RUI WANG

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EDUCATION

Ph.D. in Electrical Engineering 9/2018 - 6/2024

Fudan University, Shanghai, China Advisor: Yi Jiang

- Research: **Machine Learning + Communication Systems and Theory**
- Honors: **Scholarship of Academic Excellence** (2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023)

B.E. in Communication Engineering 9/2014 - 6/2018

Northeastern University, Shenyang, China

- Honors: **Scholarship of Academic Excellence** (2014-2015, 2015-2016), **Outstanding Student Leader** (2015-2016)
- GPA: 3.7/4.00 (**top 8%**)

PUBLICATIONS

AI for Science:

[1] P. Hu*, **R. Wang***, X. Zheng, T. Zhang, et al. *"Wavelet Diffusion Neural Operator."* ICLR 2025.

[2] P. Hu*, X. Qian*, W. Deng, **R. Wang**, H. Feng, R. Feng, et al. *"From Uncertain to Safe: Conformal Adaptation of Diffusion Models for Safe PDE Control."* ICML 2025.

[3] L. Wei*, P. Hu*, R. Feng*, Y. Du, T. Zhang, **R. Wang**, Y. Wang, Z. Ma and T. Wu. "*Generative PDE Control*." ICLR Workshop 2024. Oral. [paper]

[4] L. Wei*, P. Hu*, R. Feng*, Y. Du, T. Zhang, **R. Wang**, Y. Wang, Z. Ma and T. Wu. "*DiffPhyCon: A Generative Approach to Control Complex Physical Systems.*" NeurIPS 2024.

[5] P. Hu*, X. Zheng*, W. Deng, **R. Wang**, et al. "A Probabilistic Generative Method for Safe Physical System Control Problems." NeurIPS Workshop 2024.

Wireless Communication:

[1] W. Dai, **R. Wang**, J. Liu, and Y. Jiang. "*Distributed Downlink Precoding for Cell-Free Massive MIMO: A Quasi-Neural Network Approach.*" IEEE Transactions on Communications (TCOM), 2024.

[2] **R. Wang**, W. Dai and Y. Jiang. "*Distributed Learning for Uplink Cell-Free Massive MIMO Networks*." IEEE Transactions on Communications (TCOM), 2023. [paper]

[3] W. Dai, J. Liu, **R. Wang**, and Y. Jiang. "*Learning by Over-the-Air Training: A Distributed Precoding for Cell-Free Massive MIMO.*" IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), 2023. [paper]

[4] **R. Wang**, Y. Jiang and W. Zhang. "*Distributed Learning for MIMO Relay Networks*." IEEE Journal of Selected Topics in Signal Processing (JSTSP), 2022. [paper]

[5] **R. Wang** and Y. Jiang. "*Distributed Optimization of Uplink Cell-Free Massive MIMO Networks*." IEEE Vehicular Technology Conference (VTC), 2022. [paper]

[6] Z. Yang, **R. Wang**, Y. Jiang and J. Li, "*Joint Estimation of Velocity, Angle-of-Arrival and Range (JEVAR) Using a Conjugate Pair of Zadoff-Chu Sequences*." IEEE Transactions on Signal Processing (TSP), 2021. [paper]

[7] **R. Wang**, Y. Jiang and W. Zhang, "*A Distributed MIMO Relay Scheme Inspired by Backpropagation Algorithm*." IEEE Global Communications Conference (GLOBECOM), 2021. [paper]

[8] Z. Yang, **R. Wang** and Y. Jiang, "*A Novel Scheme for Joint Estimation of Velocity, Angle-of-arrival and Range in Multipath Environment.*" IEEE Global Communications Conference (GLOBECOM), 2021. [paper]

[9] **R. Wang** and Y. Jiang, "*Distributed Optimization of Multiuser MIMO Relay Network Using Backpropagation Algorithm.*" Asilomar Conference on Signals, Systems, and Computers (ACSSC), 2021. [paper]

[10] **R. Wang** and Y. Jiang, "*A Nonlinear Relay Scheme Resilient to Interference with Unknown CSI.*" Asilomar Conference on Signals, Systems, and Computers (ACSSC), 2020. [paper]

[11] **R. Wang** and Y. Jiang, "*An Interference-Resilient Relay Beamforming Scheme Inspired by Back-Propagation Algorithm.*" Information: Theory and Applications (ITA) Workshop, 2020. [paper]

[12] Z. Zhang, J. Liu, **R. Wang** and T. Li. "*Study on Medical Image Segmentation Methods of Humerus*." Chinese Control and Decision Conference (CCDC), 2017. [paper]

PATENTS

[1] Y. Jiang, Z. Yang and **R. Wang**. "*Joint Estimation of Velocity, Angle-of-Arrival and Range (JEVAR) Using a Conjugate Pair of Zadoff-Chu Sequence."* Apr. 12 2022. CN Patent 113,156,365.

[2] Y. Jiang, J. Yang, Q. Du, **R. Wang**, W. Zhang and F. Li. "Sensitivity of Bluetooth Receiver by Introducing Interleaver." Sept. 27 2022. US Patent 11,456,818. **&** Mar. 18 2022. CN Patent 112,653,537.

EXPERIENCES

Institute of Brain and Cognitive Sciences 1/2025 - Present

Postdoctoral Fellow (advisor: Qionghai Dai) Tsinghua University, Beijing, China

Institute for Interdisciplinary Information Sciences (IIIS) 8/2024 - 11/2024

Visiting Scholar (advisor: Longbo Huang) Tsinghua University, Beijing, China

AI for Scientific Simulation and Discovery Lab 12/2023 - 7/2024

Research Intern (advisor: Tailin Wu) Westlake University, Zhejiang, China

School of Information Science and Technologies 9/2018 - 6/2024

Ph.D. (advisor: Yi Jiang) Fudan University, Shanghai, China

Teaching Assistant:

- Mathematical Basis of Artificial Intelligence: Tutored 120 master's students. 9/2023 - 2/2024
- Mathematical Basis of Artificial Intelligence: Tutored 110 master's students. 9/2021 - 2/2022
- Linear Algebra: Tutored 200 undergraduate students. 9/2019 - 1/2020

OTHER INFORMATION

Reviewers for Journals:

- IEEE Internet of Things Journal (IoT)
- IEEE Transactions on Communications (TCOM)
- IEEE Transactions on Machine Learning in Communications and Networking (TMLCN)

Hobbies:

- Enthusiastically engaged in running, badminton, dancing, and photography.