Jiajia Guo

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Education

Ph.D. **Sep. 2019 - Mar. 2023 (expected)**
Southeast University (SEU)
School of Information Science and Engineering *Supervisor: Prof. Shi Jin*

Master **Sep. 2016 - Jun. 2019**
University of Science and Technology of China (USTC)
School of Information Science and Technology *Supervisor: Prof. Hongwei Du*

Bachelor **Sep. 2012 - Jun. 2016**
Nanjing University of Science and Technology (NJUST)
School of Electronic and Optical Engineering

Research Interests

- AI-native Air Interface: CSI feedback, Massive MIMO
- Distributed Learning for Physical Layer Design
- Lightweight Design for AI-native Air Interface
- Reconfigurable Intelligence Surface

Selected Awards & Honors

• National Scholarship of China	SEU	Sep. 2022
• Exemplary Reviewer Award of WCL	IEEE	Mar. 2022
• Zhangjiang Hi-Tech Scholarship Award	SEU	Nov. 2021
• Excellent Postgraduate Student Award	SEU	Oct. 2020
• Doctoral Freshmen Award	SEU	Nov. 2019
• Outstanding Graduates Award	USTC	Jun. 2019
• National Scholarship of China	USTC	Sep. 2018

Publications

Journal Articles
First author:

1. **J. Guo**, C.-K. Wen, S. Jin, and X. Li, "AI for CSI feedback enhancement in 5G-Advanced," *IEEE Wireless Communications*, Early access, 2022.
2. **J. Guo**, W. Chen, C.-K. Wen, and S. Jin, "Deep learning-based two-timescale CSI feedback for beamforming design in RIS-assisted communications," *IEEE Transactions on Vehicular Technology*, Early access, 2022.
3. **J. Guo**, T. Chen, S. Jin, G. Y. Li, X. Wang, and X. Hou "Deep learning for joint channel estimation and feedback in massive MIMO systems," *Digital Communications and Networks*, Early access.
4. **J. Guo**, C.-K. Wen, S. Jin, and G. Y. Li, "Overview of deep learning-based CSI feedback in massive MIMO systems," *IEEE Transactions on Communications*, vol. 70, no. 12, pp. 8017–8045, Dec., 2022. (**Invited paper**)

5. **J. Guo**, C. -K. Wen and S. Jin, "Eliminating CSI feedback overhead via deep learning-based data hiding," *IEEE Journal on Selected Areas in Communications*, vol. 40, no. 8, pp. 2267-2281, Aug. 2022.

6. **J. Guo**, C.-K. Wen, M. Chen, and S. Jin, "Environment knowledge-aided massive MIMO feedback codebook enhancement using artificial intelligence," *IEEE Transactions on Communications*, vol. 70, no. 7, pp. 4527–4542, Jul. 2022.

7. **J. Guo**, Y. Zuo, C.-K. Wen, and S. Jin, "User-centric online gossip training for autoencoder-based CSI feedback," *IEEE Journal of Selected Topics in Signal Processing*, vol. 16, no. 3, pp. 559–572, Apr. 2022.

8. **J. Guo**, C.-K. Wen, and S. Jin, "CAnet: Uplink-aided downlink channel acquisition in FDD massive MIMO using deep learning," *IEEE Transactions on Communications*, vol. 70, no. 1, pp. 199–214, Jan. 2022.

9. **J. Guo**, C.-K. Wen, and S. Jin, "Deep learning-based CSI feedback for beamforming in single and multi-cell massive MIMO systems," *IEEE Journal on Selected Areas in Communications*,vol. 39, no. 7, pp. 1872–1884, Jul. 2021.

10. **J. Guo**, X. Li, M. Chen et al., "AI enabled wireless communications with real channel measurements: Channel feedback," *Journal of Communications and Information Networks*, vol. 5, no. 3, pp. 310–317, Sept. 2020. (Cover paper)

11. **J. Guo**, J. Wang, C.-K. Wen, S. Jin, and G. Y. Li, "Compression and acceleration of neural networks for communications," *IEEE Wireless Communications*, vol. 27, no. 4, pp. 110–117, Aug. 2020.

12. **J. Guo**, C.-K. Wen, S. Jin, and G. Y. Li, "Convolutional neural network-based multiple-rate compressive sensing for massive MIMO CSI feedback: Design, simulation, and analysis," *IEEE Transactions on Wireless Communications*, vol. 19, no. 4, pp. 2827–2840, Apr. 2020. (**ESI highly cited paper**)

13. **J. Guo**, J. Zhu, H. Du and B. Qiu, "A bone age assessment system for real-world X ray images based on convolutional neural networks," *Computers & Electrical Engineering*, vol. 81, pp. 106529, Jan. 2020.

14. **J. Guo**, H. Du, J. Zhu, T. Yan, and B. Qiu, "Relative location prediction in CT scan images using convolutional neural networks," *Computer Methods and Programs in Biomedicine*, vol. 160, pp. 43–49, Jul. 2018.

Co-author:

1. Z. Cao, **J. Guo**, C.-K. Wen, and S. Jin, "Deep-unfolding-based bit-level CSI feedback in massive MIMO systems," *IEEE Wireless Communications Letters*, Early access, 2022.

2. Y. Cui, **J. Guo**, C.-K. Wen, S. Jin, and S. Han, "Unsupervised online learning in deep learning-based massive MIMO CSI Feedback," *IEEE Communications Letters*, vol. 26, no. 9, pp. 2086–2090, Sep. 2022.

3. Y. Cui, **J. Guo**, X. Li, L. Liang, and S. Jin, "Federated edge learning for the wireless physical layer: Opportunities and challenges," *China Communications*, vol. 19, no. 8, pp. 15–30, Aug. 2022.

4. M. Chen, **J. Guo**, C.-K. Wen, S. Jin, G. Y. Li, and A. Yang, "Deep learning-based implicit CSI feedback in massive MIMO," *IEEE Transactions on Communications*, vol. 70, no. 2, pp. 935–950, Feb. 2022.

5. Z. Cao, W.-T. Shih, **J. Guo**, C.-K. Wen, and S. Jin, "Lightweight convolutional neural networks for CSI feedback in massive MIMO," *IEEE Communications Letters*, vol. 25, no. 8, pp. 2624–2628, Aug. 2021.

6. J. Yang, S. Jin, C. -K. Wen, **J. Guo**, M. Matthaiou and B. Gao, "Model-based learning network for 3-D localization in mmWave communications," *IEEE Transactions on Wireless Communications*, vol. 20, no. 8, pp. 5449-5466, Aug. 2021.

7. X. Yu, **J. Guo**, X. Li, and S. Jin, "Deep learning based user scheduling for massive MIMO downlink system," *Science China Information Sciences*, vol. 64, no. 8, pp. 1–10, 2021.

8. Q. Liu, **J. Guo**, C.-K. Wen, and S. Jin, "Adversarial attack on DL-based massive MIMO CSI feedback," *Journal of Communications and Networks*, vol. 22, no. 3, pp.230–235, Jun. 2020.

9. X. Li, X. Yu, T. Sun, **J. Guo**, and J. Zhang, "Joint Scheduling and Deep Learning-Based Beamforming for FD-MIMO Systems Over Correlated Rician Fading," *IEEE Access*, vol. 7, pp. 118297-118309, 2019.

10. H. Jiang, **J. Guo**, H. Du, J. Xu, and B. Qiu, "Transfer learning on T1-weighted images for brain age estimation," Mathematical Biosciences and Engineering, vol. 16, pp. 4382-4398, May 2019.

Conference Articles
First author:

1. **J. Guo**, C.-K. Wen, and S. Jin, "Deep data hiding-based CSI feedback overhead elimination: An initial investigation," 2022 IEEE International Conference on Communications (ICC), 2022, pp. 5347-5352.

2. **J. Guo**, C.-K. Wen, M. Chen, and S. Jin, "AI-enhanced codebook-based CSI feedback in FDD massive MIMO," 2021 IEEE 94th Vehicular Technology Conference (VTC2021-Fall), 2021, pp. 1-5.

3. **J. Guo**, C. Gu, S. Chen, et al., "Channel-based Rate Selection for Commodity RFID Networks," 2018 28th International Telecommunication Networks and Applications Conference (ITNAC), 2018, pp. 1-6.

4. **J. Guo**, H. Du, B. Qiu, and X. Liang, "A deep learning-based method for relative location prediction in CT scan images," 31st Conference on Neural Information Processing Systems (NIPS) Workshop on Machine Learning for Health, 2017, pp. 1-5.

Co-author:

1. Y. Lv, **J. Guo**, C.-K. Wen, and S. Jin, "Integrated CSI feedback and localization using deep learning," 2023 IEEE International Conference on Communications (ICC), 2023.

2. C. Jiang, **J. Guo**, C.-K. Wen, S. Jin, and X. Hou "Deep learning-based implicit CSI feedback for time-varying massive MIMO channels," 2023 IEEE International Conference on Communications (ICC), 2023.

3. H. Tang, **J. Guo**, M. Matthaiou, C.-K. Wen, and S. Jin, "Knowledge-distillation-aided lightweight neural network for massive MIMO CSI feedback, " 2021 IEEE 94th Vehicular Technology Conference (VTC2021-Fall), 2021, pp. 1-5.

4. T. Chen, **J. Guo**, S. Jin, C.-K. Wen, and G. Y. Li, "A novel quantization method for deep learning-based massive MIMO CSI feedback," 2019 IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2019, pp. 1-5.

Book Chapters

1. S. Jin, **J. Guo**, Y. Cui, "User-Centric Decentralized Federated Learning for Autoencoder-Based CSI Feedback," in Federated Learning for Future Intelligent Wireless Networks, Wiley-IEEE Press, 2023.

2. S. Jin, Y. Cui, **J. Guo**, "Federated Edge Learning for Massive MIMO CSI Feedback," in Federated Learning for Future Intelligent Wireless Networks, Wiley-IEEE Press, 2023.

Submitted Articles

1. **J. Guo**, X. Yang, C.-K. Wen, S. Jin, and G. Y. Li, "DL-based CSI feedback and cooperative recovery in massive MIMO," *IEEE Transactions on Network Science and Engineering*, Major Revision.

2. Y. Zuo, **J. Guo**, N. Gao, Y. Zhu, S. Jin, and X. Li, "A Survey of blockchain and artificial intelligence for 6G wireless communications," *IEEE Communications Surveys & Tutorials*, Major Revision.

3. X. Li, **J. Guo**, C.-K. Wen, S. Jin, and X. Li "Automatic design of neural networks for wireless communications," *IEEE Communications Magazine*, Under Review.

4. X. Li, **J. Guo**, C.-K. Wen, S. Jin, S. Han, and X. Wang "Multi-task Learning-based CSI Feedback Design in Multiple Scenarios," *IEEE Transactions on Communications*, Major Revision.

Granted Patents

1. S. Jin, **J. Guo**, T. Chen, C.-K. Wen. A neural network-based multi-rate CSI compression and feedback method for massive MIMO: China Patent CN201910509887.X[P]. 2021-03-16.
2. S. Jin, **J. Guo**, C.-K. Wen. An AI-based environmental knowledge-assisted wireless channel feedback method: China Patent CN202110641006.7[P]. 2022-07-26.
3. H. Jiang, **J. Guo**, H. Du, F. Zeng, T. Yan, B. Qiu. Method and apparatus for establishing an age prediction model, age prediction method and apparatus: China Patent CN201811055569.2[P]. 2021-10-01.
4. S. Jin, W. Tang, **J. Guo**, J. Zhang. Wireless transceiver with direct RF signal processing based on RIS neural network: China Patent CN201910724723.9[P]. 2021-03-02.
5. S. Jin, T. Chen, **J. Guo**, C.-K. Wen. A quantization and dequantization method for massive MIMO CSI feedback: China Patent CN201910602829.1[P]. 2022-06-10.
6. S. Jin, Y. Cui, **J. Guo**. Online wireless CSI acquisition optimization method assisted by environmental knowledge: China Patent CN202110917287.4[P]. 2022-08-16.

3GPP Proposals

1. S. Jin and **J. Guo**, "Discussion on general aspects of AI/ML framework," Southeast University, 3GPP R1-2208739, Sep. 2022.
2. S. Jin, **J. Guo**, and C. Jiang, "Evaluation on AI/ML for CSI feedback enhancement in spatial-frequency -time domain," Southeast University, 3GPP R1-2207475, Aug. 2022.
3. S. Jin, **J. Guo**, and C. Jiang, "Evaluation on AI-based CSI feedback," Southeast University, 3GPP R1-2203650, May 2022.

Projects

- Postgraduate Research&Practice Innovation Program of Jiangsu Province (Grant KYCX21_0104), "**Research on the Theory and Key Technologies of Deep Learning-based Massive MIMO CSI Feedback**," PI, Jul. 2021-Jan. 2023
- Scientific Research Foundation of Graduate School of Southeast University (Grant YBPY2118), "**B5G/6G Oriented Deep Learning-based Massive MIMO CSI Feedback**," PI, Jul. 2021-Jan. 2023

Academic Services

- TPC member of IEEE VTC-Fall 2022.
- Reviewer of journals, such as IEEE Trans. Signal Process., IEEE J. Sel. Areas Commun., IEEE Trans. Wireless Commun., IEEE Trans. Commun., IEEE Trans. Veh. Technol., IEEE Wireless Commun., IEEE Commun. Mag., IEEE Wireless Commun. Lett., IEEE Commun. Lett., etc.
- Key technical staff of 2nd and 3rd National Artificial Intelligence Competition (NAIC)

Talks

- "Deep Learning-based CSI Feedback" for Summer School on MIMO Theory and Applications of Peking University & Zhejiang University, Jul. 30, 2022.
- "Deep Learning based Multiple-Rate Compressive Sensing for Massive MIMO CSI Feedback" in the University of Manchester, Jul. 26, 2019.