisors: Prof. Bálint Koczor, Prof. Simon Benjamin, and Prof. Artur Ekert

National University of Singapore **Aug 2020 – Jun 2023**

BComp (Hons) in Computer Science (GPA 4.81/5.00)

- Second major in mathematics
- Dual specialization in algorithms and theory/artificial intelligence
- Advisors: Prof. Patrick Rebentrost and Prof. Rahul Jain

Research Experience

Quantum Motion Technologies **Nov 2024 – Present**

Graduate Researcher (Supervisor: Prof. Simon Benjamin, Dr. Thomas R. Bromley)

Entangled Computing Lab, Centre for Quantum Technologies **May 2023 – Sep 2024**

Research Assistant (PI: Prof. Patrick Rebentrost)

Web IR/NLP Group, National University of Singapore **Apr 2021 – Jul 2022**

Undergraduate Researcher (Advisor: Prof. Min-Yen Kan)

Department of Chemistry, National Cheng Kung University **Sep 2018 – Apr 2019**

Student Researcher (Advisor: Prof. Hong-Ping Lin)

Manuscripts and Publications

[1] A. G. Rattew, **P.-W. Huang**, N. Guo, L. Pira, P. Rebentrost (2025). Accelerating inference for multilayer neural networks with quantum computers. *arXiv:2510.07195 [quant-ph]*

– *Accepted at QTML 2025 as a regular contributed talk.* –

[2] **P.-W. Huang**, G. Boyd, G.-L.R. Anselmetti, M. Degroote, N. Moll, R. Santagati, M. Streif, D. Marti-Dafcik, H. Jnane, S. Simon, N. Wiebe, T.R. Bromley and B. Koczor (2025). Fullqubit alchemist: Quantum algorithm for alchemical free energy calculation. *arXiv:2508.16719 [quant-ph]*

[3] **P.-W. Huang**, P. Rebentrost (2024). Quantum algorithm for large-scale market equilibrium computation. In *Advances in Neural Information Processing Systems* **37**, pages 10878–10907.

[4] P. Ivashkov, **P.-W. Huang**, K. Koor, L. Pira, P. Rebentrost (2024). QKAN: Quantum Kolmogorov-Arnold Networks. *arXiv:2410.04435 [quant-ph]*

[5] B. Y. Gan, **P.-W. Huang**, E. Gil-Fuster, P. Rebentrost (2024). Concept learning of parameterized quantum models from limited measurements. *arXiv:2408.05116 [quant-ph]*

– *Accepted at QTML 2024, AQIS 2024, and IPS 2024 as a regular contributed talk.* –

[6] **P.-W. Huang**, X. Li, K. Koor, P. Rebentrost (2023). Hybrid quantum-classical and quantum-inspired classical algorithms for solving banded circulant linear systems. *arXiv:2309.11451 [quant-ph]*

[7] **P.-W. Huang**, P. Rebentrost (2023). Post-variational quantum neural networks. *arXiv:2307.10560 [quant-ph]*

– *Accepted at QTML 2023 as a regular contributed talk.* –

[8] **P.-W. Huang** (2022). Domain specific augmentations as low cost teachers for large students. In *Proceedings of the First Workshop on Information Extraction from Scientific Publications*, pages 84–90.

[9] **P.-W. Huang**, A. Ramesh Kashyap, Y. Qin, Y. Yang, and M.-Y. Kan (2022). Lightweight contextual logical structure recovery. In *Proceedings of the Third Workshop on Scholarly Document Processing*, pages 37–48.

Industry Experiences

Continental Automotive Singapore **May 2022 – Jul 2022**

Software Engineer Intern

Taiwan Semiconductor Manufacturing Company (TSMC) **Jul 2021 – Sep 2021**

Information Technology Intern

Talks

[1] **Fullqubit alchemist: Quantum algorithm for alchemical free energy calculation.** *Quantum Nosh, Oxford.* (Oct 24, 2025)

[2] **Post-variational quantum neural networks.** *Contributed talk at QTML 2023.* (Nov 22, 2023)

[3] **Post-variational strategies for QML.** *QML Seminar, QAISG.* (Oct 24, 2023)

[4] **Post-variational quantum neural networks.** *CS Seminar, CQT.* (Aug 30, 2023)

[5] **Domain specific augmentations as low cost teachers for large students.** *Contributed talk at WIESP@AACL-IJCNLP 2022.* (Nov 21, 2022)

Posters

[1] **Fullqubit alchemist: Quantum algorithm for alchemical free energy calculation.** *SEEQA 2025.* (Aug 27, 2024)

[2] **Quantum algorithm for large scale market equilibrium computation.** *NeurIPS 2024.* (Dec 11, 2024)

[3] **Hybrid quantum-classical and quantum-inspired classical algorithms for solving banded circulant linear systems.** *QIP 2024.* (Jan 15, 2024)

[4] **Lightweight contextual logical structure recovery.** *Third Workshop for Scientific Document Processing @ COLING* (Oct 17, 2022)

Teaching

B8.5 Graph Theory *(Teaching Assistant)*	Aut 2025
B7.3 Further Quantum Theory *(Teaching Assistant)*	Spr 2025
B8.4 Information Theory *(Teaching Assistant)*	Aut 2024
CS2040(S) Data Structures and Algorithms *(Teaching Assistant)*	7 terms throughout 2021 to 2023

Achievements and Awards

EPSRC Quantum Technologies DTP CASE Conversion Studentship	Oct 2024 – Mar 2028
Alan Tayler Scholarship in Mathematics, St. Catherine's College	Oct 2025 – Sep 2027
Taiwanese Government Scholarship to Study Aboard	Jun 2025 – May 2027
Honours Bachelor's Degree with Highest Distinction	2023
NUS School of Computing Turing Research Programme	2023
NUS School of Computing Dean's List	Aut 2020, Spr 2021, Aut 2022
NUS School of Computing Honour List of Student Tutors	2022

Academic Services

Journal Reviewer: Int. J. Quantum Inf, Quantum Mach. Intell., npj Quantum Inf.

Conference Reviewer: QTML 2023, TAMC 2024, TQC 2024, NeurIPS 2025

Conference Volunteer: SEEQA 2025

Skills

Spoken Languages: English (full professional proficiency), Mandarin (native)

Programming Languages: C/C++, Java, Python

Machine/Deep Learning: PyTorch, JAX, Tensorflow, Keras, Sci-kit Learn, Huggingface

Quantum Computing: Qiskit, Pennylane, Cirq, Tensorflow Quantum