YIDONG REN

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428 S. Shaw Lane, East Lansing, MI - 48824, USA

Research Interests

Internet of Things, Wireless Networking, Low-Power Wide-Area Network, Smart Agriculture

Education

Michigan State University — East Lansing, USA
Ph.D. Candidate, Department of Computer Science and Engineering — 2021 – Present
Advisor: Zhichao Cao

University of Electronic Science and Technology of China — Chengdu, China
B.E., Electronic and Information Engineering — 2017 – 2021

Conference Publications

* denotes equal contribution, _ are students I mentor

First-author papers:

INFOCOM 2025 **[C1]** AeroEcho: Towards Agricultural Low-power Wide-area Backscatter with Aerial Excitation Source.
Yidong Ren, Gen Li, Yimeng Liu, Younsuk Dong, Zhichao Cao
IEEE Conference on Computer Communications, 2025
Acceptance ratio: 18.66%

MobiCom 2024 **[C2]** SateRIoT: High-performance Ground-Space Networking for Rural IoT.
Yidong Ren, Amalinda Gamage, Li Liu, Mo Li, Shigang Chen, Younsuk Dong, Zhichao Cao.
The 30th Annual International Conference On Mobile Computing And Networking.
Acceptance ratio: 20.85%

MobiCom 2024 **[C3]** Demeter: Reliable Cross-soil LPWAN with Low-cost Signal Polarization Alignment.
Yidong Ren, Wei Sun, Jialuo Du, Huaili Zeng, Younsuk Dong, Mi Zhang, Shigang Chen, Yunhao Liu, Tianxing Li, Zhichao Cao.
The 30th Annual International Conference On Mobile Computing And Networking.
Acceptance ratio: 20.85%

MobiSys 2024 **[C4]** ChirpTransformer: Versatile LoRa Encoding for Low-power Wide-area IoT.
Yidong Ren* (co-primary author), Chenning Li*, Shuai Tong, Shakhrul Iman Siam, Mi Zhang, Jiliang Wang, Yunhao Liu, Zhichao Cao.
The 22nd ACM International Conference on Mobile Systems, Applications, and Services
Acceptance ratio: 16.35%

INFOCOM 2023 **[C5]** Prism: High-throughput LoRa Backscatter with Non-linear Chirps.
Yidong Ren, Puyu Cai, Jinyan Jiang, Jialuo Du, Zhichao Cao.
IEEE Conference on Computer Communications, 2023
Acceptance ratio: 19.21%

ICNP 2022 **[C6]** Is Lorawan Really Wide? Fine-grained LoRa Link-level Measurement in An Urban Environment.
Yidong Ren* (co-primary author), Li Liu*, Chenning Li*, Zhichao Cao and Shigang Chen.
The 30th IEEE International Conference on Network Protocols.
Acceptance ratio: 21.43%

Other papers:

SenSys 2025 **[C7]** Proteus: Enhanced mmWave Leaf Wetness Detection with Cross-Modality Knowledge Transfer.
Yimeng Liu, Maolin Gan, Huaili Zeng, **Yidong Ren**, Gen Li, Jingkai Lin, Younsuk Dong, Xiaobo Tan, Zhichao Cao.
The 23rd ACM Conference on Embedded Networked Sensor Systems.
Acceptance ratio: 18.78%

MobiCom 2024 **[C8]** LoRaTrimmer: Optimal Energy Condensation with Chirp Trimming for LoRa Weak Signal Decoding.
Jialuo Du, Yunhao Liu, **Yidong Ren**, Li Liu, Zhichao Cao.
The 30th Annual International Conference On Mobile Computing And Networking.
Acceptance ratio: 20.85%

SenSys 2024 **[C9]** PiezoBud: A Piezo-Aided Secure Earbud with Practical Speaker Authentication.
Gen Li*, Huaili Zeng*, Hanqing Guo, **Yidong Ren**, Aiden Dixon, Zhichao Cao and Tianxing Li.
The 22nd ACM Conference on Embedded Networked Sensor Systems.
Acceptance ratio: 18.53%

MobiHoc 2023 **[C10]** SRLoRa: Neural-enhanced LoRa Weak Signal Decoding with Multi-gateway Super Resolution.
Jialuo Du, **Yidong Ren**, Zhuizhu, Chenning Li, Zhichao Cao, Qiang Ma, Yunhao Liu.
The 24th International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing
Acceptance ratio: 22.06%

Journal Publications

TMC **[J1]** Morph: ChirpTransformer-based Encoder-decoder Co-design for Reliable LoRa Communication.
Yidong Ren, Maolin Gan, Mi Zhang, Shigang Chen, Zhichao Cao.
Under review of IEEE Transactions on Mobile Computing

TIoT **[J2]** NELoRa: Towards Ultra-low SNR LoRa Communication with Neural-enhanced Demodulation.
Maolin Gan*, Khang Nguyen*, Jialuo Du, **Yidong Ren**, Huacheng Zeng, Mi Zhang, Shigang Chen, Zhichao Cao.
Under review of ACM Transactions on Internet of Things

TMC **[J3]** Channel Adapted Antenna Augmentation for Improved Wi-Fi Throughput.
Yanbo Zhang, Weiping Sun, **Yidong Ren**, Sung-ju Lee, Mo Li.
IEEE Transactions on Mobile Computing, 2022.

BENCKMARK

ICLR ML4IoT NELoRa-Bench: A Benchmark for Neural-enhanced LoRa Demodulation.
Jialuo Du, **Yidong Ren**, Mi Zhang, Yunhao Liu and Zhichao Cao.
International Conference on Learning Representations Workshop on Machine Learning for IoT, 2023. **Oral**

DEMO

MobiCom 2024 Demeter-Demo: Demonstrating Cross-soil LPWAN with Low-cost Signal Polarization Alignment.
Yidong Ren, Yawen Wang, Younsuk Dong, Shigang Chen, Mi Zhang, Jiliang Tang, Zhichao Cao.
The 30th Annual International Conference On Mobile Computing And Networking (**Demo**)

Honor and Awards

Rising Star, ACM MobiSys 2025
Dissertation Completion Fellowship, Graduate School at Michigan State University 2025
Distinguished Artifact Reviewer, ACM MobiCom 2024
Student Travel Grant, ACM MobiCom 2024
Student Travel Grant, ACM MobiSys 2024
Student Travel Grant, ACM MobiHoc 2023
Student Travel Grant, IEEE ICNP 2022

Teaching Experience

Michigan State University, Department of Computer Science and Engineering

Teaching Assistant

- CSE 220 — Programming in C Spring 2022, Spring 2023, Spring 2024

Academic Service

Programm Committee of

- USENIX Security Artifact Evaluation 2025
- ACM MobiCom Artifact Evaluation 2024-2025
- ACM MobiSys Artifact Evaluation 2024

- ACM SenSys Artifact Evaluation 2024
- IEEE International Conference on Parallel and Distributed Systems (ICPADS) 2024

Invited Journal Reviewer of

- IEEE/ACM Transactions on Networking 2023-2025
- IEEE Transactions on Mobile Computing 2024-2025
- IEEE Transactions on Communication 2025
- IEEE Transactions on Wireless Communication 2025
- IEEE Internet Computing 2025
- ACM Transactions on Sensor Network 2022-2024

Conference Reviewer of

- IEEE International Symposium on Dynamic Spectrum Access Networks (DySpan) 2022-2023
- EAI MobiQuitous 2022

MENTORSHIP

Puyu Cai 02/2022-12/2022
Now: Master student at Computer Science Department, New York University

Khang Nguyen, Nam Nguyen 03/2023 - Present
Now: Honor College, Michigan State University