Haoming Wang

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Homepage: haomingwang645.github.io | Linkedin | Google Scholar

Research Interests

On-device AI, Efficient Generative 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 — Sept 2018 – May 2022
with Honors from Chu Kochen Honors College
GPA: 3.8/4

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-ultrosonic acoustic senesing systems on smartphones

Publications

[AAAI'25] Tackling Intertwined Data and Device Heterogeneities in Federated Learning with Unlimited Staleness — 2025

Haoming Wang, Wei Gao

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

Haoming Wang, Wei Gao

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

Haoming Wang, Boyuan Yang, Xiangyu yin, Wei Gao

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]