

Xuhang Chen

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Research Interests

Self-evolving Agents, Multimodal Reasoning

可接受不转正实习，更看重平台的技术前景与自身在核心方向的长期成长。

Education

University of Cambridge, Brain Physics Lab

Cambridge, UK

PhD in Clinical Neurosciences (Machine Learning)

2023 – Present

Cambridge Trust Scholar (Fully-funded)

Supervised by Prof. Peter Smielewski, Dr. Ari Ercole and Prof. Marek Czosnyka

Imperial College London

London, UK

MSc in Applied Machine Learning (Distinction, Top 3)

2022 – 2023

Supervised by Dr. Chen Qin

Beihang University

Beijing, China

Major: BEng in Detection Guidance and Control Technology (Top 2)

2018 – 2022

Minor: BSc in Applied Mathematics

2019 – 2022

China National Scholarship Awardee

Selected Publications

- [1] **Chen X**, et al. Self-signals driven multi-LLM debate for efficient and accurate reasoning
Under review, the International Conference on Machine Learning – **ICML 2026** [Paper] [GitHub]
- [2] Liu X, Ji D, Liu L, Zhu L, **Chen X**, et al. CamGeo: Sparse Camera-Conditioned Image-to-Video
Generation with 3D Geometry Priors
Accepted, the International Conference on Machine Learning – **ICML 2026**
- [3] **Chen X**, et al. Artefacts in continuous neuromonitoring
Accepted, Nature Reviews Bioengineering – **NRB** [Paper]
- [4] **Chen X**, et al. Generalised label-free artefact cleaning for real-time medical pulsatile time series
Accepted, IEEE Transactions on Biomedical Engineering – **IEEE TBME** [Paper] [GitHub]
- [5] Tang C, Yi W, Xu M, Jin Y, Zhang Z, **Chen X**, et al. A deep learning-enabled smart garment for
accurate and versatile monitoring of sleep conditions in daily life
Accepted, Proceedings of the National Academy of Sciences – **PNAS** [Paper]
- [6] **Chen X**, et al. FedFDD: federated learning with frequency domain decomposition for low-dose CT
denoising
Accepted, Medical Imaging with Deep Learning 2024 – **MIDL 2024** [Paper] [GitHub]
- [7] Tang C, **Chen X**, et al. WMNN: wearables-based multi-column neural network for human activity
recognition
Accepted, IEEE Journal of Biomedical and Health Informatics – **IEEE JBHI** [Paper]
- [8] **Chen X**, Fu Z, Song Z, et al. An IoT and wearables based smart home for ALS patients
Accepted, IEEE Internet of Things Journal – **IEEE IoTJ** [Paper]

Research Experience

Self-Evolving Agents on Multimodal Tasks

Feb 2026 – Present

- Developing a model-agnostic self-evolving framework to improve visual reasoning and visual editing in multimodal large language models.
- Exploring zero-data post-training architectures, including a Proposer-Challenger mechanism for autonomous capability growth without annotated datasets.

Exploring Self-Signals for Multi-Agent LLM Debate

Sep 2025 – Jan 2026

- Developed SID, a multi-agent reasoning framework that uses generation-time self-signals to early-exit confident agents and focus discussion on key disagreements.
- Outperformed MAD/DMAD on MMLU-Pro, MATH, GPQA, ScienceQA, and MMStar while reducing token consumption by up to 40%.

3D Data Generation and Geometry-Consistent Video Generation

Oct 2025 – Jan 2026

- Built a 3D data pipeline to capture synchronized RGB, depth, intrinsics, and extrinsics for controllable world model and video generation research.
- Distilled 3D priors into video diffusion with trajectory and smoothness constraints, improving geometric consistency and reducing FVD by 21.7%.

Clinical Time-Series Artefact Cleaning and Deployment

Sep 2024 – Sep 2025

- Built an end-to-end pipeline spanning data collection, label-free modeling, and real-time deployment, achieving 95.6% accuracy and integration into the clinical research software ICM+ for bedside use.

Federated Learning for Low-Dose CT Denoising

Jul 2023 – Sep 2024

- Designed FedFDD, a personalized federated denoising method that separates shared noise patterns from client-specific anatomy, improving PSNR on Mayo LDCT over FedAvg and raw LDCT.

Multimodal Wearable Sensor Learning for Skill Training

Aug 2021 – Aug 2023

- Built multimodal learning systems over sEMG, pressure maps, and IMU for activity recognition and rehabilitation assessment, achieving up to 94.7% accuracy.

Professional Experience

Software Algorithm Engineer | Huawei China & Moxin Tech.

Zhejiang, China

Developed world model data generators with ReShadeCV (C++, C#), built synthetic data tooling, and optimized software modules

Jul 2025 – Dec 2025

Research Intern | ByteDance Byte Camp 2022

Reproduced TorchMD-Net, standardized evaluation metrics, and benchmarked backbones for molecular force fields

Jul 2022 – Aug 2022

Data Scientist Intern | Meituan

Beijing, China

Applied statistical machine learning to quality control modeling

Nov 2021 – Mar 2022

Awards

2024	Pillman and Cody Conference Award, Girton College, University of Cambridge
2023	Cambridge Trust Scholarship (Fully-funded)
2022	Beijing Outstanding Graduate (Highest honor for undergraduates in Beijing)
2021	Academic Excellence Scholarship (Top 1%, highest academic honor for undergraduates)
2020	First Prize, Beijing Division, Mathematics Competition of Chinese College Students
2019	National Scholarship (Top 1%, highest honor for undergraduates in China)

Skills

Programming: Python, C++, C#, MATLAB, R

Machine Learning: PyTorch, TensorFlow, Hugging Face Transformers, scikit-learn

Dev Tools: Linux, macOS, Windows, Git, GitHub, Docker, SSH

Languages: Mandarin (native), English (fluent), French (basic)