

Lihao Wang

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RESEARCH INTERESTS

My current research interests include mobile and ubiquitous computing, multimodal sensing, and Human-Robot Interaction (HRI).

EDUCATION

Johns Hopkins University

PhD in Computer Science

Advisor: Renjie Zhao

Baltimore, United States

2024.09 - Present

Nanjing University

M.Sc. in Computer Science and Technology

Advisor: Haipeng Dai, Wei Wang

Nanjing, China

2021.09 - 2024.06

Jilin University

B.Sc. in Computer Science and Technology

Enrolled in Tang Ao-qing Honors program

Changchun, China

2017.09 - 2021.06

EMPLOYMENT

Microsoft Research Asia

Shanghai, China

Research Intern

Mentor: Lili Qiu

2023.02 - 2023.08

PUBLICATIONS

- [1] **First Author.** “RF-HOI: Recognize Human-Object Interaction with Radio Frequency Signals”. In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (under submission)* (2026).
- [2] **Lihao Wang**, Weijun Wang, Haipeng Dai, Yuben Qu, Jiaqi Zheng, Rong Gu, Guihai Chen, and Xiaoming Fu. “Joint Deployment of Truck-drone Systems for Camera-based Object Monitoring”. In: *IEEE Transactions on Mobile Computing* (2024), pp. 1–18. doi: 10.1109/TMC.2024.3367849.
- [3] Yuben Qu, **Lihao Wang**, Haipeng Dai, Weijun Wang, Chao Dong, Fan Wu, and Song Guo. “Server Placement for Edge Computing: A Robust Submodular Maximization Approach”. In: *IEEE Transactions on Mobile Computing* 22.6 (June 2023), pp. 3634–3649. doi: 10.1109/TMC.2021.3136868.
- [4] **Lihao Wang**, Wei Wang, Haipeng Dai, and Shizhe Liu. “MagSound: Magnetic Field Assisted Wireless Earphone Tracking”. In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 7.1 (Mar. 2023), pp. 1–32. doi: 10.1145/3580889.
- [5] Yuben Qu, Haipeng Dai, **Lihao Wang**, Weijun Wang, Fan Wu, Haisheng Tan, Shaojie Tang, and Chao Dong. “CoTask: Correlation-aware Task Offloading in Edge Computing”. In: *World Wide Web* 25.5 (Sept. 2022), pp. 2185–2213. doi: 10.1007/s11280-022-01047-w.
- [6] **Lihao Wang**, Weijun Wang, Haipeng Dai, Jiaqi Zheng, Bangbang Ren, Shuyu Shi, and Rong Gu. “DUET: Joint Deployment of Trucks and Drones for Object Monitoring”. In: *2022 IEEE/ACM 30th International Symposium on Quality of Service (IWQoS)*. Oslo, Norway: IEEE, June 2022, pp. 1–10. doi: 10.1109/IWQoS54832.2022.9812917.
- [7] **Lihao Wang**, Yu Jiang, and Hong Qi. “Marine Dissolved Oxygen Prediction With Tree Tuned Deep Neural Network”. In: *IEEE Access* 8 (2020), pp. 182431–182440. doi: 10.1109/ACCESS.2020.3028863.

SELECTED RESEARCH EXPERIENCE

RF-HOI: Recognize Human-Object Interaction with Radio Frequency Signals

Submitted to ACM IMWUT.

- Pioneered a privacy-preserving Human–Object Interaction (HOI) recognition system using RF signals that jointly classifies user actions and identifies the interacted object; delivers deeper behavior understanding than RF-based HAR, enabling downstream tasks such as goal inference and assistive robotics.
- Designed a multimodal sensing framework that fuses mmWave radar (for fine-grained motion dynamics) with RFID (for object identity), overcoming the limitations of single-modality RF.
- Built a scalable synthetic multimodal RF data generation pipeline to improve model generalization under limited real-world data; validated effective sim-to-real transfer.
- Conducted extensive evaluations across diverse environments and setups, achieving performance close to vision-based models while maintaining strong robustness.

MagSound: Magnetic Field Assisted Earphone Tracking

Accepted by ACM IMWUT.

- Conceived and prototyped a system that repurposes commodity wireless earphones as a precision input device for applications like handwriting and fine-grained drawing.
- Integrated acoustic and magnetic sensing: captured earphone-transmitted acoustic signals via the smartphone microphone and leveraged the smartphone's built-in IMU magnetometer to track the earphone's embedded magnets.
- Designed (1) a correction mechanism to counteract the clock offset on-the-fly between the smartphone and the earphone; (2) a modality fusion algorithm to improve tracking accuracy.
- Experiments with commercial devices show that the proposed system effectively improves the clock skew problem and maintains the tracking accuracy at the millimeter level.

SKILLS

- Programming Languages: C/C++, Python, Java, MATLAB
- Practice with multimodal sensors: mmWave radar, acoustics, IMU, magnetic, RFID, RGB-D camera
- Hands-on experience in signal processing, wireless signal synthesis, and multimodal deep learning

AWARDS AND SCHOLARSHIPS

- Distinguished Master Thesis Award, Nanjing University, 2025
- Distinguished Graduates, Nanjing University, 2024
- The Third Class Scholarship, Jilin University, 2020
- The First Class Scholarship, Jilin University, 2018

PRESENTATIONS

- MagSound: Magnetic Field Assisted Wireless Earphone Tracking
Conference talk at UbiComp, Cancun, Mexico, October 2023

PROFESSIONAL SERVICES

- Reviewer of IEEE Systems Journal, IEEE Access