Frances Fengyi Yang

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About Me

Frances Yang is a final-year PhD candidate at the Australian Institute for Machine Learning (AIML), The University of Adelaide, supervised by *Prof. Tat-Jun Chin* and *Prof. Frank Neumann*. Completing her PhD in 2026, she focuses on developing quantum algorithms for foundational problems in machine learning and computer vision, with a particular emphasis on quantum-enhanced geometric reasoning and optimization. She has experience working with both annealing-based and gate-based quantum platforms and has implemented scalable solutions for perception and decision-making tasks.

Education

The University of Adelaide, Australia 2021 – 2025

PhD candidate at School of Computer & Mathematical Sciences
Supervisors: *Prof. Tat-Jun Chin* & *Prof. Frank Neumann*
Thesis title: Realisation of Deep Learning Algorithms and Computer Vision on Quantum Computers
Research focus: developing quantum algorithms for foundational problems in machine learning and computer vision, with a particular emphasis on quantum-enhanced geometric reasoning and optimization.

The University of Adelaide, Australia 2016 – 2020

1st Class Honours *BEng (Hons)* in Electrical & Electronics, majored in Computer Engineering
GPA: 6.3/7.0, equivalent to 3.77/4.0
Highlight courses: Digital Signal Processing, Radio Frequency Systems, Control, Electronic Circuits, Computer Architecture, System Engineering, and Engineering Electromagnetics.

Publications & Preprints

1. **Robust Fitting on a Gate Quantum Computer**
   Frances Fengyi Yang, Michele Sasdelli, Tat-Jun Chin
   European Conference on Computer Vision (ECCV), ***Best Paper Finalist, Oral***, 2024.
   Invited talk at 2nd Workshop on Quantum Computer Vision and Machine Learning (QCVML).

2. **Projected Stochastic Gradient Descent with Quantum Annealed Binary Gradients**
   Maximilian Krahn, Michelle Sasdelli, **Frances Fengyi Yang**, Vladislav Golyanik, Juho Kannala, Tat-Jun Chin, Tolga Birdal
   British Machine Vision Conference (BMVC), 2024.

3. **Training Multilayer Perceptrons by Sampling with Quantum Annealers**
   Frances Fengyi Yang, Michele Sasdelli, Tat-Jun Chin
   arXiv preprint arXiv:2303.12352, 2023.

Research Experiences

Research Assistant 2020 – 2021

Centre for Research on Engineering Software Technologies (CREST) Group, The University of Adelaide
Project: Adversarial Machine Learning in Natural Language Processing (NLP)

- Worked on building a defense pipeline against adversarial samples in a task-agnostic NLP system.
- Implemented a text normalizer to map user-generated text from social media to canonical forms for NLP systems to mitigate the impact of potential adversarial samples.

Research Assistant 2018 – 2019

System and Control Group, The University of Adelaide
Project: Rover Platform Development for Autonomous & Multi-agent system

- Implemented a three-wheeled omnidirectional robot PID controller with model simulation in Simulink, implementation & tests in Python, and deployed on Raspberry Pi.

Research Assistant 2017 – 2018

The University of Adelaide
Sponsored by Australian Defence Science and Technology Group (DSTG)
Project: Classifying Network Traffic Flows with Deep Learning

- Trained and optimized classifiers for sparsely labeled network data using selected algorithms including NN, SVM, C4.5 Decision Tree, Random Forest, etc.

Teaching Experience

Teaching Lecturer 2025 Semester 1

Course: Computer Networks & Applications (3001_7039 Combined)
School of Computer and Mathematical Sciences, The University of Adelaide

Other Experiences

Software Developer Intern 2021

eSMART 21 Pty Ltd
Sensor Image Processing in Smart Parking Systems

- Added a privacy layer to the smart parking system by processing sensor input to blur human objects in camera images using machine learning techniques.

Kaggle Competition 2020

OSIC Pulmonary Fibrosis Progression Project
Awarded **silver medal**, for ranking 17th out of 2097 and being among the **top 1%** worldwide

- Employed deep learning and data analysis techniques to carry out the task of predicting patients' severity of the decline in lung function based on historical CT scans of their lungs – as part of a 3 manned team.
- Used a ConvNets architecture called EfficientNet-B0 with Adam Optimization Algorithm for prediction.

Honors and Awards

Centre for Augmented Reasoning (CAR) Scholarship 2025
Best Paper Candidate & Oral presentation in European Conference on Computer Vision (ECCV) 2024
Australian Government Research Training Program (RTP) Scholarship 2021
Silver Medal in Kaggle Competition 2020
Australian Cyber Security Cooperative Research Centre Research Scholarships 2019
The University of Adelaide Summer Research Scholarships 2018

Skills

Programming	Python, C++, MATLAB, Verilog.
Quantum Computing	D-Wave Ocean SDK, Qiskit, AWS Braket.
Machine Learning Tools	PyTorch, Scikit-Learn.
Miscellaneous	Linux, Git, LaTeX.