

# FRANCES FENGYI YANG

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## 🌐 ABOUT ME

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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.

Frances is eager to join a team advancing quantum hardware, where she can contribute to showcasing hardware capabilities and improving quantum-classical workflows through rigorous algorithmic benchmarking and performance analysis. With a strong foundation in algorithm development, hands-on Python programming, and experience translating research into practical systems, she brings a deep commitment to pushing the boundaries of quantum computing in real-world applications.

## 🎓 EDUCATION

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**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

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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

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**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

<b>Programming</b>	Python, C++, MATLAB, Verilog.
<b>Quantum Computing</b>	D-Wave Ocean SDK, Qiskit, AWS Braket.
<b>Machine Learning Tools</b>	PyTorch, Scikit-Learn.
<b>Miscellaneous</b>	Linux, Git, L <sup>A</sup> T <sub>E</sub> X.