

WORK HISTORY

Duy Tan University, Institute of Research and Development

Research Assistance

February 2023 – Current

- Research interest includes quantum computing, quantum machine learning and its trainability, and applications in finance sectors.

EDUCATION

Deakin University

Bachelor of Information Technology (Honours)

November 2018 – September 2022

- Recipient of Deakin College Vietnam Excellence Scholarship.
- Recipient of Deakin STEM Scholarship for Bachelor study and Honour program.
- Recipient of Deakin summer scholarship for the project Impact of Barren Plateaus Countermeasures on the Quantum Neural Network Capacity to Learn.
- Majored in Creative Technology.
- Graduated with First Class Honours – Candidate for PhD Program.

PUBLICATIONS

- Cybulski, J.L., Nguyen, T. (In Press) Impact of barren plateaus countermeasures on the quantum neural network capacity to learn. Quantum Inf Process 22, 442 (2023). <https://doi.org/10.1007/s11128-023-04187-8>
 - Training of Quantum Neural Networks can be impeded by Barren Plateaus. Fortunately, there are techniques to mitigate the phenomenon. We investigate the impact of those techniques on the QNN's capacity to learn and ability to generalise beyond training data.
- Thanh Nguyen and Jacob L. Cybulski (2023): "Training Variational Quantum Models with Barren Plateaus Mitigation Strategies." In Preparation for journal submission (Advanced Draft)
 - This project investigated the effectiveness of different approaches to dealing with zero-gradient phenomena in various Quantum Neural Network developmental circumstances.
- Thanh Nguyen and H.L. Thi (2023): "Variational Quantum Algorithms in Finance." Submitted to Quantum Information Processing:
 - The finance sector is expected to be one of the first to receive the prosperity of Quantum technology. We review the current progress on Quantum Algorithms for financial applications, specifically focusing on the use cases that can be addressed through machine learning.

CONFERENCES

- Nguyen Ngo Cong Thanh and Jacob L. Cybulski (2023): "Investigation of Barren Plateaus in Quantum Neural Network Development." Presented at 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Waseda University, Tokyo, Japan, August 20-25, 2023.

SEMINARS

- Jacob Cybulski and Nguyen Ngo Cong Thanh, "Investigation of Barren Plateaus Mitigation Strategies in the Development of Variational Quantum Models: An Overview of Problems and Solutions", Warsaw School of Economics, Poland.

PROJECTS

- (2021) IBM Quantum Challenge Fall
 - Advanced achievement award granted by IBMQ, at <https://www.credly.com/badges/84ff1b26-7fc2-47f3-bb26-d9a28dcc6079>

- (2022 – Current) The Impact of Barren Plateaus Mitigation Strategy on the Quantum Neural Network Capacity to Learn
 - Funded by Deakin University as a Summer Project Scholarship, and STEM scholarship,
 - One published paper,
 - One manuscript prepared for journal publication,
 - One Poster Presentation at the 10th International Congress on Industrial and Applied Mathematics.
- (2023 – Current) Variational Quantum Algorithms in Finance
 - Two manuscripts accepted for Conference.