HAOTIAN XU

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Education

University of Science and Technology of China   **Sep 2019 – Jul 2023**
Bachelor of Engineering in Computer Science and Technology

University of Science and Technology of China   **Sep 2023 – Jul 2026(expected)**
Master of Engineering in Computer Science and Technology

Research Interest

I am working on **Federated Learning** in USTC. My research interests include **Distributed Machine Learning**, **Multimodal LLM**, and **Efficient LLM**.

Publications

Sequential Federated Learning with Discrepancy-Aware Multi-Teacher Knowledge Distillation
Haotian Xu, Jinrui Zhou, Xichong Zhang, Mingjun Xiao, He Sun, Yin Xu
(Under Review)

One-Shot Sequential Federated Learning with Dual-Distillation
Haotian Xu, Jinrui Zhou, Xichong Zhang, Mingjun Xiao
(Under Review)

SFedPO: Streaming Federated Learning with a Prediction Oracle under Temporal Drift
Jinrui Zhou*, **Haotian Xu***, Mingjun Xiao, Yin Xu, Xichong Zhang(* = equal contribution)
(Under Review)

Efficient Parallel-Sequential Federated Learning with Training Structure Optimization
Jinrui Zhou, **Haotian Xu**, Yin Xu, Mingjun Xiao, and Jie Wu
Submitted to IEEE/ACM Transactions on Networking (**ToN**)

Towards Asynchronous Online Federated Learning with UAVs for Distributed Unknown Data
Xichong Zhang, **Haotian Xu**, Yin Xu, Mingjun Xiao, Jie Wu, and Jinrui Zhou
Submitted to IEEE Transactions on Mobile Computing (**TMC**)

Age-of-Information-Aware Mobile Crowdsensing for Uncertain Event Capture
Jinrui Zhou, Yin Xu, **Haotian Xu**, Mingjun Xiao, Jie Wu
IEEE International Conference on Computer Communications (**INFOCOM**), 2026

Online Federated Learning on Distributed Unknown Data Using UAVs
Xichong Zhang, **Haotian Xu**, Yin Xu, Mingjun Xiao, Jie Wu, and Jinrui Zhou
IEEE International Conference on Data Engineering (**ICDE**), 2025

Enhancing Decentralized Federated Learning with Model Pruning and Adaptive Communication
Yin Xu, Mingjun Xiao, Jie Wu, Guoju Gao, Datian Li, **Haotian Xu**, Tongxiao Zhang
IEEE Transactions on Industrial Informatics (**TII**), June 2024

Research Experiences

USTC   **Seq 2022– Now**
Undergrad Intern & Grad Research Assistant   *Hefei, China*

- Proposed SFedKD, the first framework to leverage discrepancy-aware multi-teacher knowledge distillation for addressing catastrophic forgetting in sequential federated learning.
- Proposed SFedPO, a framework that tackles distribution shift in streaming federated learning by constructing a prediction oracle.
- Proposed PSFL, a hybrid parallel-sequential federated learning framework, and proved its convergence speed surpasses both parallel and sequential FL frameworks.

- Proposed OFL-UD^2, a framework that models data-driven federated learning as a combinatorial multi-armed bandit problem and designs an online algorithm for selecting points of interest by UAVs.

Honors and Awards

National Encouragement Scholarship	*November, 2020/21/22*
Outstanding Student Scholarship, USTC	*November, 2022*
First Prize in Anhui Province, National College Student Mathematics Competition	*November, 2021*

Skills

Languages: Mandarin (native), English (intermediate)
Programming Languages: Python, C/C++, Bash, Latex
Deep Learning Frameworks: PyTorch, HuggingFace Transformers