JINYU (DEREK) DONG

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EDUCATION

University of Cambridge, Emmanuel College — Oct 2021 – Jun 2025
MEng & BA in Electrical and Information Sciences - Honours with Distinction, ranked **12th out of 266** in cohort

MEng Project: Trained plausible recurrent neural networks for working-memory tasks and optimised them under metabolic constraints to investigate neural mechanisms. (Supervisor: Prof. Yashar Ahmadian).

Relevant Modules: Physics-Informed NN, Probabilistic ML, Optimization, Algorithms & Data Structures, Advanced Statistics

SELECTED HONORS & AWARDS

Frank Marriott Scholarship for Engineering (2022-2025) — for exceptional academic excellence.
China Physics Olympiad (CPhO) First Prize (2019) — Liaoning Province.

MACHINE LEARNING EXPERIENCE

University College London, Centre for Computational Science — Jul 2025 – Sep 2025 (expected)
AI-driven Drug Discovery — Supervisor: Prof. Peter Coveney — *Cambridge/London*

- Scaled deep neural network training on the Frontier exascale supercomputer to predict binding free energies, replacing costly Molecular Dynamics simulations in high-throughput drug screening.
- Optimized compute workflows for reliability, resource efficiency, and throughput across heterogeneous HPC infrastructure.

Skills: Distributed Training, ML Infrastructure, HPC, PyTorch, Large-Scale Scientific Computing, System Optimization

University of California Davis, Self-Supervised Learning Lab — Aug 2024 – Sep 2024
Representational Learning — Supervisor: Prof. Yubei Chen — *Remote*

- Co-developed a theoretical framework and algorithm for manifold extrapolation in diffusion-based image denoisers.
- Designed evaluation metrics for video extrapolation and benchmarked model performance.
- Co-authored a NeurIPS 2024 SciForDL paper based on this work. openreview.net/tG75AqtP6U

Skills: PyTorch, Diffusion Models, VAEs, MNIST Benchmarking, Video Similarity Evaluation

ENGINEERING EXPERIENCE

Mercedes AMG High Performance Powertrains — Sep 2023 – Aug 2024
Lap Simulation Placement — *Brixworth, UK*

- Employed lap-simulation tools to optimise power-unit calibration for every Grand Prix.
- Developed and iteratively enhanced the powertrain simulator to increase fidelity and efficiency.

Skills: C++, MATLAB, Azure DevOps, Statistical Data Analysis, Numerical Optimization, Team Collaboration

HUAWEI 2012 Lab, Cambridge Research Centre — Jul 2022 – Sep 2022
Computer Architecture Intern — *Cambridge, UK*

- Converted Google workload traces into BT9 format and evaluated state-of-the-art branch predictors using the CBP-5 kit.
- Demonstrated TAGE predictor superiority on WSC traces and proposed architectural optimisations.

Skills: C++, Bash Scripting, Linux, Docker, Multithreaded Acceleration, Large-scale Data Processing

PUBLICATIONS

1. Z. Yun, G. Chuang, **D. Dong**, Y. Chen, *Denoising for Manifold Extrapolation*. NeurIPS SciForDL 2024
2. **D. Dong**, A. Margaritov, H. K. H. So, *Evaluating SOTA Branch Predictors on WSC Traces*. Technical Report, 2022

SKILLS

Programming Languages	Python (PyTorch, TorchScript); C/C++; MATLAB; JavaScript; Assembly; Git; Linux; Mandarin (native); English (fluent)