Fanyi Wu

F27A Wilmslow Park, 211 Hathersage Road, Manchester M13 0JQ
+44 7579010391 fanyi.wu@manchester.ac.uk

EDUCATION

2024-present **University of Manchester**
PhD in Artificial Intelligence
- UKRI fully funded scholarship in collaboration with the University of Cambridge
- Supervised by Dr Michele Caprio and Professor Samuel Kaski on conformal prediction and probabilistic machine learning in collaboration with Google DeepMind

2023-2024 **University of Cambridge**
Mphil in Data Intensive Science
- Thesis: Combinatorial Optimisation – Chaotic Amplitude Control for the Ising Minimisation Using Optical Parametric Oscillator System (Distinction)
- Relevant Modules: Advanced Research Computing, Application of Machine Learning, Deep Learning and Neural Networks, Statistics for Data Science
- Student Representative for the Cohort

2020-2023 **Imperial College, London**
BSci in Physics
- Relevant modules: Computational and experimental Physics, Mechanics and Relativity, Oscillation and Waves, Electrostatic and Magnetism, Statistics, Advanced Mathematics, Thermal Dynamics and Structure of Matters, Quantum Mechanics, Particle Physics, Solid State Physics, Informational Theory
- Full marks for individual Python project in Year 1 Practical Physics Module
- Demonstrated good writing, collaborating, organisational and time-management skills through individual lab reports and group assignments.

PUBLICATION

[1] **F. Wu**, V. Lohmanova 'Bayesian Conformal Prediction as Decision Risk Problem Using Bayesian Quadrature,' EurIPS EIML Workshop 2025.

[2] A. C. Harwood, S. Vezzoli, T. V. Raziman, C. Hooper, R. Tirole, **F. Wu**, S. Maier, J.B. Pendry, S. A. R. Horsley, R. Sapienza 'Space-time optical diffraction from synthetic motion,' Nature Communications 2025

[3] X. Zhang, Q. Wei, Y. Zhu, **F. Wu**, and S. Ananiadou, "THCM-CAL: Temporal-Hierarchical Causal Modelling with Conformal Calibration for Clinical Risk Prediction," EMNLP 2025.

EXPERIENCE

2024 **University of Cambridge MPhil Thesis – Chaotic Amplitude Control for the Ising Minimization Using Optical Parametric Oscillator System**
- Supervised by Prof Natalia Berloff in Department of Mathematics
- Implemented an algorithm for analog bistable systems to solve combinatorial optimization problems (MAX-CUT and GSets)
- Optimized the algorithm using Machine Learning techniques to efficiently find low-energy states of the Ising Hamiltonian, demonstrating performance comparable to state-of-the-art heuristics.

2024 **University of Cambridge – Degradation Strategies in Diffusion Model**
- Applied novel degradation strategies within DDPMs on the MNIST dataset
- Using a CNN to explore hyperparameter impacts of Diffusion Model
- Developed and tested Gaussian blurring and "crop-flip" degradation strategies
- Evaluated models using Inception scores, FID, and classification confidence

2023 **Imperial College London – Quantum Optics & Meta-material Group**

- Supervised by Prof Riccardo Sapienza
- Explored space-time double-slit experiment using a time-varying meta-material ITO
- Conducted data analysis and simulations, revealing interference patterns in frequency space
- Wrote arbitrary patterns and produced computer generated holograms (CGH) on spatial-light modulator

2022 **Imperial College London BSc Project – Single Photon Pairs Generation and Detection and Building a Micro-spectrophotometer**

- Supervised by Dr Stefano Riccardo to explore SPDC behaviour of photons with EMCCD
- Conducted experiment on optical behaviour of BBO non-linear crystals
- Used thin films of meta surface BBO to trap photons and simulate SPDC behaviour by modifying the codes and compare with experimental results.

2022 **Imperial College London – Magnetic Confinement Fusion**

- Studied plasma fluid & kinetic models and plasma physics in tokamak
- Learned command and terminal basics to control computer using Linux
- Used SOL-KiT to do large data simulations on SOL plasma behaviour
- Process large data set on HPC and managed to do data analysis with the generated results

2022 **Chinese Academy of Science High Energy Group – Cosmic Ray Summer School**

- Studied with scientists in high energy group of Chinese Academy of Science
- Explored topics on cosmic rays and high energy detectors
- Participated in muon detection and imaging seminars

2021 **Zhejiang University High-Energy & Particle Physics Research Programme**

- Learned Cpp fundamentals and used ROOT to extrapolate data and explore the underlying relationships between variables
- Broadened awareness of theories in High-Energy & Particle Physics and relevant fields

2020 **Imperial College London Hubble's Constant Python Project**

- Demonstrated excellence in Python by generating 400000 random mass-energy for products in proton-proton collisions distributed in the same way as the real discovery did
- Proved good data-analysis ability when determining Hubble's constant by calculating redshift velocities from Hydrogen-alpha spectral data from 100 galaxies after eliminating futile data through Python

ADDITIONAL SKILLS AND ACHIEVEMENTS

IT SKILLS

- Python, MATLAB, Linux, C++, Machine Learning
- MS Word, PowerPoint, Excel

LANGUAGES

- Chinese, English

ACHIEVEMENTS

- 2025 Turing scheme award winner for fully funded international exchange
- 2024 CVPR Embodied AI Workshop PRS Challenge: Ranked top2 in this challenge
- 2019 BPhO：Global Gold Prize, ranking top 10 in China
- 2019 21th Century Speech Competition: Outstanding Winner
- 2018 ASDAN 3D Printing Competition: National Championship