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**