Hao Wu

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I am **Hao Wu**, currently a **first-year PhD student** in the School of Science at **Tsinghua University** (2025 - 2028 (expected)). Previously, I graduated from the Department of Computer Science at the **University of Science and Technology of China (USTC)**. During my Master's studies at USTC, I was also a joint training student in the large model training group of the Machine Learning Platform Department at **Tencent**. My **research interests** are as follows: (1) **Scientific Machine Learning**. (2) **Multi-modal Large Language Model**. My research has been published in top-tier conferences and journals, such as **ICLR, NeurIPS, ICML, KDD, AAAI, ACM MM, and TKDE**, with over **10 papers as the first or corresponding author**. Additionally, I have had the privilege of serving as a reviewer for prominent conferences and journals including **ICLR, KDD, NeurIPS, ICCV, ICML, and ACM MM**.

EDUCATION

Tsinghua University, PhD Student in Data Science	Sept 2025 – June 2028
University of Science and Technology of China, MS in Computer Science	Sept 2022 – June 2025

Experience

Research intern, **Machine Learning Platform Department, Large model training group, Tencent**	Aug 2023 – July 2025

- Mentored by **Jinbao Xue**

Research intern, **CityMind Lab, Hong Kong University of Science and Technology (Guangzhou)** – Guangzhou	May 2023 – Aug 2023

- Advisor: **Yuxuan Liang**

Publications

Scientific Machine Learning

Advanced long-term earth system forecasting by learning the small-scale nature	**Nature**, In Peer Review

Hao Wu, Yuan Gao, Ruiqi Shu, Kun Wang, Ruijian Gou, Chuhan Wu, Xinliang Liu, Juncai He, Shuhao Cao, Junfeng Fang, Xingjian Shi, Feng Tao, Qi Song, Shengxuan Ji, Yanfei Xiang, Yuze Sun, Jiahao Li, Fan Xu, Huanshuo Dong, Haixin Wang, Fan Zhang, Penghao Zhao, Xian Wu, Qingsong Wen, Deliang Chen, Xiaomeng Huang

Nature, In Peer Review

OneForecast: A Universal Framework for Global and Regional Weather Forecasting.	**ICML**, 2025

Yuan Gao, *Hao Wu*, Ruiqi Shu, Huanshuo Dong, Fan Xu, Rui Ray Chen, Yibo Yan, Qingsong Wen, Xuming Hu, Kun Wang, Jiahao Wu, Li Qing, Hui Xiong, Xiaomeng Huang#

ICML, 2025

PURE: Prompt Evolution with Graph ODE for Out-of-distribution Fluid Dynamics Modeling.	**NeurIPS**, 2024

Hao Wu, Changhu Wang, Fan Xu, Jinbao Xue, Chong Chen, Xian-Sheng Hua, Xiao Luo#

NeurIPS, 2024

Prometheus: Out-of-distribution Fluid Dynamics Modeling with Disentangled Graph ODE.	**ICML**, 2024

Hao Wu, Huiyuan Wang, Kun Wang, Weiyan Wang, Changanye Ye, Yangyu Tao, Chong Chen, Xian-Sheng Hua, Xiao Luo#

ICML, 2024

Spatio-temporal Prediction

DynST: Dynamic Sparse Training for Resource-Constrained Spatio-Temporal Forecasting.   **KDD**, 2025

Hao Wu, Haomin Wen, Guibin Zhang, Yutong Xia, Yuxuan Liang, Yu Zheng, Qingsong Wen, Kun Wang#

KDD, 2025

Earthfarseer: versatile spatio-temporal dynamical systems modeling in one model.   **AAAI**, 2024

Hao Wu, Yuxuan Liang, Wei Xiong#, Zhengyang Zhou, Wei Huang, Shilong Wang, Kun Wang#

AAAI, 2024

NuwaDynamics: Discovering and Updating in Causal Spatio-Temporal Modeling.   **ICLR**, 2024

Kun Wang^, *Hao Wu*^, Yifan Duan, Guibin Zhang, Kai Wang, Xiaojiang Peng, Yu Zheng, Yuxuan Liang#, Yang Wang#

ICLR, 2024

Modeling spatio-temporal dynamical systems with neural discrete learning and levels-of-experts.   **TKDE**, 2024

Kun Wang^, *Hao Wu*^, Guibin Zhang, Junfeng Fang, Yuxuan Liang, Yuankai Wu, Roger Zimmermann, Yang Wang#

TKDE, 2024

PastNet: introducing physical inductive biases for spatio-temporal video prediction.   **ACM MM**, 2024

Hao Wu, Wei Xiong, Fan Xu, Xiao Luo#, Chong Chen, Xian-Sheng Hua, Haixin Wang#

ACM MM, 2024

Neural Operator Learning

Neural Manifold Operators for Learning the Evolution of Physical Dynamics.   **KDD**, 2024

Hao Wu, Kangyu Weng, Shuyi Zhou, Xiaomeng Huang#, Wei Xiong#

KDD, 2024

Neural Manifold Operator for Geophysical Fluid Dynamics Prediction.   **AI for Time Series (AI4TS) Workshop @ AAAI**, 2024

Wei Xiong, Kun Wang, Yuxuan Liang, *Hao Wu*#, Xiaomeng Huang#

AI for Time Series (AI4TS) Workshop @ AAAI, 2024

Information Retrieval

IDEA: An Invariant Perspective for Efficient Domain Adaptive Image Retrieval.   **NeurIPS**, 2023

Haixin Wang^, *Hao Wu*^, Jinan Sun, Shikun Zhang, Chong Chen, Xian-Sheng Hua, Xiao Luo#

NeurIPS, 2023

Technologies

Languages: C++, C, Java, Python

Technologies: .NET, Microsoft SQL Server, XCode