

Xiaoyu Wang

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EDUCATION

Ph. D. in ECE, 4.0/4.0 **New York University**

Sep 2021 – May 2026 (Expected)

B.S in EE, 88.09/100 **University of Science and Technology of China**

Sep 2015 - June 2019

Undergraduate Visiting Researcher Program **University of Florida**

July 2018 – Sep 2018

PROFESSIONAL EXPERIENCE

DOCOMO Innovations Inc., CA

Research Engineering Intern -- Cloud & AI Group

May 2023 – Dec 2023 (2 terms)

AWS-Sparse Vertical Federated Learning Platform and Hybrid VFL

- Built open-source Vertical Federated Learning framework using AWS (S3, Lambda, Step Functions).
- Implemented Sparse Encoding to reduce communication by 70–80%, improving training speed by 10–13%.

Dynamic Hybrid Vertical Federated Learning

- Developed Dynamic Hybrid Vertical Federated Learning algorithm with parallel training and resource-aware aggregation.
- Achieved linear-time speedup while maintaining accuracy; theoretical analysis ongoing.

Peng Cheng Laboratory, Shenzhen, China

Sep 2019 – Jan 2020

Machine Learning Intern -- Open Source Platform Project Team

Federated Learning Come Across With Label Noise Learning

- Deployed AutoML pipelines (Ray.tune, TPOT, Skopt) to cloud; handled XGBoost, SVM, etc.
- Enhanced FL robustness against label noise; recovered CIFAR/MNIST accuracy from 30% to 88%.

RESEARCH EXPERIENCE

Wireless Lab, NYU ECE

Research Assistant

Oct 2021 – Present

MoE with LoRA for LLMs Fine-tuning in Federated Learning

- Integrating LoRA + Mixture of Experts (MoE) to enhance training efficiency in federated learning for LLM-related tasks.
- Developing adaptive LoRA selection and expert-sharing strategies to reduce communication costs.

Multimodal Federated Learning in Overlay Networks

- Investigating federated learning with model fusion for multimodal data, including images, videos, and audio.
- Designing a model fusion algorithm, using information-theoretic approaches, to bridge missing modality issues and improving training performance.

Federated Learning with Caching in Decentralized Vehicle Network

- Developed a decentralized FL framework with model caching on mobile agents, enabling delay-tolerant model aggregation.
- Theoretical analyzed model aggregation convergence, addressing the impact of model staleness.
- Designed and evaluated various model caching algorithms for different DFL scenarios and mobility patterns.
- Achieved significant performance improvements and faster convergence over standard DFL.
- **Published at AAAI 2025 (Oral)**

Recommendation System for Content Deliver Network

- Proposed a novel Predictive Edge Caching (PEC) system that predicts the future content popularity, and opportunistically prefetches contents predicted using idle network bandwidth.
- Fine-grained learning models that mine sequential patterns in user content retrieval behaviors.
- **Published at Computer Networks 2023**

Microsoft Key Lab @ USTC

Research Intern

Jan 2019 – May 2019

- Bayesian relabeling framework for instance-dependent noisy binary classification.
- Enhanced PU-learning via boundary estimation and statistical correction.

Medical Imaging Center @ USTC

Research Assistant

Sep 2018 – May 2019

- Designed CNN-based metastatic cancer detection pipeline on PCam benchmark.
- Integrated Octave Conv, Non-local blocks, and ResNeXt-101 for robust inference.

PUBLICATION

Wang, X., Xiong, G., Cao, H., Li, J., & Liu, Y. (2025). *Decentralized Federated Learning with Model Caching on Mobile Agents*. **AAAI 2025 (Oral)**.

Li, C., **Wang, X.**, Zong, T., Cao, H. and Liu, Y., 2023. *Predictive edge caching through deep mining of sequential patterns in user content retrievals*. **Computer Networks**, p.109866.

SKILLS

Languages: Python, MATLAB, C, Bash, Git, Latex

Frameworks: PyTorch, Scikit-learn, Numpy, Matplotlib, SciPy, Seaborn

Databases/Tools: AWS (S3, Lambda), Docker, MySQL, Git, Jira

Knowledge: Deep Learning, Federated Learning, LLMs Finetuning/Optimization, Network Systems, Data Structure.

AWARDS

Dante Youla Award for Graduate Research Excellence, NYU	2025
Ernst Weber Fellowship, NYU	2022
SoE Fellowship, NYU	2021
Outstanding Graduate, USTC	2019
Outstanding Undergraduate Innovative Research, USTC	2019
Scholarship of Institute of Electrics, Chinese Academy of Sciences (Top 4/75)	2017
First Prize, Electromagnetism Course paper Contest (1/70)	2016