

Haoming Wang

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Research Interests

On-device AI, Spatial Intelligence, Explainable AI

Education

Ph.D. in Electrical and Computer Engineering , University of Pittsburgh	Sept 2022 – May 2027 (Anticipated)
Advisor: Prof. Wei Gao	
B.Eng. in Automation , Zhejiang University with Honors from Chu Kochen Honors College GPA: 3.8/4	Sept 2018 – May 2022

Experience

Graduate Student Researcher / Research Assistant , Intelligent System Lab, Dept. of Electrical & Computer Engineering, University of Pittsburgh,	Sept 2022 – Present
• (2022 Sept - 2024 Oct) Designed novel Federated Learning frameworks to address intertwined data heterogeneity and device staleness, using techniques like gradient inversion to compensate for update delays.	
• (2024 Nov - 2025 May) Developed methods for efficient and explainable on-device AI, including expediting LLM personalization via model selection and enhancing the explainability of image generation models.	
• (2025 May - Now) Enhanced VLM spatial reasoning by generating customizable 3D test scenes via LLM-based optimization and enabling on-device cross-frame reasoning by constructing unified semantic maps. Two papers under review.	
Teaching Assistant , Department of Electrical and Computer Engineering ,University of Pittsburgh,	Sept 2024 – Now
• ECE 1175 - Embedded System Design (Fall 2024)	
• ECE 1195 - Advanced Digital Design (Spring 2025)	
• ECE 1396 - Introduction to Machine Learning (Fall 2025)	
Research Assistant , Department of Control Science and Technology, Zhejiang University	Sept 2020 – Jun 2022
• Signal design and processing for near-ultrasonic acoustic sensing systems on smartphones	

Publications

[AAAI'25] Tackling Intertwined Data and Device Heterogeneities in Federated Learning with Unlimited Staleness	2025
<i>Haoming Wang, Wei Gao</i>	
in Proceedings of the 39th Annual Conference on Artificial Intelligence, 2025. (Acceptance Ratio: 23.4%)	
[Paper] / [arXiv]	
[MobiCom'25] When Device Delays Meet Data Heterogeneity in Federated AIoT Applications	2025
<i>Haoming Wang, Wei Gao</i>	
in Proceedings of the 31st ACM International Conference on Mobile Computing and Networking. (Acceptance Ratio: 17.1%)	
[Paper]	
[MobiSys'25] Never Start from Scratch: Expediting On-Device LLM Personalization via Explainable Model Selection	2025
<i>Haoming Wang, Boyuan Yang, Xiangyu Yin, Wei Gao</i>	

In Proceedings of the 23rd Annual International Conference on Mobile Systems, Applications and Services
(Acceptance Ratio: 18.0%)
[Paper]

Preprints

Deciphering Personalization: Towards Fine-Grained Explainability in Natural Language for Personalized Image Generation Models

2025

Haoming Wang, Wei Gao

[Paper]

Freezeasguard: Mitigating illegal adaptation of diffusion models via selective tensor freezing

2024

Kai Huang, Haoming Wang (co-author), Wei Gao

[Paper]