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

- **(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)
- **(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.
- **(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.

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]