Ningning HOU

Macquarie University
Sydney, Australia
E-mail: ningning.hou@mq.edu.au; nnhou.polyu@gmail.com;
Phone: (61)478357794, (852)5566-3517
Homepage: https://ningning-hou.github.io/homepage/

RESEARCH INTERESTS

- Internet of Things (IoT): LPWAN, LoRa, Wireless Sensing
- Mobile Networking and Wireless Communication: Signal Processing, IoT Applications
- Cyber Physical Security: Covert Channel, Jamming, Authentication

WORK EXPERIENCE

Macquarie University, Australia ***Nov 2023 – present***
Lecturer (Assistant Professor)

The Hong Kong Polytechnic University, Hong Kong ***Dec 2021 – Oct 2023***
Postdoc

EDUCATION

The Hong Kong Polytechnic University, Hong Kong ***Sep 2017 – Nov 2021***
Ph.D., Computer Science

Beijing University of Posts and Telecommunications, Beijing, China ***Sep 2013 – Jun 2017***
B.Sc., Telecommunication Engineering

PUBLICATIONS

- Conference Papers

[1] **Ningning Hou**, Yifeng Wang, Xianjin Xia, Shiming Yu, Yuanqing Zheng, Tao Gu. " MoLoRa: Intelligent Mobile Antenna System for Enhanced LoRaReception in Urban Environments ", in proc. of *ACM SenSys'25*, Irvine, LA, USA, May. 2025. (Core A*, Acceptance rate: 18.78%)

[2] Ruonan Li, Ziyue Zhang, Xianjin Xia, **Ningning Hou**, Wenchang Chai, Shiming Yu, Yuanqing Zheng, Tao Gu. "From Interference Mitigation to Toleration: Pathway to Practical Spatial Reuse in LPWANs", in proc. of *ACM MobiCom'25*, Hong Kong, China, Nov. 2025. (Core A*, Acceptance rate: 17.08%)

[3] Shiming Yu, Xianjin Xia, Ziyue Zhang, **Ningning Hou**, Yuanqing Zheng. "FDLoRa: Tackling Downlink-Uplink Asymmetry with Full-duplex LoRa Gateways", in proc. of *ACM SenSys'24*, Hangzhou, China, Nov. 2024. (Core A*, Acceptance rate: 18.5%)

[4] Shiming Yu, Xianjin Xia, **Ningning Hou**, Yuanqing Zheng, Tao Gu. "Revolutionizing LoRa Gateway with XGate: Scalable Concurrent Transmission across Massive Logical Channels", in proc. of *ACM MobiCom'24*, Washington DC, USA, Oct. 2024. (Core A*, Acceptance rate: 23.2%)

[5] **Ningning Hou**, Xianjin Xia, Yifeng Wang, Yuanqing Zheng. "One Shot for All: Quick and Accurate Data Aggregation for LPWANs", in proc. of *IEEE INFOCOM'23*, New York, USA, May. 2023. (Core A*, Acceptance rate: 19.2%)

[6] Xianjin Xia, Qianwu Chen, **Ningning Hou**, Yuanqing Zheng, Mo Li. "XCopy: Boosting Weak Links for Reliable LoRa Communication", in proc. of *ACM MobiCom'23*, Madrid, Spain, Oct. 2023. (Core A*, Acceptance rate: 24.4%)

[7] Xianjin Xia, Qianwu Chen, **Ningning Hou**, Yuanqing Zheng. "HyLink: Towards High Throughput LPWANs with LoRa Compatible", in proc. of *ACM SenSys'22*, Boston, USA, Nov. 2022. (Core A*, Acceptance rate: 25%, Best paper candidate – 3 out of 52)

[8] **Ningning Hou**, Xianjin Xia, Yuanqing Zheng. "Don't Miss Weak Packets: Boosting LoRa Reception with Antenna Diversities", in proc. of *IEEE INFOCOM'22*, London, UK, May. 2022. (Core A*, Acceptance rate: 19.8%)

[9] Xianjin Xia, **Ningning Hou**, Yuanqing Zheng, Tao Gu. "PCube: Scaling LoRa Concurrent Transmissions with Reception Diversities", in proc. of *ACM MobiCom'21*, New Olean, USA, Oct. 2021. (Core A*, Acceptance rate: 23%)

[10] **Ningning Hou**, Xianjin Xia, Yuanqing Zheng, "Jamming of LoRa PHY and Countermeasure", in proc. of *IEEE INFOCOM'21*, Vancouver, Canada, Apr. 2021. (Core A*, Acceptance rate: 19.7%)

[11] **Ningning Hou**, Yuanqing Zheng, "CloakLoRa: A Covert Channel over LoRa PHY ", in proc. of *IEEE ICNP'20*, Madrid, Spain, Oct. 2020. (Core B, Acceptance rate: 24.7%)

- **Journal Papers**

[1] **Ningning Hou**, Xianjin Xia, Yuanqing Zheng, "CloakLoRa: A Covert Channel over LoRa PHY ", *IEEE/ACM Transactions on Networking (TON)*, Sep. 2022. (Core A*)

[2] **Ningning Hou**, Xianjin Xia, Yuanqing Zheng. "Don't Miss Weak Packets: Boosting LoRa Reception with Antenna Diversities", *ACM Transactions on Sensor Networks (TOSN)*, Aug. 2022.

[3] Xianjin Xia, **Ningning Hou**, Yuanqing Zheng. "PCube: scaling lora concurrent transmissions with reception diversities", *ACM Transactions on Sensor Networks (TOSN)*, Jun. 2022.

[4] **Ningning Hou**, Xianjin Xia, Yuanqing Zheng, "Jamming of LoRa PHY and Countermeasure", *ACM Transactions on Sensor Networks (TOSN)*, Jan. 2023.

[5] **Ningning Hou,** Yifeng Wang, Xianjin Xia, Yuanqing Zheng, "One Shot for All: Quick and Accurate Data Aggregation for LPWANs", *IEEE/ACM Transactions on Networking (TON)*, Dec. 2023. (Core A*)

[6] Xianjin Xia, Qianwu Chen, **Ningning Hou**, Yuanqing Zheng, Tao Gu, "Hylink: Towards High Throughput LPWANs with LoRa Compatible Communication", *IEEE/ACM Transactions on Networking (TON)*, Jan. 2024. (Core A*)

[7] Shiming Yu,Xianjin Xia,Ziyue Zhang,**Ningning Hou**,Yuanqing Zheng, "FDLoRa: Scaling Downlink Concurrent Transmissions with Full-duplex LoRa Gateways", IEEE Transactions on Mobile Computing, May. 2025. (Core A*)

- **Workshop, Posters, and Demos**

[1] **Ningning Hou**, Yuanqing Zheng. "Demo Abstract: CLoRa-A Covert Channel over LoRa PHY". In Proc. of *IEEE INFOCOM '20*. Toronto, Canada, Oct. 2020.

TEACHING EXPERIENCE

School of Computing, Macquarie University

Lecturer, COMP 8293 "IoT Communication Networks and Security" 2024-Sem 1

Lecturer, COMP8294 "Embedded IoT Hardware System and Devices" 2024-Sem 2

Lecturer, COMP8296 "Artificial Intelligence and Machine Learning Techniques in IoT" 2024-Sem 2

FUNDS

- Reliable and Efficient Massive Long Range Connectivity. Amount: 749,991.00 AUD, Year funded: 2025-2027
- Macquarie University Research Acceleration Scheme, AUD 50,000 AUD. "Bridging the Digital Divide: Reshaping Aged Care with Long-Range Integrated Sensing and Communication Technology", Jul. 2024 to Jul. 2025.

PROFESSIONAL SERVICES

- Reviewer of conferences: IEEE INFOCOM 2019-2023, ACM SenSys 2019-2022, IEEE/ACM IoTDI 2021-2022
- Reviewer of journals: IEEE/ACM TON; ACM TOSN; IEEE TMC, TWC, TDSC, TCOM, TNSE; EURASIP
- PC member of conferences: IEEE ICDCS 2024, ICPADS 2022-2023, MSN 2023-2024, UIC 2024
- Program chairs: Publicity chair of IEEE ICPADS 2024
- Journal Guest Editor: electronics - Ubiquitous Computing and Mobile Computing (Special Issue)
- Journal Guest Editor: Drones - Drone Communication, Networking, and Trajectory Control in Urban Environments (Special Issue)
- Artifact Evaluation Committee: MobiCom 2025
- Demo TPC: MobiCom 2025
- TPC for BodySys 2025 @ ACM UbiComp

AWARDS

- People's Choice Award for the Three Minute Thesis (3MT) Competition (2021)
- IEEE INFOCOM student travel grant (2021)
- PolyU Annual Research Day (First prize in 2018, Second prize in 2019)
- National Scholarship for Encouragement (2014-2016)
- The Xingda Scholarship (2014-2016)
- Outstanding Graduates & Dissertation Award of Beijing University of Posts and Telecommunications (2017, top 5%)