YUZHU MAO

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EDUCATION

Tsinghua-Berkeley Shenzhen Institute, **Tsinghua University** Sept. 2020-June 2023

- Master of Engineering in **Data Science and Information Technology**; GPA: **3.85/4.0**
- Scholarship and Awards: Graduate Scholarship for Excellent Academic Performance; Best Poster Award of the 2021 TBSI Workshop on Learning Theory (WOLT).

School of Cyber Science and Engineering, **Wuhan University** Sept. 2016-June 2020

- Bachelor of Engineering in **Information Security**; GPA: **3.87/4.0** (Graduate with Distinction)
- Scholarships and Awards: National Scholarship (top 1%); Cyber Security Scholarship (top 1%); Scholarship for Overseas Exchange Programs; First-class Scholarship for Outstanding Students; First-class Memorial Scholarship for Outstanding Undergraduates.

ACADEMIC & RESEARCH EXPERIENCE

Efficient and Reliable Federated Learning System Sept. 2020-June 2023

Master's research topic co-supervised by Prof. Wenbo Ding and Prof. Yang Liu

- Studied deep learning theories and techniques that support efficient federated learning.
- Designed and implemented efficient algorithms for federated learning systems.

Deep Learning-based Text-to-Speech Synthesis System Jan. 2020-June 2020

Distinct Undergraduate Thesis of Wuhan University in 2020

- Studied end-to-end speech synthesis models and designed a deep learning algorithm that uses inter-frame audio features for synthesized speech detection, achieving over 90% accuracy.

Self-driving Car Robotics Enabled by Sensors and Object Detection Algorithms June 2018-Aug. 2018

Summer Workshop, School of Computing, National University of Singapore

- Developed the data acquisition and motion control module on Arduino, and achieved first place in the road test.

WORK EXPERIENCE

Research Assistant, Tsinghua-Berkeley Shenzhen Institute, Shenzhen, China Sept. 2023-Present

- Explored the use of large pretrained models in resource-limited environments to improve efficiency and generalization.

Research Intern, **Meituan**, Shenzhen, China June 2022-Sept. 2022

- Participated in the development of a 2D to 3D platform for large-scale UAV simulations, focusing on texture generation.

Research Intern, **Tencent Technology**, Shenzhen, China June 2021-Sept. 2021

- Participated in the development of an open-source JAX-based rigid body dynamics algorithm library, and contributed to the writing of technical documentation (https://github.com/Tencent-RoboticsX/jbdl).
- Provided guidance on implementing self-defined JAX operators on GPU through XLA.

PUBLICATIONS

Mao, Y., Zhao, Z., Yan, G., Liu, Y., Lan, T., Song, L., & Ding, W. (2022). Communication-efficient federated learning with adaptive quantization. ACM Transactions on Intelligent Systems and Technology (TIST), 13(4), 1-26.

Zhao, Z., **Mao, Y.**, Liu, Y., Song, L., Ouyang, Y., Chen, X., & Ding, W. (2023). Towards efficient communications in federated learning: A contemporary survey. Journal of the Franklin Institute (JFI), 360(12), 8669-8703.

Mao, Y., Zhao, Z., Yang, M., Liang, L., Liu, Y., Ding, W., Lan, T., & Zhang, X. P. (2023). SAFARI: Sparsity-enabled federated

learning with limited and unreliable communications. IEEE Transactions on Mobile Computing (TMC).
Zhao, Z.*, **Mao, Y.***, Shi, Z., Liu, Y., Lan, T., Ding, W., & Zhang, X. P. (2023). AQUILA: Communication efficient federated learning with adaptive quantization in device selection strategy. IEEE Transactions on Mobile Computing (TMC).
Ping, S*., **Mao, Y.***, Liu, Y., Zhang, X. P., & Ding, W. FL-TAC: Enhanced fine-tuning in federated learning via low-rank, task-specific adapter clustering. In ICLR 2024 Workshop on Large Language Model (LLM) Agents.
(* denotes equal contribution)

COMPETITIONS

Second Prize, National College Student Information Security Contest Jan. 2019-Aug.2019

- Designed a deep learning algorithm that uses both temporal and spatial features from video streams for deepfake video detection, achieving over 96% accuracy.

ADDITIONAL

Coding Skills: Python, C/C++/CUDA, MATLAB, PyTorch, TensorFlow,
Academic & English Skills: LaTex, Paper-writing, Presentation, IELTS overall Band 8.0
Others: Piano Accompanist, Tsinghua & Peking Univ. Chorus; National Registered Volunteer of Young Volunteers Association.