

Po-Wei (George) HUANG

☎ +65 8891 3219 | ✉ huangpowei22@u.nus.edu | 💻 [huangpowei](https://github.com/georgepwhuang) | 🌐 georgepwhuang.github.io | 🎓 Google Scholar

EDUCATION

National University of Singapore

Aug 2020 - Jun 2023

Bachelor of Computing (Computer Science) with Honours (Highest Distinction) (GPA 4.81/5.00)

- Second Major in Mathematics
- Turing Programme (Honours Research Specialization Program)
- Study Focus Area: Algorithm and Theory / Artificial Intelligence
- Coursework: Design and Analysis of Algorithms (A^+), Information Theory (A^+), Optimisation Algorithms (A^+), Randomised Algorithms (A), Algorithm Mechanism Design (A), Artificial Intelligence (A), Uncertainty Modelling in AI (A), AI Planning and Decision Making (A), Quantum Mechanics I/II (A), Probability (A)

Nanyang Technological University

Aug 2019 - May 2020

BEng/BBus Double Degree in Business and Computing (GPA 4.91/5.00(CS) 4.74/5.00(BUSINESS))

- Incomplete; transferred to NUS by end of freshman year
- Coursework: Computational Thinking (A^+), Data Structures (A^+), Data Science and AI (A^+)

PREPRINTS

P.-W. Huang, X. Li, K. Koor, P. Reberntrost (2023). Hybrid quantum-classical and quantum-inspired classical algorithms for solving banded circulant linear systems. *arXiv:2309.11451 [quant-ph]*, submitted to QIP 2024 and npj Quantum Information.

P.-W. Huang, P. Reberntrost (2023). Post-variational quantum neural networks. *arXiv:2307.10560 [quant-ph]*, accepted at QTML 2023 as short talk, under review at Physical Review Research.

PUBLICATIONS

P.-W. Huang (2022). Domain specific augmentations as low cost teachers for large students. *Proceedings of the First Workshop on Information Extraction from Scientific Publications (WIESP@AAACL-IJCNLP2022)*.

P.-W. Huang, A. Ramesh Kashyap, Y. Qin, Y. Yang, and M.-Y. Kan (2022). Lightweight contextual logical structure recovery. *Proceedings of the Third Workshop on Scholarly Document Processing (SDP@COLING2022)*.

RESEARCH EXPERIENCE

Research Assistant

May 2023 - Present

Principal Investigator: Patrick Reberntrost (CENTRE FOR QUANTUM TECHNOLOGIES)

- Investigating hybrid quantum-classical algorithms and quantum machine learning with provable guarantees.
- Exploring algorithmic quantum solutions in physical and economical applications.

Undergraduate Researcher

Aug 2022 - Apr 2023

Supervisor: Patrick Reberntrost, Rahul Jain (CENTRE FOR QUANTUM TECHNOLOGIES)

- Proposed “post-variational” strategies that convert quantum optimization to convex optimization problems.
- Conducted error analysis of such strategies and provided upper bounds of quantum measurements required.

Undergraduate Researcher

Apr 2021 - Jul 2022

Supervisor: Min-Yen Kan (WEB IR/NLP GROUP @ NUS)

- Optimized document structure extraction performance by 10% for marco-F1 against a previous model.
- Adapted sliding attention framework to induce quadratic speedup in runtime.
- Applied deep semi-supervised learning techniques to increase model robustness to out-of-domain data.

Student Researcher

Sep 2018 - May 2019

Supervisor: Hung-Ping Lin (NCKU CHEMISTRY)

- Synthesized porous bio-carbon as a replacement material of graphene-based supercapacitors.
- Experimented on different properties of bio-carbon that affect capacitance.

ACHIEVEMENTS AND AWARDS

Degree Honours – Highest Distinction (2023)

Certificate of Distinction – Algorithms & Theory / Artificial Intelligence (2023)

Top Students for Design and Analysis of Algorithms / Optimisation Algorithms (2022, 2023)

Dean's List (Fall 2020, Spring 2021, Fall 2022)

Honour List of Student Tutors (2022)

TALKS

“Post-variational strategies for quantum machine learning.” *QML Seminar, QAISG.* (Oct 24, 2023)

“Post-variational quantum neural networks.” *CS Seminar, Centre for Quantum Technologies.* (Aug 30, 2023)

“Hybrid quantum-classical neural networks.” *Bachelor's Dissertation Report, NUS.* (Apr 17, 2023)

“Domain specific augmentations as low cost teachers for large students.” *Contributed talk at First Workshop on Information Extraction from Scientific Publications.* (Nov 21, 2022)

“Neural logical recovery for scholarly articles.” *Undergraduate Research Opportunity Programme (UROP) Project Report, School of Computing, NUS.* (Apr 18, 2022)

ACADEMIC SERVICES

Sub-reviewer for QTML 2023, QIP 2024

TEACHING EXPERIENCE

NUS School of Computing

Jan 2021 - Apr 2023

Teaching Assistant (DATA STRUCTURES AND ALGORITHMS)

- Provided algorithm design consultation and pseudocode fine-tuning for 120+ students over 6 semesters.
- Graded programming assignments for 200+ students over 7 semesters.
- Designed lab materials for Java programming and data structure applications.

INDUSTRIAL EXPERIENCE

OpenRead

Mar 2022 - Sep 2022

Part-time NLP Engineer (NEURAL ENGINE DEVELOPMENT TEAM)

- Constructed an inference engine for table and figure extraction using vision models from scientific articles.
- Developed document reconstruction program for PDF files using multimodal ensemble neural networks.
- Assembled summarization pipeline for long scholarly documents.

Continental Automotive Singapore

May 2022 - Jul 2022

Software Engineer Intern (CENTRAL ENGINEERING DEPARTMENT)

- Developed an internal tool to track coding issues with the purpose of reducing manual time.
- Designed heuristic-based algorithm for string matching for issue detection.
- Participated in Agile ceremonies and familiarized Agile workflows.

Taiwan Semiconductor Manufacturing Company (TSMC)

Jul 2021 - Sep 2021

Software Engineering Intern (EQUIPMENT EDGE COMPUTING TEAM)

- Facilitated database transfer from SQL to NoSQL increasing read/write access speed by 10x.
- Created Spring-based backend of the existing dashboard to streamline database accessing procedures.
- Deployed cluster-balanced Cassandra database, reducing reliance on external data services.
- Adapted Prometheus and Grafana interface for easy monitoring of Kubernetes cluster health status.

STANDARD TEST SCORES

TOEFL iBT: 118/120 (Jun 2018)

GRE Physics Subject Test: 990/990 (Oct 2023)

SKILLS

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

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

Quantum Computing: Qiskit, PennyLane