Lei Li

Ph.D., The Chinese University of Hong Kong, Shenzhen

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Education

Ph.D., Computer and Information Engineering *2020 – 2024*
The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen) *GPA: 3.87/4.0*
- Thesis: Efficient CSI sensing for multi-antenna communications
- Advisor: Prof. Tsung-Hui Chang (IEEE Fellow)

Ph.D. Student, Electrical Engineering *2018 – 2019*
Virginia Tech (VT), Blackburg, VA, USA *GPA: 3.88/4.0*

M.S., Information and Communication Engineering *2014 – 2017*
Beijing Institute of Technology (BIT), Beijing *GPA: 86.4/100*

B.E., Communication Engineering (Siyuan Honor Program) *2010 – 2014*
Beijing Jiaotong University (BJTU), Beijing *GPA: 88.5/100*

Research Experiences

Channel state information (CSI) sensing and recovery in massive MIMO systems

Develop efficient CSI sensing algorithms for 5G and next-G systems to achieve low-overhead CSI recovery.

[J7] L. Li, X. Zeng, Y.-F. Liu, Y. Xu and T.-H. Chang, "CSI sensing from heterogeneous user feedbacks: a constrained phase retrieval approach," *IEEE Trans. Wireless Commun., 2023*.

[J6] L. Li, M. Zhu, S. Xia and T. -H. Chang, "Downlink CSI recovery in massive MIMO systems by proactive sensing," *IEEE Wireless Commun. Lett., 2023*.

[C10] L. Li, Q. Chen, X. Zeng and T. -H. Chang, "Downlink CSI sensing from heterogeneous user feedbacks: a constrained phase retrieval approach," in *IEEE SPAWC 2022*.

Manuscripts in Progress:

[W1] Q. Chen, L. Li, X. Luo, and T.-H. Chang, "Transformer-inspired deep adaptive CSI sensing with learnable quantizer," submitted to *IEEE Trans. Veh. Technol.* (in the 2nd round review, corresponding author).

Integrated sensing and communication (ISAC)

Modeling and low-complexity algorithm design for ISAC systems, with a focus on sensing-assisted communication applications.

[J5] L. Li, J. Zhang and T.-H. Chang, "Beamforming optimization for robust sensing and communication in dynamic mmWave MIMO networks," accepted by *IEEE J. Sel. Areas Commun., 2024*.

[J4] K. Zhang, L. Li and T.-H. Chang, "Joint fronthaul compression and power allocation optimization for networked integrated sensing and communication," accepted by *IEEE Trans. Veh. Technol., 2024*.

[C9] L. Li, T. Cai, and T.-H. Chang, "ISAC beamforming optimization for robust transmission in dynamic mmWave MIMO networks," in *IEEE ICASSP, 2024*.

[C8] T. Cai, L. Li and T.-H. Chang, "Sensing-assisted distributed user scheduling and beamforming in multi-cell mmWave networks," in *IEEE ICASSP, 2024*.

[J3] M. Zhu, L. Li, S. Xia and T.-H. Chang, "Information and sensing beamforming optimization for multi-user multi-target MIMO ISAC systems," *EURASIP J. Adv. Signal Process., 2023*.

[C7] M. Zhu, L. Li, S. Xia and T.-H. Chang, "Information and sensing beamforming optimization for multi-user multi-target MIMO ISAC systems," in *IEEE ICASSP, 2023* (Top 3% paper recognition).

Unmanned aerial vehicle (UAV) communication

Develop positioning and power control algorithms for UAV-enabled networking.

[J2] L. Li, T.-H. Chang and S. Cai, "UAV positioning and power control for wireless two-way relaying," *IEEE Trans. Wireless Commun., 2020*.

[C6] L. Li, T.-H. Chang and S. Cai, "UAV positioning and power control for wireless two-way relaying," in *IEEE SPAWC, 2019*.

Others: DoA estimation, multi-user beamforming, secure communication, SCMA, and visual light communication (VLC)

[J1] S. Li, L. Li, B. Liu, Y. Song, M. Li, J. Ren and W. Jiang, "High precision fast direction-of-arrival estimation method for planar array," in *Space: Science & Technology (2023)*.

[C5] L. Li, J. Chen, C. Li, B. Li, N. Wang and Z. Fei, "Balancing energy efficiency and user rate fairness in multicell networks," in *IEEE WPMC 2016*.

[C4] Ni. Wang, L. Li, J. Chen, Z. Fei and J. Kuang, "The ADMM-based beamforming design with per-antenna power constraints," in *IEEE WPMC 2016*.

[C3] B. Li, L. Li, D. He, J. Chen and W. Kong, "Energy efficient secure transmission in massive MIMO systems with pilot attack," in *IEEE WCSP 2016*.

[C2] C. Sun, L. Li, J. Chen *et al.*, "System-level performance estimation of SCMA," in *IEEE ICCS 2016*.

[C1] M. Feng, Y. Zeng, K. Zhou *et al.*, "Adaptive screen modulation schemes for mobile device employing optical camera communication," in *IEEE ICUFN 2014*.

Professional Skills

- Experienced knowledge in wireless communication, signal processing, 4G-LTE, and 5G-NR.
- Familiar with air interface performance analysis, modeling and optimization.
- Academic Language: C/C++, Python, Matlab, CUDA, and LaTeX.

Honors and Awards

- SRIBD PhD Fellowship (Gold Class), Shenzhen Research Institute of Big Data (SRIBD) *2023*
- Graduate Research Conference Poster Award, Second Place, CUHK-Shenzhen *2022*
- National Endeavor Scholarship *2012 & 2013*
- University Scholarship of BIT *2014 & 2015*
- University Scholarship of BJTU *2012 & 2013*
- Merit Student of BJTU *2013*
- Second Prize in Electronic Design Contest at BJTU *2013*
- Outstanding Award in the 4th Innovational Work Election on Electronics and Information Design for College Students, Chinese Institute of Electronics *2013*

Academic Services

Graduate Teaching Assistant at CUHK-Shenzhen *May. 2020 – Dec. 2023*

Graduate Teaching Assistant at VT *Jan. 2019 – May 2019*

Graduate Teaching Assistant at BIT *May 2016*

Reviewer: *IEEE TWC, IEEE TSP, IEEE JSAC, IEEE J-STSP, IEEE OJSP* *Jan. 2021 – Present*

Language

Mandarin: Native.

English: Professional working proficiency (TOEFL iBT: 104, GRE: 332.5)

References

Dr. Tsung-Hui Chang, Professor and Associate Dean of SSE, CUHK-Shenzhen, changtsunghui@cuhk.edu.cn
Dr. Ya-Feng Liu, Associate Professor of AMSS, Chinese Academy of Sciences, yafliu@lsec.cc.ac.cn