Hao Xu

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Research Interests

Foundation models for decision-making • Partially Observable Markov Decision Processes (POMDPs) • LLM applications in manufacturing and materials science

Education

Ph.D. in Mathematics and Statistics
The University of Sydney, Sydney, Australia
Research: Foundation models for decision-making, POMDPs, and AI/LLM applications in manufacturing and materials science.

MPhil in Smart Manufacturing
HKUST (Guangzhou), Guangzhou, China
Research: Anomaly detection in industrial manufacturing; high-dimensional data processing for point clouds and images.

M.S. in Data Science
City University of Hong Kong, Hong Kong, China
Research: Deep learning and predictive modeling; attention-based financial sentiment analysis and epidemiological mortality monitoring.

B.Eng. in Materials Science and Engineering
Chongqing University, Chongqing, China
Research: Materials synthesis, characterization, and failure analysis; ODS steels, Mg-based hydrogen storage alloys, and high-voltage testing. **Grade Rank: Top 5%.**

Publications

** indicates co-first authors; † indicates corresponding authors.*

[1] Xiangru Jian*, **Hao Xu*†**, Wei Pang*, Xinjian Zhao, Chengyu Tao, Qixin Zhang, Xikun Zhang†, Chao Zhang, Guanzhi Deng, Alex Xue, Juan Du, Tianshu Yu, Garth Tarr, Linqi Song, Qiuzhuang Sun, Dacheng Tao.
FORGE: Fine-grained Multimodal Evaluation for Manufacturing Scenarios.
arXiv preprint arXiv:2604.07413, 2026. [arXiv]

[2] **Hao Xu***, Xiangru Jian*†, Xinjian Zhao*, Wei Pang*, Chao Zhang, Suyuchen Wang, Qixin Zhang, Zhengyuan Dong, Joao Monteiro, Bang Liu, Qiuzhuang Sun, Tianshu Yu†.
GraphOmni: A Comprehensive and Extendable Benchmark Framework for Large Language Models on Graph-theoretic Tasks.
International Conference on Learning Representations (ICLR), 2026. [arXiv]

[3] Chengyu Tao, **Hao Xu**, Juan Du†.
F2PAD: A General Optimization Framework for Feature-Level to Pixel-Level Anomaly Detection.
arXiv preprint arXiv:2407.06519, 2024. [arXiv]

[4] **Hao Xu**, Juan Du†, A. Wang, Y.C. Chen.
Ano-SuPs: Multi-size Anomaly Detection for Manufactured Products by Identifying Suspected Patches.
Under second revision at *INFORMS Journal on Data Science*, 2023. [arXiv]

Selected Awards

Finalist, Best Paper Competition — INFORMS Conference on Quality, Statistics, and Reliability *2025*

Outstanding Graduate of Chongqing City *2020*

National College Students Summer Social Practice Special Action Bronze Award *(Deputy Leader)* *2018*