BEIJING JIAOTONG UNIVERSITY

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Research Areas: Cell-free massive MIMO, extremely large-scale MIMO, reinforcement learning

EDUCATION BACKGROUND

- **Sept. 2022 ~ Present** ***Ph.D. candidate*** Information and Communication Engineering
  School of Electronics and Information Engineering, **Beijing Jiaotong University**, Beijing, CN.
- **Sept. 2018 ~ Jul. 2022** ***B.E .*** Communication Engineering
  School of Information and Control Engineering, **Qingdao University of Technology**, Shandong, CN.

PROJECTS

- Leader, 'Optimization design of cell-free XL-MIMO system based on multi-agent reinforcement learning', Fundamental Research Funds for the Central Universities (2023YJS001).
- Main participants, 'Cell-free large-scale collaborative MIMO technology for 6G', National Key R&D Program of China (2020YFB1807201).
- Main participants, 'Research on basic theory and key technology of cell-free massive MIMO system', National Natural Science Foundation of China (61971027).

MAIN AWARDS

- 2023, 2020 National Scholarship
- 2023 Ucom Best Paper Reward & Ucom Excellent Graduate Student Reward
- 2022 IEEE ComSoc Student Grant
- 2022 Outstanding Students and Graduates of Shandong Province
- 2020 National Second Prize in National College Students Mathematical Contest in Modeling

SELECTED PUBLICATIONS

[1] **Z. Liu**, J. Zhang, Z. Wang, X. Zhang, H. Xiao and B. Ai, "Cell-Free Massive MIMO With Mixed-Resolution ADCs and I/Q Imbalance Over Rician Spatially Correlated Channels," ***IEEE Trans. Veh. Technol.***, July 2023.

[2] **Z. Liu,** J. Zhang, Z. Liu, H. Du, Z. Wang, D. Niyato, M. Guizani and B. Ai, "Cell-Free XL-MIMO Meets Multi-Agent Reinforcement Learning: Architectures, Challenges, and Future Directions", ***IEEE Wireless Commun.***, to appear.

[3] **Z. Liu**, J. Zhang, Z. Wang, B. Ai and D. W. K. Ng, "Cell-Free Massive MIMO with Low-Resolution ADCs and I/Q Imbalance over Spatially Correlated Channels," ***in Proc. IEEE GLOBECOM***, 2022.

[4] **Z. Liu**, Z. Liu, J. Zhang, H. Xiao, B. Ai and D. W. K. Ng, "Uplink Power Control for Extremely Large-Scale MIMO with Multi-Agent Reinforcement Learning and Fuzzy Logic," in ***Proc. IEEE INFOCOM,*** 2023.

[5] **Z. Liu** et al., "Antenna Selection of Cell-Free XL-MIMO Systems with Multi-Agent Reinforcement Learning," ***2023 International Conference on Ubiquitous Communication (Ucom)***, 2023.

[6] Z. Liu, J. Zhang, **Z. Liu**, H. Xiao and B. Ai, "Double-Layer Power Control for Mobile Cell-Free XL-MIMO with Multi-Agent Reinforcement Learning", ***IEEE Trans. Wireless Commun.,*** early access.

[7] **Z. Liu**, J. Zhang, Y. Zeng and B. Ai, "Energy-Efficient UAV Trajectory Optimization in Cell-Free Space-Air-Ground Integrated Networks", ***IEEE JSAC***, submitted.