

Biography

I am a fourth-year Ph.D. student at School of Computer Science, Peking University, advised by Prof. Chenren Xu. My research focuses on hardware–software co-designed systems for building novel sensing capabilities beyond vision. I am also a full-stack developer and, in some sense, a “maker.”

Education




- 2022–2027 📖 **Ph.D. in Computer Science**
Center for Energy-efficient Computing and Applications, Peking University
- 2017–2022 📖 **BSc. Physics and Dual BSc. Computer Science**
School of Physics, Peking University

Internship

- 2025.09 – Now 📖 **Embodied AI Research Intern, LightRobotics**
Enhanced the sim-to-real pipeline for humanoid control. (Mentors: Yuntao Ma, Tingxiang Fan, Xu Jiang)
- 2024.11 – 2025.08 📖 **Embodied AI Research Intern, Microsoft Research Asia (MSRA)**
Designed and built robot hardware and a vision-language navigation model. Independently developed the first wheeled single-arm humanoid robot, “Master,” deployed in MSRA embodied AI research. (Mentor: Xiaohan Yi)
- 2023.07 – 2023.10 📖 **HCI Research Intern, Institute of Computing Technology, Chinese Academy of Sciences (ICT)**
Designed hardware and software for mmWave radio systems supporting backscatter-based localization. (Mentor: Tengxiang Zhang)
- 2021.07 – 2023.05 📖 **Software-Hardware Engineer, XG Lab, Alibaba DAMO Academy**
Developed and deployed RFID-based inventory and localization systems supporting Alibaba’s logistic chains (Cai Niao and Fresh Hema). The system was presented at NSDI’23, making me the first undergraduate to publish at NSDI. [Project page] (Mentor: Pengyu Zhang)
- 2020.06 – 2021.03 📖 **HCI Research Intern, Cornell University SciFi Lab**
Designed and implemented acoustic sensing systems to enable expression recognition for smart earable applications. (Mentor: Prof. Cheng Zhang)

Research Publications

- 1 C. Gong, B. Liang, W. Purui, J. Xiaoyu, C. Yin, and C. Xu, “Rf-rock: Intermodulation-based rfid unauthorized identification attack without tag activation,” in *Proceedings of the 31st Annual International Conference on Mobile Computing and Networking*, 2025.
- 2 C. Gong, B. Liang, W. Gao, and C. Xu, “Data can speak for itself: Quality-guided utilization of wireless synthetic data,” in *Proceedings of the 23rd Annual International Conference on Mobile Systems, Applications and Services*, 2025, pp. 209–222.

- 3 B. Liang, J. Peng, X. Liu, C. Gong, and C. Xu, "Liquid identification via vision-guided mmwave imaging and llm reasoning," in *Proceedings of the 23rd Annual International Conference on Mobile Systems, Applications and Services*, 2025, pp. 631–632.
- 4 K. Xu, B. Liang, J. Li, and C. Xu, "Retrolidar: A liquid-crystal fiducial marker system for high-fidelity spatial computing," in *Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems*, 2025.
- 5 B. Liang, P. Wang, R. Zhao, *et al.*, "Rf-chord: Towards deployable rfid localization system for logistic networks," in *20th USENIX Symposium on Networked Systems Design and Implementation (NSDI 23)*, 2023, pp. 1783–1799.
- 6 B. Liang, X. Liu, Y. Wan, S. Cheng, J. Liu, and C. Xu, "Poster: Empower smart agriculture with rfid reference infrastructure," in *2023 20th Annual IEEE International Conference on Sensing, Communication, and Networking (SECON)*, IEEE, 2023, pp. 72–73.
- 7 P. Wang, B. Liang, R. Zhao, P. Zhang, X. Zhang, and C. Xu, "Poster: An rfid localization system for smart logistics," in *Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems*, 2022, pp. 849–850.  DOI: 10.1145/3560905.3568078.
- 8 K. Li, R. Zhang, B. Liang, F. Guimbretière, and C. Zhang, "Earrio: A low-power acoustic sensing earable for continuously tracking detailed facial movements," 2, vol. 6, ACM New York, NY, USA, 2022, pp. 1–24.  DOI: 10.1145/3534621.
- 9 K. Xu, C. Gong, B. Liang, *et al.*, "Low-latency visible light backscatter networking with retromumimo," in *Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems*, 2022, pp. 448–461.  DOI: 10.1145/3560905.3568507.

Skills

Coding	■ C, Python, MATLAB
Robotics	■ IsaacLab, MuJoCo, Habitat, ROS
Prototyping	■ PCB & antenna design, 3D printing, Embedded/FPGA/MCU development
Physics	■ Advanced optics, Electrodynamics, Quantum mechanics, Theoretical mechanics

Services

Reviewer

Reviewer	■ CHI'24, IMWUT'22–23
Artifact Evaluation Committee	■ MobiCom'23–24, MobiSys'23

Teaching Assistant

Computer Network	■ 22 fall (honor track at Peking University)
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Honors

2025	■ First Prize, CCF Technical Invention Award (National-level, 6th contributor)
	■ MobiSys Best Paper Award (CCF B)
	■ PKU Three Good Students; PKU Schlumberger Scholarship (Top 5%)
2024	■ First Prize in the 1st CCF Ubiquitous Intelligent Sensing Technology Innovation and Application Competition (5/63)

Honors (continued)

	PKU President Scholarship for Ph.D Student (Top 3%)
2022	PKU Outstanding Graduates (Top 10%)
2020	PKU Weiming Physics Student Scholarship (Top 10%)
2018 & 2020	PKU Outstanding Student Leader (Top 2%)
2017	PKU Admission Scholarship (Top 5%)