



## GRANT RECORD

- **RGC General Research Fund (GRF) (15207220)**, PI, HK\$ 845,055, “Massive IoT Connectivity in Future Wireless Networks via Deep Learning-Assisted Compressive Sensing,” 01/01/2021–31/12/2023.
- **RGC General Research Fund (GRF) (16210719)**, Co-I, HK\$ 673,470, “Learn to Optimize for Scalable Resource Allocation in Cooperative Dense Wireless Networks,” 01/01/2020–31/12/2022.
- **RGC General Research Fund (GRF) (16209418)**, PI, HK\$ 495,086, “Mobility-Aware Cooperative Caching for Wireless Content Delivery,” 01/01/2019–31/12/2021.
- **RGC General Research Fund (GRF) (16210216)**, PI, HK\$ 675,647, “Millimeter-Wave MIMO Communications for 5G Networks,” 01/09/2016–29/02/2020.
- **RGC General Research Fund (GRF) (16211815)**, PI, HK\$ 696,029, “High Dimensional Channel Estimation for Wireless DenseNets,” 01/07/2015–31/12/2018.
- **RGC General Research Fund (GRF) (16200214)**, PI, HK\$ 692,894, “Cloud-RAN: A New Design Paradigm for Cooperative Wireless Networks,” 01/09/2014–28/02/2018.
- **RGC General Research Fund (GRF) (610113)**, PI, HK\$ 836,450, “Interference Management for Next-Generation Heterogeneous Networks,” 01/01/2014–30/06/2017.
- **RGC General Research Fund (GRF) (610212)**, Co-I, HK\$ 700,000, “Green Cooperative Communications for Future Wireless Networks,” 2013–2015.
- **RGC General Research Fund (GRF) (610311)**, Co-I, HK\$ 1,292,370, “Interference-Aware Coordination for Next-Generation Wireless Networks,” 2012–2015.
- **RGC Direct Allocation Grant (DAG11EG03)**, PI, HK\$ 200,000, “Interference measurement and management in wireless networks,” 2010–2014.

## CONFERENCE TUTORIALS

1. J. Zhang, “Task-oriented Communication for Edge AI,” (3 hours) *IEEE MeditCom 2021*.
2. J. Zhang, X. Yu “Hybrid Beamforming for 5G Millimeter Wave Systems,” (3 hours) *IEEE/CIC ICC*, Changchun, China, Aug. 2019.
3. J. Zhang, “Hybrid Beamforming for 5G Millimeter Wave Systems,” (3 hours) *IEEE GLOBECOM*, Abu Dhabi, Dec. 2018.
4. J. Zhang, “Tractable Analysis of Large-scale Multi-antenna Wireless Networks via Stochastic Geometry,” (3 hours) *the 16th International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt 2018)*, Shanghai, China, May 2018.
5. J. Zhang, Y. Shi, “Generalized Sparse and Low-Rank Optimization for Dense Wireless Networks: Models, Algorithms and Theory,” (3 hours) *IEEE/CIC ICC*, Beijing, China, Aug. 2018.
6. J. Zhang, Y. Shi, “Sparse and Low-Rank Optimization for Dense Wireless Networks: Models, Algorithms and Theory,” (3 hours) *IEEE GLOBECOM*, Singapore, Dec. 2017.

## PUBLICATIONS

(Google Citation: 14,439; h-index: 50; i10-index: 113, as of Dec 12, 2021)

### Books:

1. A. Ghosh, J. Zhang, J. G. Andrews, and R. Muhamed, *Fundamentals of LTE*, Prentice-Hall, 2010.
2. X. Yu, C. Li, J. Zhang, and K. B. Letaief, *Stochastic Geometry Analysis of Multi-antenna Networks*, Springer, 2019.
3. Y. Shi, J. Dong, and J. Zhang, *Low-overhead Communications in IoT Networks: Structured Signal Processing Approaches*, Springer, 2020.

### Book Chapters:

1. Y. Shi, J. Zhang, K. B. Letaief, B. Bai and W. Chen, “Large-Scale Convex Optimization for C-RANs,” in *Cloud Radio Access Networks: Principles, Technologies, and Applications*, Cambridge University Press, 2017.

2. C. You, Y. Mao, J. Zhang, K. Huang, "Energy-Efficient Offloading for Mobile Edge Computing," in *Wiley 5G Ref: The Essential 5G Reference Online*, 2019.

#### **Journal Articles (Submitted):**

1. Y. Sun, J. Shao, Y. Mao, J. Wang, and J. Zhang, "Semi-decentralized federated edge learning with data and device heterogeneity," submitted to *IEEE J. Select. Areas Commun.*.
2. H. He, X. Yu, J. Zhang, S.H. Song, and K. B. Letaief, "Cell-free massive MIMO detection: A distributed expectation propagation approach," submitted to *IEEE Trans. Wireless Commun.*.
3. Y. Ma, Y. Shen, X. Yu, J. Zhang, S.H. Song, and K. B. Letaief, "Learn to communicate with neural calibration: Scalability and generalization," submitted to *IEEE Trans. Wireless Commun.*.
4. J. Shao, Y. Mao, and J. Zhang, "Task-oriented communication for multi-device cooperative edge inference," submitted to *IEEE Trans. Wireless Commun.*.
5. X. Bian, Y. Mao, and J. Zhang, "Joint activity detection, channel estimation, and data decoding for grant-free massive random access," submitted to *IEEE Trans. Wireless Commun.*.
6. L. Liu, J. Zhang, S.H. Song, and K. B. Letaief, "Hierarchical quantized federated learning: Convergence analysis and system design," submitted to *IEEE Trans. Wireless Commun.*.
7. J. Dong, J. Zhang, Y. Shi, and J. Wang, "Faster activity and data detection in massive random access: A multi-armed bandit approach," submitted to *IEEE Internet of Things Journal*.

#### **Journal Articles (Published, Accepted):**

1. H. He, X. Yu, J. Zhang, S.H. Song, and K. B. Letaief, "Cell-free massive MIMO for 6G wireless communication networks," *Journal of Communications and Information Networks*, to appear.
2. X. Zhao, T. Lin, Y. Zhu, and J. Zhang, "Partially-connected hybrid beamforming for spectral efficiency maximization via a weighted MMSE equivalence," *IEEE Trans. Wireless Commun.*, to appear.
3. J. Shao, Y. Mao, and J. Zhang, "Learning task-oriented communication for edge inference: An information bottleneck approach," *IEEE J. Select. Areas Commun.*, to appear.
4. L. Chen, J. Wu, J. Zhang, X. Long, and Y. Pang, "Dependency-aware computation offloading for mobile edge computing with edge-cloud cooperation," *IEEE Trans. Cloud Computing*, to appear.
5. Y. Yu, C. Zhang, W. Wang, J. Zhang, and K. B. Letaief, "Towards dependency-aware cache management for data-parallel applications," *IEEE Trans. Cloud Computing*, to appear.
6. D. Liu, G. Zhu, J. Zhang, and K. Huang, "Data-importance aware User scheduling for communication-efficient edge machine learning," *IEEE Trans. Cognitive Commun. and Networking*, vol. 7, no. 1, pp. 265–278, March 2021.
7. Y. Xue, Y. Shen, V. Lau, J. Zhang, and K. B. Letaief, "Blind data detection in massive MIMO via  $\ell_3$ -norm maximization over the Stiefel manifold," *IEEE Trans. Wireless Commun.*, vol. 20, no. 2, pp. 1411–1424, Feb. 2021.
8. L. Chen, J. Wu, and J. Zhang, "Long-term optimization for MEC-enabled HetNets with edge-cloud-cloud collaboration," *Computer Communications*, vol. 166, pp. 66–80, Jan. 2021.
9. D. Liu, G. Zhu, Q. Zeng, J. Zhang, and K. Huang, "Wireless data acquisition for edge learning: Data-importance aware retransmission," *IEEE Trans. Wireless Commun.*, vol. 20, no. 1, pp. 406–420, Jan. 2021.
10. Y. Shen, Y. Shi, J. Zhang, and K. B. Letaief, "Graph neural networks for scalable radio resource management: architecture design and theoretical analysis," *IEEE J. Select. Areas Commun.*, vol. 39, no. 1, pp. 101–115, Jan. 2021.
11. J. Shao, J. Zhang, "Communication-computation trade-off in resource-constrained edge inference," *IEEE Commun. Mag.*, vol. 58, no. 12, pp. 20–26, Dec. 2020.
12. Y. Shi, K. Yang, T. Jiang, J. Zhang, and K. B. Letaief, "Communication-efficient edge AI: Algorithms and systems," *IEEE Commun. Surveys Tuts.*, vol. 22, no. 4, pp. 2167–2191, 4th Quart. 2020.
13. L. Wang, J. Zhang, J. Chuan, R. Ma, and A. Fei, "Edge intelligence for mission cognitive wireless emergency networks," *IEEE Wireless Commun. Mag.*, vol. 27, no. 4, pp. 103–109, Aug. 2020.

14. X. Yang, S. Hua, Y. Shi, H. Wang, J. Zhang, and K. B. Letaief, "Sparse optimization for green edge AI inference," *Journal of Communications and Information Networks*, vol. 5, no. 1, pp. 1–15, Apr. 2020.
15. J. Zhang and K. B. Letaief, "Mobile Edge Intelligence and Computing for the Internet of Vehicles," *Proc. IEEE*, vol. 108, no. 2, pp. 246–261, Feb. 2020.
16. Y. Yu, W. Wang, R. Huang, J. Zhang, and K. B. Letaief, "Achieving load-balanced, redundancy-free cluster caching with selective partition," *IEEE Trans. Parallel Distrib. Syst.*, vol. 31, no. 2, pp. 439–454, Feb. 2020.
17. G. Zhu, D. Liu, Y. Du, C. You, J. Zhang, and K. Huang, "Towards an intelligent edge: Wireless communication meets machine learning," *IEEE Commun. Mag.*, vol. 58, no. 1, pp. 19–25, Jan. 2020.
18. Y. Shen, Y. Shi, J. Zhang, and K. B. Letaief, "LORM: Learning to optimize for resource management in wireless networks with few training samples," *IEEE Trans. Wireless Commun.*, vol. 19, no. 1, pp. 665–679, Jan. 2020.
19. J. Zhang, X. Yu, and K. B. Letaief, "Hybrid beamforming for 5G and beyond millimeter-wave systems: A holistic view," *IEEE Open J. Commun. Society*, vol. 1, no. 1, pp. 77–91, Dec. 2019.
20. K. B. Letaief, W. Chen, Y. Shi, J. Zhang, and A.-Y. Zhang, "The Roadmap to 6G – AI Empowered Wireless Networks," *IEEE Commun. Mag.*, vol. 15, no. 8, pp. 84–90, Aug. 2019.
21. S. He, J. Wang, J. Zhang, Y. Huang, and X. Zhang, "Coordinated fronthaul data assignment and multicast beamforming for cache-enabled wireless networks," *IEEE Wireless Commun. Lett.*, vol. 8, no. 4, pp. 1082–1085, Aug. 2019.
22. T. Jiang, Y. Shi, J. Zhang, and K. B. Letaief, "Joint activity detection and channel estimation for IoT networks: Phase transition and computation-estimation tradeoff," *IEEE Internet of Things Journal*, vol. 6, no. 4, pp. 6212–6225, Aug. 2019.
23. X. Yu, J. Zhang, and K. B. Letaief, "Doubling phase shifters for efficient hybrid precoder design in millimeter-wave communication systems," *Journal of Communications and Information Networks*, vol. 4, no. 2, pp. 51–67, Jun. 2019.
24. T. Lin, J. Cong, Y. Zhu, J. Zhang, and K. B. Letaief, "Hybrid beamforming for millimeter wave systems using the MMSE criterion," *IEEE Trans. Commun.*, vol. 67, no. 5, pp. 3693–3708, May 2019.
25. X. Yu, C. Li, J. Zhang, M. Haenggi, and K. B. Letaief, "A unified framework for the tractable analysis of multi-antenna wireless networks," *IEEE Trans. Wireless Commun.*, vol. 17, no. 12, pp. 7965–7980, Dec. 2018.
26. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "Exploiting mobility in cache-assisted D2D networks: Performance analysis and optimization," *IEEE Trans. Wireless Commun.*, vol. 17, no. 8, pp. 5592–5605, Aug. 2018.
27. Y. Shi, J. Zhang, W. Chen, and K. B. Letaief, "Generalized sparse and low-rank optimization for ultra-dense networks," *IEEE Commun. Mag.*, vol. 56, no. 6, pp. 42–48, Jun. 2018.
28. X. Yu, J. Zhang, and K. B. Letaief, "A hardware-efficient analog network structure for hybrid precoding in millimeter wave systems," *IEEE J. Sel. Topics Signal Process., Special Issue on Hybrid Analog-Digital Signal Processing for Hardware-Efficient Large Scale Antenna Arrays*, vol. 12, no. 2, pp. 282–297, May 2018.
29. X. Liu, Y. Shi, J. Zhang, and K. B. Letaief, "Massive CSI acquisition for dense Cloud-RANs with spatial-temporal dynamics," *IEEE Trans. Wireless Commun.*, vol. 17, no. 4, pp. 2557–2570, Apr. 2018.
30. Y. Shi, J. Zhang, W. Chen, and K. B. Letaief, "Enhanced group sparse beamforming for green Cloud-RAN: A random matrix approach," *IEEE Trans. Wireless Commun.*, vol. 17, no. 4, pp. 2511–2524, Apr. 2018.
31. X. Peng, Y. Shi, J. Zhang, and K. B. Letaief, "Layered group sparse beamforming for cache-enabled green wireless networks," *IEEE Trans. Commun.*, vol. 65, no. 12, pp. 5589–5603, Dec. 2017.
32. Y. Mao, C. You, J. Zhang, K. Huang, and K. B. Letaief, "A survey on mobile edge computing: The communication perspective," *IEEE Commun. Surveys Tuts.*, vol. 19, no. 4, pp. 2322–2358, 4th Quart. 2017. (**The 2021 Best Survey Paper Award of IEEE Communications Society.**)
33. J. Liu, B. Bai, J. Zhang, and K. B. Letaief, "Cache placement in Fog-RANs: from centralized to distributed algorithms," *IEEE Trans. Wireless Commun.*, vol. 16, no. 11, pp. 7039–7051, Nov. 2017.

34. Y. Mao, J. Zhang, S.H. Song, and K. B. Letaief, "Stochastic joint radio and computational resource management for multi-user mobile-edge computing systems," *IEEE Trans. Wireless Commun.*, vol. 16, no. 9, pp. 5994–6009, Sept. 2017.
35. B. Hu, C. Hua, J. Zhang, C. Chen, and X. Guan, "Joint fronthaul multicast beamforming and user-centric clustering in downlink C-RANs," *IEEE Trans. Wireless Commun.*, vol. 16, no. 8, pp. 5395–5409, Aug. 2017.
36. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "Mobility-aware caching in D2D networks," *IEEE Trans. Wireless Commun.*, vol. 16, no. 8, pp. 5001–5015, Aug. 2017.
37. X. Yu, J. Zhang, M. Haenggi, and K. B. Letaief, "Coverage analysis for millimeter wave networks: The impact of directional antenna arrays," *IEEE J. Select. Areas Commun., Special Issue on Millimeter Wave Communications for Future Mobile Networks*, vol. 35, no. 7, pp. 1498–1512, Jul. 2017.
38. J.-C. Shen, J. Zhang, K.-C. Chen, and K. B. Letaief, "High-dimensional CSI acquisition in massive MIMO: Sparsity-inspired approaches," *IEEE Systems Journal*, vol. 11, no. 1, pp. 32–40, Mar. 2017.
39. Y. Mao, J. Zhang, and K. B. Letaief, "Dynamic computation offloading for mobile-edge computing with energy harvesting devices," *IEEE J. Select. Areas Commun. - Series on Green Commun. and Networking*, vol. 34, no. 12, pp. 3590–3605, Dec. 2016. **(The 2019 IEEE Communications Society & Information Theory Society Joint Paper Award)**
40. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "Optimal QoS-aware channel assignment in D2D communications with partial CSI," *IEEE Trans. Wireless Commun.*, vol. 15, no. 11, pp. 7594–7609, Nov. 2016.
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42. Y. Shi, J. Zhang, and K. B. Letaief, "Low-rank matrix completion for topological interference management by Riemannian pursuit," *IEEE Trans. Wireless Commun.*, vol. 15, no. 7, pp. 4703–4717, Jul. 2016.
43. J.-C. Shen, J. Zhang, E. Alsusa, and K. B. Letaief, "Compressed CSI acquisition in FDD massive MIMO: How much training is needed?" *IEEE Trans. Wireless Commun.*, vol. 15, no. 6, pp. 4145–4156, Jun. 2016.
44. Y. Mao, J. Zhang, and K. B. Letaief, "Grid energy consumption and QoS tradeoff in hybrid energy supply wireless networks," *IEEE Trans. Wireless Commun.*, vol. 15, no. 5, pp. 3573–3586, May 2016.
45. Y. Shi, J. Cheng, J. Zhang, B. Bai, W. Chen, and K. B. Letaief, "Smoothed Lp-minimization for green Cloud-RAN with user admission control," *IEEE J. Select. Areas Commun., Special Issue on Energy-Efficient Techniques for 5G Wireless Commun. Systems*, vol. 34, no. 4, pp. 1022–1036, Apr. 2016.
46. X. Yu, J.-C. Shen, J. Zhang, and K. B. Letaief, "Alternating minimization algorithms for hybrid precoding in millimeter wave MIMO systems," *IEEE J. Sel. Topics Signal Process., Special Issue on Signal Process. for Millimeter Wave Wireless Communications*, vol. 10, no. 3, pp. 485–500, Apr. 2016. **(The 2018 IEEE Signal Processing Society Young Author Best Paper Award) (One of the IEEE Signal Processing Societys top 25 downloaded articles in 2019)**
47. C. Li, J. Zhang, J. G. Andrews, and K. B. Letaief, "Success probability and area spectral efficiency in multiuser MIMO HetNets," *IEEE Trans. Commun.*, vol. 64, no. 4, pp. 1544–1556, Apr. 2016.
48. Y. Luo, J. Zhang, and K. B. Letaief, "Transmit power minimization for wireless networks with energy harvesting relays," *IEEE Trans. Commun.*, vol. 64, no. 3, pp. 987–1000, Mar. 2016.
49. Y. Mao, J. Zhang, and K. B. Letaief, "A Lyapunov optimization approach for green cellular networks with hybrid energy supplies," *IEEE J. Select. Areas Commun. Series on Green Commun. and Networking*, vol. 33, no. 12, pp. 2463–2477, Dec. 2015.
50. Y. Shi, J. Zhang, B. ODonoghue, and K. B. Letaief, "Large-scale convex optimization for dense wireless cooperative networks," *IEEE Trans. Signal Process.*, vol. 63, no. 18, pp. 4729–4743, Sept. 2015. **(The 2016 IEEE Signal Processing Society Young Author Best Paper Award)**
51. Y. Shi, J. Zhang, and K. B. Letaief, "Robust group sparse beamforming for multicast green Cloud-RAN with imperfect CSI," *IEEE Trans. Signal Process.*, vol. 63, no. 17, pp. 4647–4659, Sept. 2015.
52. Y. Shi, J. Zhang, K. B. Letaief, B. Bai, and W. Chen, "Large-scale convex optimization for ultra-dense Cloud-RAN," *IEEE Wireless Commun. Mag.*, vol. 22, no. 3, pp. 84–91, Jun. 2015.
53. Y. Mao, Y. Luo, J. Zhang, and K. B. Letaief, "Energy harvesting small cell networks: Feasibility, deployment and operation," *IEEE Commun. Mag.*, vol. 53, no. 6, pp. 94–101, Jun. 2015.

54. J.-C. Shen, J. Zhang, and K. B. Letaief, "Downlink user capacity of massive MIMO under pilot contamination," *IEEE Trans. Wireless Commun.*, vol. 14, no. 6, pp. 3183–3193, Jun. 2015.
55. C. Li, J. Zhang, M. Haenggi, and K. B. Letaief, "User-centric intercell interference nulling for downlink small cell networks," *IEEE Trans. Commun.*, vol. 63, no. 4, pp. 1419–1431, Apr. 2015.
56. Y. Shi, J. Zhang, and K. B. Letaief, "Optimal stochastic coordinated beamforming for wireless cooperative networks with CSI uncertainty," *IEEE Trans. Signal Process.*, vol. 63, no. 4, pp. 960–973, Feb. 2015.
57. N. Seifi, J. Zhang, R. W. Heath Jr., T. Svensson, and M. Coldrey, "Coordinated 3D beamforming for interference management in cellular networks," *IEEE Trans. Wireless Commun.*, vol. 13, no. 10, pp. 5396–5410, Oct. 2014.
58. Y. Shi, J. Zhang, and K. B. Letaief, "Group sparse beamforming for green cloud-RAN," *IEEE Trans. Wireless Commun.*, vol. 13, no. 5, pp. 2809–2823, May 2014. (**The 2016 Marconi Prize Paper Award**)
59. C. Li, J. Zhang, and K. B. Letaief, "Throughput and energy efficiency analysis of small cell networks with multi-antenna base stations," *IEEE Trans. Wireless Commun.*, vol. 13, no. 5, pp. 2502–2517, May 2014.
60. G. Bartoli, R. Fantacci, K. B. Letaief, D. Marabissi, N. Privitera, M. Pucci, and J. Zhang, "Beamforming for small cells deployment in LTE-Advanced and beyond," *IEEE Wireless Commun. Mag.*, vol. 21, no. 2, pp. 50–56, Apr. 2014.
61. Y. Luo, J. Zhang, and K. B. Letaief, "Optimal scheduling and power allocation for two-hop energy harvesting communication systems," *IEEE Trans. Wireless Commun.*, vol. 11, no. 9, pp. 4729–4741, Sept. 2013.
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63. J. Zhang and K. B. Letaief, "Interference management with relay cooperation in two-hop interference channels," *IEEE Wireless Communications Letters*, 2012, vol. 1, no. 3, pp. 165–168, Jun. 2012.
64. J. Xu, J. Zhang, and J. G. Andrews, "On the Accuracy of the Wyner Model in Cellular Networks," *IEEE Trans. Wireless Commun.*, vol. 10, no. 9, pp. 3098–3109, Sept. 2011.
65. J. Zhang, M. Kountouris, J. G. Andrews, and R. W. Heath Jr., "Multi-mode transmission for the MIMO broadcast channel with imperfect channel state information," *IEEE Trans. Commun.*, vol. 59, no. 3, pp. 803–814, Mar. 2011.
66. N. Seifi, M. Viberg, R. W. Heath Jr., J. Zhang, and M. Coldrey, "Multi-mode Transmission in Network MIMO Downlink with Incomplete CSI," *EURASIP Journal on Advances in Signal Processing*, special issue on Cooperative MIMO Multicell Networks, vol. 2011, Article ID 743916, 13 pages, doi:10.1155/2011/743916, 2011.
67. J. Zhang, J. G. Andrews, "Adaptive intercell interference cancellation in multicell wireless networks," *IEEE J. Select. Areas Commun.*, vol. 28, no. 9, pp. 1455–1468, Dec. 2010.
68. J. Zhang, R. W. Heath Jr., M. Kountouris, and J. G. Andrews, "Mode switching for the multi-antenna broadcast channel based on delay and channel quantization," *EURASIP Journal on Advances in Signal Processing*, special issue on Multiuser Limited Feedback, vol. 2009, Article ID 463823, 13 pages, doi:10.1155/2009/463823, 2009. (**The 2014 EURASIP Best Paper Award**)
69. J. Zhang, R. Chen, J. G. Andrews, A. Ghosh, and R. W. Heath Jr., "Networked MIMO with clustered linear precoding," *IEEE Trans. Wireless Commun.*, vol. 8, no. 4, pp. 1910–1921, Apr. 2009.
70. J. Zhang, J. G. Andrews, "Distributed antenna systems with randomness," *IEEE Trans. Wireless Commun.*, vol. 7, no. 9, pp. 3636–3646, Sept. 2008.
71. J. Zhang, T. M. Lok, "Cooperative protocols for multiple-source multiple-relay wireless networks," *International Journal of Sensor Networks*, vol. 4, no. 4, pp. 209–219, Jan. 2008.

#### Conference Papers (Submitted):

1. X. Bian, Y. Mao, and J. Zhang, "Error rate analysis for grant-free massive random access with short-packet transmission," submitted to *IEEE Int. Conf. Commun. (ICC)*, Seoul, South Korea, May 2022.
2. Y. Sun, J. Shao, Y. Mao, and J. Zhang, "Asynchronous semi-decentralized federated edge learning for heterogeneous clients," submitted to *IEEE Int. Conf. Commun. (ICC)*, Seoul, South Korea, May 2022.

3. L. Liu, J. Zhang, S.H. Song, and K. B. Letaief, "Communication-efficient federated distillation with active data sampling," submitted to *IEEE Int. Conf. Commun. (ICC)*, Seoul, South Korea, May 2022.
4. Y. Shen, J. Zhang, and K. B. Letaief, "How neural architectures affect deep learning for communication networks?," submitted to *IEEE Int. Conf. Commun. (ICC)*, Seoul, South Korea, May 2022.
5. M. Yao, L. Chen, J. Zhang, J. Huang, and J. Wu, "Loading cost-aware model caching and request routing for cooperative edge inference," submitted to *IEEE Int. Conf. Commun. (ICC)*, Seoul, South Korea, May 2022.
6. Y. Sun, J. Shao, Y. Mao, J. Wang, and J. Zhang, "Semi-decentralized federated edge learning for fast convergence on non-IID data," submitted to *IEEE Wireless Commun. Networking Conf. (WCNC)*, Austin, TX, USA, Apr. 2022.

#### Conference Papers (Published, Accepted):

1. X. Zhang, J. Shao, Y. Mao, and J. Zhang, "Communication-computation efficient device-edge co-inference via AutoML," *IEEE Globecom*, Madrid, Spain, Dec. 2021.
2. Y. Ma, Y. Shen, X. Yu, J. Zhang, S.H. Song, and K. B. Letaief, "Neural calibration for scalable beamforming in FDD massive MIMO with implicit channel estimation," *IEEE Globecom*, Madrid, Spain, Dec. 2021.
3. H. He, H. Wang, X. Yu, J. Zhang, S.H. Song, and K. B. Letaief, "Distributed expectation propagation detector for cell-free massive MIMO," *IEEE Globecom*, Madrid, Spain, Dec. 2021.
4. H. Wang, Y. Shen, Z. Wang, D. Li, J. Zhang, K. B. Letaief, and J. Lu, "Decentralized statistical inference with unrolled graph neural networks," *IEEE Conference on Decision and Control (CDC)*, Austin, TX, USA, Dec. 2021. **(Invited Paper)**
5. Y. Shen, Y. Wu, Y. Zhang, C. Shan, J. Zhang, K. B. Letaief, and D. Li, "How powerful is graph convolution for recommendation?," *ACM International Conference on Information and Knowledge Management (CIKM)*, virtual conference, Nov. 2021.
6. X. Bian, Y. Mao, and J. Zhang, "Joint activity detection and data decoding in massive random access via a Turbo receiver," *IEEE Int. Workshop Signal Process. Adv. Wireless Commun. (SPAWC)*, Lucca, Italy, Sept. 2021.
7. Y. Shen, J. Zhang, S.H. Song, and K. B. Letaief, "AI empowered resource management for future wireless networks," *IEEE Int. Mediterranean Conf. Commun. and Networking (MeditCom)*, Athens, Greece, Sept. 2021. **(Invited Paper)**
8. X. Bian, Y. Mao, and J. Zhang, "Supporting more active users for massive access via data-assisted activity detection," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Montreal, Canada, Jun. 2021.
9. J. Shao, H. Zhang, Y. Mao, and J. Zhang, "Branchy-GNN: a device-edge co-inference framework for efficient point cloud processing," in *Proc. IEEE Int. Conf. Acoust. Speech Signal Process. (ICASSP)*, Toronto, Ontario, Canada, Jun. 2021.
10. Y. Ma, Y. Shen, X. Yu, J. Zhang, S.H. Song, and K. B. Letaief, "A low-complexity algorithmic framework for large-scale IRS-assisted wireless systems," *IEEE Globecom 2020 Workshop on Reconfigurable Intelligent Surfaces for Wireless Communication for Beyond 5G*, Taipei, Taiwan, Dec. 2020.
11. H. Zhao, J. Zhang, X. Li, Q. Wang, and H. Zhu, "A novel traffic accident risk prediction via deep learning for Internet of vehicle," *IEEE Globecom 2020 Workshop on Secure and Dependable Software-defined Networking for Sustainable Smart Communities*, Taipei, Taiwan, Dec. 2020.
12. Y. Shen, J. Zhang, S.H. Song, and K. B. Letaief, "Deep learning for scalable wireless resource allocation: Which model to use?," *Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2020. **(Invited Paper)**
13. Y. Shen, Y. Xue, J. Zhang, K. B. Letaief, and V. Lau, "Complete Dictionary Learning via  $\ell_p$ -norm Maximization," *Conference on Uncertainty in Artificial Intelligence (UAI) 2020*, Toronto, Canada, Aug. 2020.
14. D. Liu, G. Zhu, J. Zhang, and K. Huang, "Exploiting diversity via importance-aware user scheduling for fast edge learning," in *IEEE Int. Conf. Commun. (ICC) Workshop on Edge Machine Learning for 5G Mobile Networks and Beyond*, Dublin, Ireland, Jun. 2020.
15. J. Shao, J. Zhang, "BottleNet++: An end-to-end approach for feature compression in device-edge co-inference systems," in *IEEE Int. Conf. Commun. (ICC) Workshop on Edge Machine Learning for 5G Mobile Networks and Beyond*, Dublin, Ireland, Jun. 2020.

16. L. Liu, J. Zhang, S.H. Song, and K. B. Letaief, "Client-edge-cloud hierarchical federated learning," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Dublin, Ireland, Jun. 2020.
17. J. Dong, J. Zhang, and Y. Shi, "Bandit sampling for faster activity and data detection in massive random access," in *Proc. IEEE Int. Conf. Acoust. Speech Signal Process. (ICASSP)*, Barcelona, Spain, May 2020.
18. Y. Shen, Y. Shi, J. Zhang, and K. B. Letaief, "A graph neural network approach for scalable wireless power control," in *Proc. IEEE GLOBECOM 2019 Workshop on Machine Learning for Wireless Communications*, Waikoloa, HI, USA, Dec. 2019.
19. Y. Yu, W. Wang, J. Zhang, and K. B. Letaief, "LACS: Load-aware cache sharing with isolation guarantee," in *Proc. IEEE Int. Conf. Distrib. Comput. Syst. (ICDCS)*, Dallas, TX, Jul. 2019. (**Acceptance Rate: 19.6%**)
20. D. Liu, G. Zhu, J. Zhang, and K. Huang, "Wireless Data Acquisition for Edge Learning: Importance-Aware Retransmission," in *Proc. IEEE Int. Workshop Signal Process. Adv. Wireless Commun. (SPAWC)*, Cannes, France, Jul. 2019.
21. X. Yu, J. Zhang, R. Schober, and K. B. Letaief, "A tractable framework for coverage analysis of cellular-connected UAV networks," in *Proc. IEEE Int. Conf. Commun. (ICC) Workshop On Integrating UAVs Into 5G and Beyond (IU5GB)*, Shanghai, China, May 2019.
22. Y. Shen, Y. Shi, J. Zhang, and K. B. Letaief, "Transfer learning for mixed-integer resource allocation problems in wireless networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Shanghai, China, May 2019.
23. H. Yang, J. Zhang, S.H. Song, and K. B. Letaief, "Connectivity-aware UAV path planning with aerial coverage maps," in *Proc. IEEE Wireless Commun. Networking Conf. (WCNC)*, Marrakech, Morocco, Apr. 2019.
24. K. Huang, G. Zhu, C. You, J. Zhang, Y. Du, and D. Liu, "Communication, computing, and learning on the edge," in *Proc. IEEE Int. Conf. on Commun. Systems (ICCS)*, Chengdu, China, Dec. 2018. (**Invited Paper**)
25. Y. Shen, Y. Shi, J. Zhang, and K. B. Letaief, "Scalable network adaptation for Cloud-RANs: An imitation learning approach," in *Proc. IEEE Global Conf. Signal and Inf. Process. (GlobalSIP)*, Anaheim, CA, Nov. 2018.
26. Y. Yu, R. Huang, W. Wang, J. Zhang, and K. B. Letaief, "SP-Cache: Load-balanced, Redundancy-free Cluster Caching with Selective Partition," in *Proc. IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (SC18)*, Dallas, TX, November, 2018. (**Acceptance Rate: 19%**)
27. Y. Yu, W. Wang, J. Zhang, Q. Weng, and K. B. Letaief, "OpuS: Fair and efficient cache sharing for in-memory data analytics," in *Proc. IEEE Int. Conf. Distrib. Comput. Syst. (ICDCS)*, Vienna, Austria, Jul. 2018. (**Acceptance Rate: 20%**)
28. J. Liu, B. Bai, J. Zhang, K. B. Letaief, and Y. Li, "Joint device caching and channel allocation for D2D-assisted wireless content delivery," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Kansas City, MO, USA, May 2018.
29. Y. Yu, W. Wang, J. Zhang, and K. B. Letaief, "LERC: Coordinated cache management for data-parallel systems," in *Proc. IEEE Globecom*, Singapore, Dec. 2017.
30. X. Yu, J. Zhang, and K. B. Letaief, "Hybrid precoding in millimeter wave systems: How many phase shifters are needed?" in *Proc. IEEE Globecom*, Singapore, Dec. 2017. (**Best Paper Award**)
31. X. Zhang, Y. Mao, J. Zhang, and K. B. Letaief, "Multi-objective resource allocation for mobile edge computing systems," in *Proc. IEEE Int. Symp. on Personal Indoor and Mobile Radio Comm. (PIMRC)*, Montreal, QC, Canada, Oct. 2017.
32. X. Yu, J. Zhang, and K. B. Letaief, "Partially-connected hybrid precoding in mm-wave systems with dynamic phase shifter networks," in *Proc. IEEE Int. Workshop Signal Process. Adv. Wireless Commun. (SPAWC)*, Hokkaido, Japan, Jul. 2017.
33. R. Wang, J. Zhang, and K. B. Letaief, "Incentive mechanism design for cache-assisted D2D communications: A mobility-aware approach," in *Proc. IEEE Int. Workshop Signal Process. Adv. Wireless Commun. (SPAWC)*, Hokkaido, Japan, Jul. 2017. (**Invited Paper**)
34. X. Yu, C. Li, J. Zhang, and K. B. Letaief, "A tractable framework for performance analysis of dense multi-antenna networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Paris, France, May 2017.



35. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "Mobility increases the data offloading ratio in D2D caching networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Paris, France, May 2017.
36. X. Liu, Y. Shi, J. Zhang, and K. B. Letaief, "Massive CSI acquisition in dense Cloud-RAN with spatial and temporal prior information," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Paris, France, May 2017.
37. Y. Yu, W. Wang, J. Zhang, and K. B. Letaief, "LRC: DAG-Aware cache management in distributed data analytics systems," in *Proc. IEEE INFOCOM 2017*, Atlanta, GA, May 2017. (**Acceptance Rate: 20.93%**)
38. Y. Mao, J. Zhang, and K. B. Letaief, "Joint task offloading scheduling and transmit power allocation for mobile-edge computing systems," in *Proc. IEEE Wireless Commun. Networking Conf. (WCNC)*, San Francisco, CA, Mar. 2017.
39. K. Yang, Y. Shi, J. Zhang, Z. Ding, and K. B. Letaief, "A low-rank approach for interference management in dense wireless networks," in *Proc. IEEE Global Conf. Signal and Inf. Process. (GlobalSIP)*, Washington, DC, Dec. 2016.
40. Y. Su, Y. Shi, B. Bai, W. Chen, J. Zhang, K. B. Letaief, and S. Zhou, "Optimal stochastic power control with compressive CSI acquisition for Cloud-RAN," in *Proc. IEEE Global Conf. Signal and Inf. Process. (GlobalSIP)*, Washington, DC, Dec. 2016.
41. Y. Yu, J. Zhang, and K. B. Letaief, "Joint subcarrier and CPU time allocation for mobile edge computing," in *Proc. IEEE Globecom*, Washington, DC, Dec. 2016.
42. Y. Mao, J. Zhang, S.H. Song, and K. B. Letaief, "Power-delay tradeoff in multi-user mobile-edge computing systems," in *Proc. IEEE Globecom*, Washington, DC, Dec. 2016.
43. X. Yu, J. Zhang, and K. B. Letaief, "Alternating minimization for hybrid precoding in multiuser OFDM mmWave systems," in *Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2016. (**Invited Paper**)
44. J. Liu, Y. Mao, J. Zhang, and K. B. Letaief, "Delay-optimal computation task scheduling for mobile-edge computing systems," in *Proc. IEEE Int. Symp. Information Theory*, Barcelona, Spain, Jul. 2016.
45. Y. Shi, J. Zhang, and K. B. Letaief, "Statistical group sparse beamforming for green Cloud-RAN via large system analysis," in *Proc. IEEE Int. Symp. Information Theory*, Barcelona, Spain, Jul. 2016.
46. C. Li, J. Zhang, S.H. Song, and K. B. Letaief, "Selective uplink training for massive MIMO systems," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Kuala Lumpur, Malaysia, May 2016.
47. X. Peng, J. Zhang, S.H. Song, and K. B. Letaief, "Cache size allocation in backhaul limited wireless networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Kuala Lumpur, Malaysia, May 2016.
48. J. Liu, B. Bai, J. Zhang, and K. B. Letaief, "Content caching at the wireless network edge: A distributed algorithm via brief propagation," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Kuala Lumpur, Malaysia, May 2016. (**Best Paper Award**)
49. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "QoS-aware joint mode selection and channel assignment for D2D communications," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Kuala Lumpur, Malaysia, May 2016.
50. Y. Mao, J. Zhang, and K. B. Letaief, "ARQ with adaptive feedback for energy harvesting receivers," in *Proc. IEEE Wireless Commun. Networking Conf. (WCNC)*, Doha, Qatar, Apr. 2016.
51. X. Yu, J. Zhang, and K. B. Letaief, "Coverage analysis for dense millimeter wave cellular networks: The impact of array size," in *Proc. IEEE Wireless Commun. Networking Conf. (WCNC)*, Doha, Qatar, Apr. 2016.
52. X. Yu, J.-C. Shen, J. Zhang, and K. B. Letaief, "Hybrid precoding design in millimeter wave MIMO systems: An alternating minimization approach," in *Proc. IEEE Globecom*, San Diego, CA, Dec. 2015.
53. X. Peng, J.-C. Shen, J. Zhang, and K. B. Letaief, "Backhaul-aware caching placement for wireless networks," in *Proc. IEEE Globecom*, San Diego, CA, Dec. 2015.
54. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "QoS-aware channel assignment for sum-rate maximization in D2D communications," in *Proc. IEEE Globecom*, San Diego, CA, Dec. 2015.
55. Y. Shi, J. Zhang, and K. B. Letaief, "Low-rank matrix completion via Riemannian pursuit for topological interference management," in *Proc. IEEE Int. Symp. Information Theory*, Hong Kong, Jun. 2015.

56. J. Chen, Y. Shi, B. Bai, W. Chen, J. Zhang, and K. B. Letaief, "Group sparse beamforming for multicast green Cloud-RAN via parallel semidefinite programming," in *Proc. IEEE Int. Conf. Commun. (ICC)*, London, UK, Jun. 2015.
57. C. Li, J. Zhang, S.H. Song, and K. B. Letaief, "Analysis of area spectral efficiency and link reliability in multiuser MIMO HetNets," in *Proc. IEEE Int. Conf. Commun. (ICC)*, London, UK, Jun. 2015.
58. J.-C. Shen, J. Zhang, E. Alsusa, and K. B. Letaief, "Compressed CSI acquisition in FDD massive MIMO with partial support information," in *Proc. IEEE Int. Conf. Commun. (ICC)*, London, UK, Jun. 2015.
59. Y. Mao, J. Zhang, and K. B. Letaief, "Joint base station assignment and power control in hybrid energy supply wireless networks," in *Proc. IEEE Wireless Commun. Networking Conf. (WCNC)*, New Orleans, LA, Mar. 2015.
60. Y. Shi, J. Zhang, and K. B. Letaief, "Scalable coordinated beamforming for dense wireless cooperative networks," in *Proc. IEEE Globecom*, Austin, TX, Dec. 2014.
61. J.-C. Shen, J. Zhang, and K. B. Letaief, "User capacity of pilot-contaminated TDD massive MIMO systems," in *Proc. IEEE Globecom*, Austin, TX, Dec. 2014.
62. Y. Mao, J. Zhang, S.H. Song, and K. B. Letaief, "Joint link selection and relay power allocation for energy harvesting relaying systems," in *Proc. IEEE Globecom*, Austin, TX, Dec. 2014.
63. Y. Luo, J. Zhang, and K. B. Letaief, "Achieving energy diversity with multiple energy harvesting relays," in *Proc. Int. Conf. on Wireless Commun. and Signal Processing (WCSP)*, Hefei, China, Oct. 2014. (**Invited Paper**)
64. X. Peng, J.-C. Shen, J. Zhang, and K. B. Letaief, "Joint data assignment and beamforming for backhaul limited caching networks," in *Proc. IEEE Int. Symp. on Personal Indoor and Mobile Radio Comm. (PIMRC)*, Washington, DC, Sept. 2014. (**Best Paper Award**)
65. R. Wang, J. Zhang, S.H. Song, and K. B. Letaief, "Average throughput analysis of downlink cellular networks with multi-antenna base stations," in *Proc. IEEE Int. Symp. on Personal Indoor and Mobile Radio Comm. (PIMRC)*, Washington, DC, Sept. 2014.
66. Y. Shi, J. Zhang, and K. B. Letaief, "CSI overhead reduction with stochastic beamforming for cloud radio access networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Sydney, Australia, Jun. 2014.
67. C. Li, J. Zhang, and K. B. Letaief, "User-centric intercell interference coordination in small cell networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Sydney, Australia, Jun. 2014.
68. F. Li, J. Zhang, and K. B. Letaief, "Location-aware spectrum sharing in cognitive radio networks A semi-matching approach," in *Proc. Wireless Commun. Networking Conf. (WCNC)*, Istanbul, Turkey, Apr. 2014.
69. Y. Shi, J. Zhang, and K. B. Letaief, "Group sparse beamforming for green cloud radio access networks," in *Proc. IEEE Globecom*, Atlanta, GA, Dec. 2013.
70. C. Li, J. Zhang, and K. B. Letaief, "Performance analysis of SDMA in multicell wireless networks," in *Proc. IEEE Globecom*, Atlanta, GA, Dec. 2013.
71. Y. Luo, J. Zhang, and K. B. Letaief, "Relay selection for energy harvesting cooperative communication systems," in *Proc. IEEE Globecom*, Atlanta, GA, Dec. 2013.
72. G. Zhao, L. Li, J. Zhang, and K. B. Letaief, "Residential Demand Response with Power Adjustable and Unadjustable Appliances in Smart Grid," *IEEE ICC'13 - Workshop on Energy Efficiency in Wireless Networks & Wireless Networks for Energy Efficiency (E2Nets)*, Budapest, Hungary, Jun. 2013.
73. C. Li, J. Zhang, and K. B. Letaief, "Energy efficiency analysis of small cell networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Budapest, Hungary, Jun. 2013.
74. Y. Luo, J. Zhang, and K. B. Letaief, "Throughput maximization for two-hop energy harvesting communication systems," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Budapest, Hungary, Jun. 2013.
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76. Y. Shi, J. Zhang, and K. B. Letaief, "Coordinated relay beamforming for amplify-and-forward two-hop interference networks," in *Proc. IEEE Globecom*, Anaheim, CA, Dec. 2012.

77. F. Li, J. Zhang, and K. B. Letaief, "Location-aware distributed routing in cognitive radio networks," in *Proc. First IEEE Int. Conf. on Commun. in China (ICCC)*, Beijing, China, Aug. 2012.
78. C. Li, S.H. Song, J. Zhang, and K. B. Letaief, "Maximizing energy efficiency in wireless networks with a minimum average throughput requirement," in *Proc. IEEE Wireless Commun. Networking Conf. (WCNC)*, Paris, France, Apr. 2012, pp. 1130–1134.
79. F. Li, B. Bai, J. Zhang, and K. B. Letaief, "Location-based joint relay selection and channel allocation for cognitive radio networks," in *Proc. IEEE Globecom*, Houston, TX, Dec. 2011.
80. J. Zhang, J. G. Andrews, and K. B. Letaief, "Optimizing training and feedback for spatial intercell interference cancellation," in *Proc. IEEE Globecom*, Houston, TX, Dec. 2011.
81. J. Xu, J. Zhang, and J. G. Andrews, "On the Accuracy of the Wyner Model in Downlink Cellular Networks," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Kyoto, Japan, Jun. 2011.
82. J. Xu, J. Zhang, and J. G. Andrews, "When does the Wyner Model Accurately Describe an Uplink Cellular Network?" in *Proc. IEEE Globecom*, Miami, FL, Dec. 2010, pp. 1–5.
83. N. Seifi, M. Viberg, R. W. Heath Jr., J. Zhang, and M. Coldrey, "Coordinated Single-Cell vs Multi-Cell Transmission with Limited-Capacity Backhaul," in *Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2010.
84. J. Zhang, J. G. Andrews, and R. W. Heath Jr., "Block diagonalization in the MIMO broadcast channel with delayed CSIT," in *Proc. IEEE Globecom*, Honolulu, HI, Nov.–Dec. 2009, pp. 1–6.
85. J. Zhang, M. Kountouris, J. G. Andrews, and R. W. Heath Jr., "Achievable throughput of multi-mode multiuser MIMO with imperfect CSI constraints," in *Proc. IEEE Int. Symp. Information Theory*, Seoul, Korea, Jun. 2009, pp. 2659–2663.
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87. J. Zhang, R. Chen, J. G. Andrews, and R. W. Heath Jr., "Coordinated multi-cell MIMO systems with cellular block diagonalization," in *Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 4–7 2007, pp. 1669–1673.
88. J. Zhang, J. G. Andrews, "Cellular communication with randomly placed distributed antennas," in *Proc. IEEE Globecom*, Washington DC, Nov. 2007, pp. 1400–1404.
89. J. Zhang, T. M. Lok, "Multiple-source multiple-relay cooperation system," in *Proc. IEEE Int. Conf. Commun. (ICC)*, Istanbul, Turkey, Jun. 2006, pp. 3735–3740.
90. J. Zhang, T. M. Lok, "Performance comparison of conventional and cooperative multihop transmission," in *Proc. IEEE Wireless Commun. Networking Conf.*, Las Vegas, NV, Apr. 2006, pp. 897–901.
91. J. Zhang, T. M. Lok, "Performance analysis of multiple-relay decode-and-forward cooperation system," in *Proc. IEEE Tencon '05*, Melbourne, Australia, Nov. 2005, pp. 1–6.

## INVITED TALKS (since 2016)

1. J. Zhang, "An Algorithmic Investigation of Hybrid Beamforming for 5G and Beyond Networks," The IEEE Signal Processing Society Webinar, Aug 2020.
2. J. Zhang, "Rethink Communications for Edge AI: Effective Feature Compression and Transmission," Smart Wireless Networks Workshop, CUHK-SZ, China, Dec 2019.
3. J. Zhang, "Deep Learning for Wireless Networks – Which Model to Use?" IEEE International Conference on Signal, Information and Data Processing 2019, Chongqing, China, Dec 2019.
4. J. Zhang, "A New Paradigm of Wireless Communications for Edge AI," 2019 International Forum on Radar and Signal Processing, Beijing, China, Dec 2019.
5. J. Zhang, "BottleNet++: Effective Feature Compression and Transmission for Edge Inference," Southeast University, China, Nov 2019.
6. J. Zhang, "Deep Learning for Wireless Networks – Which Model to Use?" University of Macau, Macau, Sept 2019.

7. J. Zhang, "Machine Learning for Optimization in Dense Wireless Networks," Fudan University, China, June 2019.
8. J. Zhang, "From Mobile Edge Computing to Edge AI," Tsinghua University, China, June 2019.
9. J. Zhang, "Machine Learning for Optimization in Dense Wireless Networks," The University of Hong Kong, Hong Kong, Apr. 2019.
10. J. Zhang, "Machine Learning for Optimization in Dense Wireless Networks," Theory Lab, 2012 Labs, Huawei Technologies Co., Ltd., Hong Kong, Apr. 2019.
11. J. Zhang, "Machine Learning for Optimization in Dense Wireless Networks," Southeast University, China, Apr. 2019.
12. J. Zhang, "From Mobile Edge Computing to Edge AI," Nanjing University of Post and Telecommunications, China, Apr. 2019.
13. J. Zhang, "Edge AI: Mobile Edge Computing Meets Artificial Intelligence," Guangdong University of Technology, China, Mar. 2019.
14. J. Zhang, "Dense Cooperative Wireless Networks for 5G," Nanjing University, China, Oct. 2018.
15. J. Zhang, "Cache Management for In-Memory Big Data Analytics," Southeast University, China, Oct. 2018.
16. J. Zhang, "Dense Cooperative Wireless Networks for 5G," Hong Kong Polytechnic University, Hong Kong, Jul. 2018.
17. J. Zhang, "Cloud and Edge Computing for Mobile Intelligence," Sun Yat-Sen University, China, Jan. 2018.
18. J. Zhang, "Cloud and Edge Computing for Mobile Intelligence," University of Hong Kong, Hong Kong, Jan. 2018.
19. J. Zhang, "Communication and Computing for Mobile Intelligence," South University of Science and Technology of China, Shenzhen, China, Nov. 2017.
20. J. Zhang, "Hybrid Precoding for mm-Wave MIMO Systems: Algorithm Design and Hardware Implementation," Fudan University, China, Oct. 2017.
21. J. Zhang, "Computing Platforms for Mobile Intelligence," Chinese University of Hong Kong, Hong Kong, Sept. 2017.
22. J. Zhang, "Resource Management for Mobile Edge Computing (MEC)," Shanghai Jiao Tong University, China, Aug. 2017.
23. J. Zhang, "A Tractable Framework for Dense Multi-Antenna Wireless Networks," Tongji University, China, May 2017.
24. J. Zhang, "Hybrid Precoding for mm-Wave MIMO Systems: Algorithm Design and Hardware Implementation," Southeast University, China, May 2017.
25. J. Zhang, "Mobility-Aware Caching at the Wireless Edge," Fudan University, China, Nov. 2016.
26. J. Zhang, "Mobility-Aware Caching for Content-Centric Wireless Networks," IEEE/CIC International Conference on Communications in China, July 2016.

## STUDENT SUPERVISION

### PhD Students

- Xinjie Zhang, Topic: Edge AI
- Tailin Zhou, Topic: Federated Learning (HKUST-GZ, co-supervised with Danny Tsang)
- Yuchang Sun, Topic: Federated Learning
- Xinyu Bian, Topic: Massive Random Access for IoT Networks
- Jiawei Shao, Topic: Edge AI
- Yifan Ma, Topic: Deep Learning for Wireless Communications. (Co-supervised with Khaled B. Letaief)
- Lumin Liu, Topic: Federated Learning. (Co-supervised with Khaled B. Letaief)
- Yifei Shen, Topic: Graph Neural Networks for Wireless Communications. (Co-supervised with Khaled B. Letaief)

- Bilal HUSSAIN, “Artificial Intelligence-Based Anomaly Detection for the Efficient Management and Security of the Future Wireless Networks”, Aug 2021.
- Yinghao Yu (Hong Kong PhD Fellowship), “Towards Efficient, Fair and Load-Balanced Cluster Caching for Big Data Analytics”, August 2019. (Alibaba, China)
- Xianghao Yu, “Hybrid Precoding for Millimeter Wave Wireless Communication Systems”, August 2018. (Postdoc, Friedrich-Alexander University Erlangen-Nuremberg)
- Xi Peng, “Cache-Assisted Communications in Backhaul-Limited Wireless Networks”, Nov 2017. (Huawei, Hong Kong)
- Rui Wang, “Cache-Assisted D2D Communications in Content-Centric Networks”, August 2017. (Microsoft, Beijing)
- Yuyi Mao (Hong Kong PhD Fellowship), “Design Methodologies for Green Communications and Mobile-Edge Computing Systems in 5G Networks”, August 2017. (Huawei, Hong Kong)
- Chang Li, “MIMO Heterogenous and Small Cell Networks for 5G Systems”, March 2016. (National Institute of Standards and Technology (NIST), USA)
- Yuanming Shi, “Scalable Sparse Optimization in Dense Cloud-RAN”, Aug 2015. (Assistant Professor, ShanghaiTech University, Shanghai, China)
- Yaming Luo, “Cooperative Transmission for Energy Harvesting Wireless Communication Systems”, Aug 2015. (ASTRI, Hong Kong)
- Fangyong Li, “Location-Aware Spectrum Access and Sharing in Cognitive Radio Networks”, Aug 2014.

#### **Visiting PhD Students**

- Heng Liu (Beijing Institute of Technology), Aug 2019 – Feb 2020.

#### **Postdoctoral Fellows**

- Yao Zhang, Sept 2020 – Sept 2021.
- Xianghao Yu, Sept 2018 – Nov 2018, now Postdoc with Friedrich-Alexander University Erlangen-Nuremberg, German.
- Juan Liu, Feb 2015–Feb 2016, now with Ningbo University, China.
- Juei-chin Shen, 2014–2015, now with MediaTek, Taiwan.
- Guodong Zhao, 2012–2013, now Associated Professor at UESTC, China.

#### **Research Assistant**

- Haoyang Li (B.S., Hong Kong Polytechnic University), 2021.
- Zhuoyi Huang (B.S., Tongji University), 2021.
- Yao Zhang (B.S., Xidian University), 2020.

#### **Visiting Scholars**

- Haitao Zhao (Nanjing University of Post and Telecommunications), May 2019 – Nov 2019.
- Long Chen (Guangdong University of Technology), Aug 2018 – March 2019.

#### **ADMINISTRATION**

- 2021–present, Member, UG Curriculum Committee of ECE, HKUST.
- 2021–present, Member, UG Student Affairs Committee of ECE, HKUST.
- 2013–2018, 2021–present, Member, Computer Engineering Program Committee, HKUST.
- 2020–2021, Deputy Programme Leader, BSc in Internet and Multimedia Technologies (IMT), PolyU.
- 2015–2018, Engineering School Faculty Advisor for Year 1 Students, HKUST.
- 2015–2018, Member, Mainland JEE Recruitment and Admissions Committee of Engineering School, HKUST.

## PROFESSIONAL ACTIVITIES

- Journal Editorial Board
  - Editor, Journal Frontiers in Communications and Networks, 2020–present.
  - Editor, IEEE Transactions on Communications, 2019–present.
  - Editor, Journal of Communications and Information Networks (JCIN), 2019–present.
  - Editor, IEEE Transactions on Wireless Communications, 2015 – 2020.
- Guest Journal Editor
  - Physical Communication (Elsevier), guest editor of special issue on “Massive MIMO Systems”.
  - IEEE Access, guest editor of special section on “Mobile Edge Computing for Wireless Networks”.
  - Frontiers Special Issue on “Resource Allocation in Cloud-Radio Access Networks and Fog-Radio Access Networks for B5G Systems”.
- Technical Program Committee Chair
  - IEEE International Conference on Communications (ICC) 2021 (Wireless Communications Symposium)
  - IEEE Wireless Communications and Networking Conference (WCNC) 2011 (the MAC track)
- Workshop Organization
  - IEEE ICC 2021 Wireless Networking Innovations for Mobile Edge Learning Workshop
- Elected Member, Signal Processing for Communications and Networking Technical Committee (SPCOM TC), Jan. 2020–present.
- Technical Program Committee
  - IEEE International Conference on Communications (ICC) 2011–2020, 2022
  - IEEE Global Telecommunications Conference (Globecom) 2011–2022
  - IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2014
  - IEEE Wireless Communications and Networking Conference (WCNC) 2012, 2013, 2014, 2015, 2019
  - IEEE Vehicular Technology Conference (VTC) 2011-Fall, 2012-Fall, 2013-Spring, 2013-Fall, 2014-Spring, 2014-Fall, 2015-Fall, 2016-Spring, 2016-Fall, 2017-Spring, 2017-Fall
  - International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), 2021
  - IEEE International Conference on Parallel and Distributed Systems (ICPADS 2018)
  - IEEE Int. Symp. on Personal Indoor and Mobile Radio Comm. (PIMRC) 2012
  - International Conference on Computing, Networking and Communications (ICNC) 2012
  - IEEE International Conference on Green Computing and Communications 2013
  - IEEE/CIC International Conference on Communications in China (ICCC) 2014, 2018
  - IEEE International Conference on Communication Systems (ICCS) 2014, 2016
  - IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob) 2013
  - 2015 European Conference on Networks and Communications (EuCNC 2015)
  - International Conference on Communications and Networking in China (CHINACOM) 2014
  - International Conference on Wireless Communications and Signal Processing (WCSP) 2014, 2019
  - IEEE IWCMC 2014 Software Defined Wireless Networks (SDWN) Workshop
  - IEEE WCNC 2013 Workshop – Convergence of Broadcast and Broadband Communication
  - The 4th IEEE International Workshop on Heterogeneous and Small Cell Networks (HetSNets)
  - IEEE INFOCOM 2014 Workshop on Mobile Cloud Computing
  - IEEE INFOCOM 2015 Workshop on Mobile Cloud and Virtualization

- IEEE GC 2015 Workshop on 5G Heterogeneous and Small Cell Networks (HetSNets)
- Workshop on Energy Harvesting Communications 2014
- IEEE International Conference on Ubiquitous Wireless Broadband 2015: Workshop on Energy-Harvesting Wirelessly-Powered Communications and Wireless Power Transfer (IEEE ICUWB 2015)
- JSAC Special Issue on Recent Advances in Heterogeneous Cellular Networks
- GREENNET Workshop at WiOpt 2016
- IEEE WCNC EDGE 2018 (Workshop on Intelligent Computing and Caching at the Network Edge)
- IEEE ICC 2019 Workshop on Millimeter-Wave Communications for 5G and B5G
- IEEE GLOBECOM 2019 Workshop on Wireless Edge Intelligence
- IEEE GLOBECOM 2020 Workshop on Edge Learning over 5G Networks and Beyond
- Session Chair:
  - Hybrid Beamforming II, Globecom 2017
  - Data Acquisition, Caching and Processing, Globecom 2017
  - Device to Device Communications II, ICC 2016
  - Matrix Completion, ISIT 2015
  - Radio Resource Management, ICC 2014
  - Multicell Optimization, ICC 2013
  - Green Cognitive Radio and Energy Harvesting, Globecom 2012
- Reviewer for:
  - IEEE Transaction on Wireless Communications, IEEE Transaction on Communications, IEEE Transaction on Information Theory, IEEE Journal on Selected Areas in Information Theory, IEEE Transaction on Vehicular Technology, IEEE Wireless Communications, IEEE Communications Magazine, IEEE Vehicular Technology Magazine, IEEE Transaction on Signal Processing, IEEE/ACM Transaction on Networking, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Mobile Computing, ACM Computing Surveys, IEEE Transactions on Emerging Topics in Computing, IEEE Transactions on Sustainable Computing, IEEE Journal on Selected Areas in Communications, IEEE Journal of Selected Topics in Signal Processing, IEEE Communications Letters, IEEE Signal Processing Letters, IEEE Wireless Communications Letters, EURASIP Journal on Advances in Signal Processing, EURASIP Journal on Wireless Communications and Networking, Wireless Communications and Mobile Computing, Ad Hoc Networks, International Journal of Communication Systems
  - Conferences: ISIT, ICC, ITW, VTC, Globecom, IWCMC, ISWPC, Milcom, Tencon, ICASSP 2018.
- Fellow of Institute of Electrical and Electronics Engineers (IEEE).
- Member of IEEE Communications Society, IEEE Information Theory Society, IEEE Signal Processing Society.