

Zhenlin An | CV

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Experience

- University of Georgia** **Athens, GA**
Assistant Professor at School of Computing *2025.7-Present*
- University of Pittsburgh** **Pittsburgh, PA**
Postdoctoral Associate at Department of Computer Science *2024.7-2025.7*
Advised by [Dr. Longfei Shangguan](#), [Prof. Kyle Jamieson](#)(InterDigital: [John Kaewell](#), [Philip Pietraski](#), NIST: [Camillo Gentile](#))
- Princeton University** **Princeton, NJ**
Postdoctoral Research Associate at Department of Computer Science *2023.12-2024.7*
Advised by [Prof. Kyle Jamieson](#), [Dr. Longfei Shangguan](#) (InterDigital: [John Kaewell](#), [Philip Pietraski](#))
- The Hong Kong Polytechnic University** **Hong Kong SAR**
Postdoctoral Fellow, funded by PolyU Postdoc Matching Fund *2021.11-2024.06*
Advised by [Dr. Lei Yang](#)

Education

- The Hong Kong Polytechnic University** **Hong Kong SAR**
Ph.D. in Computer Science, *2017.8-2021.10*
Chief Supervisor: [Dr. Lei Yang](#), Co-supervisor: [Prof. Jiannong Cao](#) (IEEE Fellow, ACM Distinguish Member)
Thesis: "On Cross-Technology Mutualism in the Internet of Things: Communication and Localization"
- Dalian University of Technology** **Dalian, China**
B.E. degree in Electronic Information Engineering, *2013.9-2017.7*

Summary

- **(I) Research Interests:** My research focuses on wireless systems, mobile computing and their intersection with AI. I explore physics-informed AI for intelligent communication, localization, and sensing.
- **(II) Summary of Publications:** A total of over 60 publications on top conferences/journals range from: MobiCom (9), INFOCOM (10), MobiSys(2), SIGCOMM (1), NSDI (1), SenSys (2), S&P (1), UbiComp (1), TMC (10), TNET (4), TOSN (1). These works have garnered over 900 citations, with an h-index of 15.
- **(III) Keywords:** NextG Wireless, AI4Wireless, Internet-of-Things, Backscatter, Sensing, Security

Awards and Honors

- **Rising Star, ACM MobiSys** 2025
- Best Paper Nominee, ACM SenSys 2025
- **Best Paper Award Runner-up, ACM MobiCom** 2023
- Graduate Award, ACM MobiCom 2023
- **Best Paper Award, IEEE SECON** 2023
- **ACM SIGBED China Doctoral Dissertation Award** 2022
- Best Demo Award Runner-up (2/20), ACM MobiCom 2022
- **Best Paper Award (1/129), IEEE SECON** 2020
- Best-In-Session Presentation Award, IEEE INFOCOM 2019
- Student Travel Grant, IEEE INFOCOM 2019
- Best Demo Award Runner-up (2/27), ACM MobiCom 2018
- Outstanding Graduate, Dalian University of Technology 2017
- Meritorious Winner, Interdisciplinary Contest in Modeling (ICM) 2016

Publications

* indicates students I mentored, [Google Scholar Page](#)

Conference Papers

- [C1] Hongbo Lan, **Zhenlin An**, Haoyu Li, Vaibhav Singh, and Longfei Shangguan. "Accelerating Physical Property Reasoning for Augmented Visual Cognition". In: *IEEE CVPR OpenSUN3D*. 2026.
- [C2] **Zhenlin An**. "Physics-Informed AI for Wireless Communication and Sensing". In: *ACM MobiSys*. 2025.
- [C3] **Zhenlin An**, Shangguan Longfei, Kaewell John, Pietraski Philip, and Kyle Jamieson. "RadioTwin: A Digital Building Material Twin for Wideband, Cross-link, Cross-band Wireless Channel Prediction". In: *IEEE DySPAN*.
- [C4] Yongjie Yang, Tao Chen, **Zhenlin An**, Shirui Cao, Xiaoran Fan, and Longfei Shangguan. "LeakyFeeder: In-Air Gesture Control Through Leaky Acoustic Waves". In: *ACM SenSys*. (Best Paper Nominees). 2025.
- [C5] Jingyu Tong, Xiaopeng Zhao, Donghui Dai, **Zhenlin An**, and Lei Yang. "Commercial RFIDs as Reconfigurable Intelligent Surfaces". In: *IEEE INFOCOM*. 2025.
- [C6] Yanni Yang, Zheng Shi, **Zhenlin An**, Runyu Pan, Yanling Bu, Guoming Zhang, Pengfei Hu, and Jiannong Cao. "RFnoID: Protecting RFID Motion Privacy via Metasurface". In: *IEEE INFOCOM*. 2025.
- [C7] Shuaiqi Lu, Yi Guo, **Zhenlin An**, Yan Zhu, and Ning Huang. "GA-Clip: Semantic-Aware Graph Augmentation for Contrastive Learning". In: *IEEE ICME*. IEEE. 2025.
- [C8] Zheng Gong*, **Zhenlin An**, Donghui Dai, Jingyu Tong, Shuijie Long, and Lei Yang. "Enabling cross-medium wireless networks with miniature mechanical antennas". In: *ACM MobiCom*. 2024.
- [C9] Xueyuan Yang*, **Zhenlin An**, Qingrui Pan, Lei Yang, Dangyuan Lei, and Yulong Fan. "Binary Optical Machine Learning: Million-Scale Physical Neural Networks with Nano Neurons". In: *ACM MobiCom*. 2024.
- [C10] Xiaopeng Zhao*, Guosheng Wang, **Zhenlin An**, Qingrui Pan, and Lei Yang. "Understanding Localization by a Tailored GPT". In: *ACM MobiSys*. 2024.
- [C11] Xiaopeng Zhao*, Shen Wang, **Zhenlin An**, and Lei Yang. "Crowdsourced Geospatial Intelligence: Constructing 3D Urban Maps with Satellite Radiance Fields". In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)* 8.3 (2024).
- [C12] Jingyu Tong*, **Zhenlin An**, Xiaopeng Zhao, Sicong Liao, and Lei Yang. "In-Sensor Machine Learning: Radio Frequency Neural Networks for Wireless Sensing". In: *ACM MobiHoc*. 2024.
- [C13] Donghui Dai*, **Zhenlin An**, Zheng Gong, Qingrui Pan, and Lei Yang. "{RFID+}: Spatially Controllable Identification of {UHF}{RFIDs} via Controlled Magnetic Fields". In: *USENIX NSDI*. 2024.
- [C14] Yanni Yang, Genglin Wang, **Zhenlin An**, Guoming Zhang, Xiuzhen Cheng, and Pengfei Hu. "RF-Parrot: Wireless Eavesdropping on Wired Audio". In: *IEEE INFOCOM*. IEEE. 2024.
- [C15] Donghui Dai*, **Zhenlin An (Co-first Author)**, and Lei Yang. "Inducing wireless chargers to voice out for inaudible command attacks". In: *IEEE S&P*. 2023.
- [C16] Xiaopeng Zhao*, **Zhenlin An**, Qingrui Pan, and Lei Yang. "NeRF2: Neural Radio-Frequency Radiance Fields". In: *ACM MobiCom*. (Best Paper Runner-up). 2023.
- [C17] Donghui Dai*, **Zhenlin An**, Qingrui Pan, and Lei Yang. "Magcode: Nfc-enabled barcodes for nfc-disabled smartphones". In: *ACM MobiCom*. 2023.
- [C18] Sicong Liao, **Zhenlin An**, Qingrui Pan, Xiaopeng Zhao, Jingyu Tong, and Lei Yang. "XiTuXi: Sealing the Gaps in Cross-Technology Communication by Neural Machine Translation". In: *ACM SenSys*. 2023.
- [C19] Yanni Yang, Jiannong Cao, **Zhenlin An**, Yanwen Wang, Pengfei Hu, and Guoming Zhang. "Nfchain: A practical fingerprinting scheme for nfc tag authentication". In: *IEEE INFOCOM*. IEEE. 2023.
- [C20] Xueyuan Yang*, **Zhenlin An**, Xiaopeng Zhao, and Lei Yang. "Transfer Beamforming via Beamforming for Transfer". In: *IEEE INFOCOM*. 2023.
- [C21] Qingrui Pan*, **Zhenlin An**, Xiaopeng Zhao, and Lei Yang. "Revisiting Backscatter Frequency Drifts for Fingerprinting RFIDs: A Perspective of Frequency Resolution". In: *IEEE SECON*. (Best Paper Award). 2023.
- [C22] Qingrui Pan*, **Zhenlin An (Co-first author)**, Xueyuan Yang, Xiaopeng Zhao, and Lei Yang. "RF-DNA: Large-scale physical-layer identifications of RFIDs via dual natural attributes". In: *ACM MobiCom*. 2022.

- [C23] Zheng Gong*, Lubing Han, **Zhenlin An**, Lei Yang, Siqi Ding, and Yu Xiang. "Empowering smart buildings with self-sensing concrete for structural health monitoring". In: *ACM SIGCOMM*. (Best Demo Runner-up). 2022.
- [C24] Qingrui Pan, **Zhenlin An**, Qiongzheng Lin, and Lei Yang. "LSAB: Enhancing Spatio-Temporal Efficiency of AoA Tracking Systems". In: *IEEE INFOCOM*. IEEE. 2022.
- [C25] **Zhenlin An**, Qiongzheng Lin, Xiaopeng Zhao, Lei Yang, Dongliang Zheng, Guiqing Wu, and Shan Chang. "One tag, two codes: Identifying optical barcodes with NFC". In: *ACM MobiCom*. 2021.
- [C26] **Zhenlin An**, Qiongzheng Lin, Qingrui Pan, and Lei Yang. "Turbocharging deep backscatter through constructive power surges with a single RF source". In: *IEEE INFOCOM*. IEEE. 2021.
- [C27] **Zhenlin An**, Qiongzheng Lin, Ping Li, and Lei Yang. "General-purpose deep tracking platform across protocols for the internet of things". In: *ACM MobiSys*. 2020.
- [C28] **Zhenlin An**, Qiongzheng Lin, Lei Yang, and Xie Lei. "Activating wireless voice for e-toll collection systems with zero start-up cost". In: *IEEE INFOCOM*. 2020.
- [C29] Qiongzheng Lin, Lei Yang, **Zhenlin An**, Yi Guo, and Ping Li. "RFCamera: Identifying RFIDs in Pixel Dimensions". In: *IEEE SECON*. (Best Paper Award). 2020.
- [C30] Qiongzheng Lin (Co-first Author), **Zhenlin An (Co-first Author)**, and Lei Yang. "Rebooting ultrasonic positioning systems for ultrasound-incapable smart devices". In: *ACM MobiCom*. 2019.
- [C31] **Zhenlin An**, Qiongzheng Lin, Lei Yang, and Wei Lou. "Embracing tag collisions: Acquiring Bloom filters across RFIDs in physical layer". In: *IEEE INFOCOM*. 2019.
- [C32] Ping Li, **Zhenlin An**, Lei Yang, and Panlong Yang. "Towards physical-layer vibration sensing with rfid". In: *IEEE INFOCOM*. IEEE. 2019.
- [C33] **Zhenlin An**, Qiongzheng Lin, and Lei Yang. "Cross-Frequency Communication: Near-Field Identification of UHF RFIDs with WiFi!". In: *ACM MobiCom*. (Best Demo Runner-up). 2018.
- [C34] Lei Yang, Qiongzheng Lin, Chunhui Duan, and **Zhenlin An**. "Analog on-tag hashing: Towards selective reading as hash primitives in Gen2 RFID systems". In: *ACM MobiCom*. 2017.

Journal Papers.....

- [J1] Jingyu Tong, Xiaopeng Zhao, Zhicheng Wang, Donghui Dai, Zheng Gong, **Zhenlin An**, and Lei Yang. "Toward Scalable Reconfigurable Intelligent Surfaces Using Commercial RFIDs". In: *IEEE Transactions on Mobile Computing* (2026).
- [J2] Zheng Shi, Zhikai Ding, Yanni Yang, **Zhenlin An**, Runyu Pan, Yanling Bu, Guoming Zhang, Pengfei Hu, and Jiannong Cao. "MetaRFence: Protecting Human Motion Privacy Against RFID Sensing via Metasurface". In: *IEEE Transactions on Mobile Computing* (2026).
- [J3] Junling Wang*, **Zhenlin An**, and Guo Yi. "MetaSonic: Advancing Robot Localization with Directional Embedded Acoustic Signals". In: *IEEE Robotics and Automation Letters* (2025).
- [J4] Xiaopeng Zhao*, **Zhenlin An**, Qingrui Pan, and Lei Yang. "Frequency-Aware Neural Radio-Frequency Radiance Fields". In: *IEEE Transactions on Mobile Computing* (2025).
- [J5] Donghui Dai*, **Zhenlin An**, Qingrui Pan, and Lei Yang. "Harnessing NFC to Generate Standard Optical Barcodes for NFC-Missing Smartphones". In: *IEEE Transactions on Mobile Computing* (2024).
- [J6] Yanni Yang, **Zhenlin An**, Jiannong Cao, Yanwen Wang, Pengfei Hu, Guoming Zhang, and Xiuzhen Cheng. "Jump out of Resonance: A Practical NFC Tag Fingerprinting Scheme". In: *IEEE Transactions on Mobile Computing* (2024).
- [J7] Yanni Yang, Pengfei Hu, Jun Luo, **Zhenlin An**, Jiannong Cao, Dongxiao Yu, and Xiuzhen Cheng. "Romeo: Fault Detection of Rotating Machinery Via Fine-Grained Mmwave Velocity Signature". In: *IEEE Transactions on Mobile Computing* (2024).
- [J8] Yanni Yang, Pengfei Hu, Jiaxing Shen, Haiming Cheng, **Zhenlin An**, and Xiulong Liu. "Privacy-preserving human activity sensing: A survey". In: *High-Confidence Computing* (2024).

- [J9] Xiaopeng Zhao*, **Zhenlin An**, Qingrui Pan, and Lei Yang. "Understanding Wireless Channels Through NeRF2". In: *GetMobile: Mobile Computing and Communications* 28.1 (2024).
- [J10] Xiaopeng Zhao*, Guosheng Wang, **Zhenlin An**, Qingrui Pan, Qiongzhen Lin, and Lei Yang. "Pushing the Boundaries of High-Precision AoA Estimation With Enhanced Phase Estimation Protocol". In: *IEEE Internet of Things Journal* (2024).
- [J11] Qingrui Pan*, **Zhenlin An**, Xiaopeng Zhao, and Lei Yang. "The Power of Precision: High-Resolution Backscatter Frequency Drift in RFID Identification". In: *IEEE Transactions on Mobile Computing* (2023).
- [J12] Xueyuan Yang*, **Zhenlin An**, Xiaopeng Zhao, and Lei Yang. "Transfer Beamforming via Beamforming for Transfer". In: *IEEE Transactions on Mobile Computing* (2023).
- [J13] Yue Yu, Yepeng Yao, Zhewei Liu, **Zhenlin An**, Biyu Chen, Liang Chen, and Ruizhi Chen. "A Bi-LSTM approach for modelling movement uncertainty of crowdsourced human trajectories under complex urban environments". In: *International Journal of Applied Earth Observation and Geoinformation* 122 (2023).
- [J14] **Zhenlin An**, Qiongzhen Lin, Lei Yang, Yi Guo, and Ping Li. "Localizing RFIDs in pixel dimensions". In: *ACM Transactions on Sensor Networks* (2022).
- [J15] **Zhenlin An**, Qiongzhen Lin, Lei Yang, and Lei Xie. "Tagcaster: Activating Wireless Voice of Electronic Toll Collection Systems With Zero Start-Up Cost". In: *IEEE/ACM Transactions on Networking* 30.5 (2022).
- [J16] Qingrui Pan, **Zhenlin An**, Lei Yang, and Qiongzhen Lin. "LSAB: Enhancing Spatio-Temporal Efficiency of AoA Tracking Systems". In: *ACM Transactions on Sensor Networks* (2022).
- [J17] **Zhenlin An**, Lei Yang, and Qiongzhen Lin. "Identifying UHF RFIDs in Range of Readers With WiFi". In: *IEEE/ACM Transactions on Networking* 01 (2021).
- [J18] Wenzhong Shi, Zhewei Liu, **Zhenlin An**, and Pengfei Chen. "RegNet: a neural network model for predicting regional desirability with VGI data". In: *International Journal of Geographical Information Science* 35.1 (2021).
- [J19] **Zhenlin An**, Qiongzhen Lin, Lei Yang, and Yi Guo. "Revitalizing ultrasonic positioning systems for ultrasound-incapable smart devices". In: *IEEE Transactions on Mobile Computing* 20.5 (2020).
- [J20] **Zhenlin An**, Qiongzhen Lin, Lei Yang, Wei Lou, and Lei Xie. "Acquiring bloom filters across commercial rfids in physical layer". In: *IEEE/ACM Transactions on Networking* 28.4 (2020).
- [J21] Qiongzhen Lin, Lei Yang, Chunhui Duan, and **Zhenlin An**. "Tash: Toward selective reading as hash primitives for Gen2 RFIDs". In: *IEEE/ACM Transactions on Networking* 27.2 (2019).
- [J22] Ping Li, **Zhenlin An**, Lei Yang, Panlong Yang, and Qiongzhen Lin. "RFID harmonic for vibration sensing". In: *IEEE Transactions on Mobile Computing* 20.4 (2019).

Grants and Fundings

- UGA TTAP Startup, 2025-2027.
- Physical Neural Networks, PolyU Internal Funding, HKD 1M, 2023-2025, Co-PI with Dr. Lei Yang.

Teaching

- Lecturer at UGA Spring 2026
CSCI 8000 Special Topics in Spatial Computing and Embedded AI System
- Lecturer at UGA Fall 2025
CSCI 4900/6900 Special Topics in Mobile Computing and Internet of Things
- Guest Lecturer at UPitt (Lecturer: Dr. Longfei Shangguan) Spring 2024
CS 3720 Advanced Topics in Internet of Things
- Guest Lecturer at UPitt (Lecturer: Dr. Longfei Shangguan) Fall 2024
CS 2520 Wide Area Networks
- Teaching Assistant at PolyU (Lecturer: Dr. Lei Yang) Spring 2021
Web Application Design and Development (COMP 3421)

- Teaching Assistant at PolyU (Lecturer: Dr. Lei Yang) Fall 2020, Spring 2020
Internet Computing and Applications (COMP 5322)
- Teaching Assistant at PolyU (Lecturer: Prof. Guiling Wang) Fall 2019
Crowdfunding and E-finance (COMP 4141)
- Teaching Assistant at PolyU (Lecturer: Dr. Lei Yang) Fall 2018
Enterprise Web and Internet Computing for Managers (COMP 5321)
- Teaching Assistant at PolyU (Lecturer: Dr. Lei Yang) Spring 2019, Spring 2018, Fall 2017
Mobile Computing (COMP 4342)
- Teaching Assistant at DUT (Lecturer: Yingjie Zhang) 2014-2017
Microcomputer Assembly and Commissioning

Demos, Posters and Patents

Demos and Posters

- [D1] Qingrui Pan*, **Zhenlin An**, Xiaopeng Zhao, and Lei Yang. "Advancing Device Uniqueness through Physical-Layer Identification: A High-Resolution Strategy". In: *MobiUK*. 2024.
- [D2] Zheng Gong*, **Zhenlin An**, Jingyu Tong, Donghui Dai, and Lei Yang. "Building the Future: Empowering Smart Structures with In-Concrete Backscatter Networks". In: *ACM TURC*. 2023.
- [D3] Jingyu Tong*, **Zhenlin An**, Xiaopeng Zhao, Sicong Liao, and Lei Yang. "Radio Frequency Neural Networks for Wireless Sensing". In: *ACM MobiCom*. (Graduate Award), 2023.
- [D4] Donghui Dai*, **Zhenlin An**, Qingrui Pan, and Lei Yang. "MagCode: Bringing NFC Feature to All Smartphones". In: *ACM MobiCom*. 2023.
- [D5] Zheng Gong*, **Zhenlin An**, Jingyu Tong, Donghui Dai, and Lei Yang. "Constructing smart buildings with in-concrete backscatter networks". In: *ACM MobiCom*. (Best Demo Runner-up). 2022.
- [D6] Donghui Dai*, **Zhenlin An**, and Lei Yang. "Inducing wireless chargers to voice out". In: *ACM MobiCom*. (Best Demo Runner-up). 2022.
- [D7] **Zhenlin An**, Qiongzhen Lin, and Lei Yang. "Activating Wireless Voice for E-Toll Collection Systems with Zero Start-up Cost". In: *ACM MobiCom*. 2019.
- [D8] **Zhenlin An**, Qiongzhen Lin, and Lei Yang. "Near-Field Identification of UHF RFIDs with WiFi!" In: *ACM MobiCom*. (Best Demo Runner-up). 2018.

Patents

- [P1] Donghui Dai, **Zhenlin An**, Qingrui Pan, and Lei Yang. "Near field communication method and system based on camera magnetic field interference". CN116132956B (China). 2023.
- [P2] Yanni Yang, Sen Jia, Dongxiao Yu, Peng Wang, **Zhenlin An**, Huafeng Xu, Jiannong Cao, Entao Sun, and Chao Du. "Passive signal measuring device and measuring method based on millimeter wave radar". CN115436938A (China). 2023.
- [P3] Qingrui Pan, **Zhenlin An**, Xiaopeng Zhao, and Lei Yang. "Antenna array optimization method, device, terminal and storage medium". CN115377702A (China). 2022.
- [P4] **Zhenlin An**, Xueyuan Yang, Lei Yang, Yuan Li, Hong Liu, Jia Jia, and Renhui Sun. "Communication system, communication method and communication device". CN116263868A (China). 2021.
- [P5] Xiaopeng Zhao, **Zhenlin An**, Lei Yang, Jia Jia, Renhui Sun, and Hong Liu. "Positioning server, positioning method and back reflection communication system". CN116437435A (China). 2021.
- [P6] Qiongzhen Lin, **Zhenlin An**, and Lei Yang. "Image positioning method and device based on rotary antenna and terminal equipment". CN116437435A (China). 2019.

Professional Activities

Over 100 times top journal and conferences paper review services.

Referee for submissions to journals:

- ACM/IEEE Transactions on Networking
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Wireless Communication Letters
- IEEE Internet of Things Journal
- IEEE Transactions on Dependable and Secure Computing
- ACM Transactions on Sensor Networks
- ACM Transactions on Internet of Things
- IEEE Embedded Systems Letters
- IEEE Journal of Radio Frequency Identification
- IEEE Transactions on Information Forensics and Security
- IEEE Transactions on Automation Science and Engineering
- Nature Science Reports
- IEEE International Journal of Communication Systems
- Journal of Computer Science and Technology
- IEEE Pervasive Computing

Referee for submissions to conferences:

- 2026 Technical Program Committee: IEEE MASS, IMC Shadow, IWCMC ML Symposium, ACM HeadSys, CONEXT Artifacts
- 2026 Reviewer: IMWUT/UbiComp
- 2025 Technical Program Committee: IEEE ICPADS, ACM BodySys, ISPA, AloTSys
- 2024 Technical Program Committee: IEEE ICPADS, ICA3PP, ACM MobiCom Artifacts
- 2023 Technical Program Committee: IEEE ICPADS, ACM MobiCom Artifacts, ACM MobiArch
- 2022 Technical Program Committee: IEEE ICPADS, ACM SIGCOMM SRC Juror
- 2022 Reviewer: EAI MobiQuitous