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教育背景

- (2006-2009) 博士, 香港城市大学, 电子工程系
- (2003-2006) 硕士, 西安电子科技大学, 电子工程系
- (1999-2003) 学士, 西安电子科技大学, 电子工程系

研究方向

- 阵列流型设计, 阵列信号处理
- 参数估计，统计信号处理
- 传感器网络中的目标跟踪
- 压缩感知
- 凸优化
- 水声信号处理，成像，定位
- 语音信号处理，智能音频信号处理

奖励

- 西安电子科技大学优秀本科毕业生, 2003
- 西安电子科技大学学术年会最优论文, 2005
- 陕西省优秀硕士毕业生, 2006
- 西安电子科技大学优秀硕士论文, 2006
- 陕西省高等学校科学技术奖, 一等, 2006, 编号：No. 06C18.
- 陕西省科技进步奖, 二等, 2007, 编号：No. 06-2-010-R9.
- 最优论文, IEEE DSP, 2016
- 多元供给、自主选择、形成性评价的个性化实践教学模式改革与实践, 重庆市教学成果奖励, 三等奖，2022.
- 第八届中国国际互联网+创新创业大赛，优秀创新创业导师，重庆市教育委员会，2022.
- mdctGAN: Taming transformer-based GAN for speech super-resolution with Modified DCT spectra, 重庆市优秀本科毕业论文, 2023.
- 第三届成渝地区双城经济圈留学生创新创业大赛，优秀指导教师，重庆市教育委员会，四川省教育厅，2023。
- 乘用车座舱声景设计与智能控制关键技术，中国汽车工程学会科学技术奖，科学技术进步奖，二等奖，2024.

竞赛获奖

- 全国银奖, The intelligent wheelchair based on GIS and MIC array speech recognition, 第五届中国国际“互联网+”大学生创新创业大赛, 2019.
- Global Top 10, Beamforming Videos Contest, ICASSP, Spain, 2020.
- 全国铜奖, ”Timbre” - 一款基于计算机听觉技术的智能安全监测机器人, 第七届中国国际“互联网+”大学生创新创业大赛, 2021.
- 全国银奖, Windblade listener - an intelligent approach for wind turbine blade monitoring using sound, 第七届中国国际“互联网+”大学生创新创业大赛, 2021.
- L3DAS22: Machine Learning for 3D Audio Signal Processing - 3D Sound Event Localization and Detection, second place, ICASSP, 新加坡, 2022.
- Robust Anomaly Sound Detection Framework for Machine Condition Monitoring, DCASE (声事件检测全球比赛) Task 2, 全球第一名, 2022.
- 重庆市金奖, 踏铁寻声, 第八届中国国际“互联网+”大学生创新创业大赛, 重庆, 2022.
- Attention mechanism network and data augmentation for sound event localization and detection, DCASE Task 3.A, 全球第二名, 2023.
- Audio-visual sound event localization and detection based on CRNN using depthwise separable convolution, DCASE Task 3.B, 全球第二名, 2023.
- 第三届成渝地区双城经济圈留学生创新创业大赛，二等奖，重庆市教育委员会，四川省教育厅，2023.
- Power cue enhanced network and audio-visual fusion for sound event localization and detection of DCASE2024 Challenge, DCASE Task 3.A&B, Fourth place, 2024.

工作经历

- **研究员** (2009.10 - 2013.01), Acoustic Research Laboratory, Tropical Marine Science Institute, Electrical and Computer Engineering Department, National University of Singapore (新加坡国立大学).
- **教授** (2013.02 -), 通信与信息工程学院，重庆邮电大学.
- **高级学术导师** (2018. 09-), 联合办学, 重庆邮电大学和伦敦布鲁内尔大学.

教学

1. **本科生课程**
   - ◇ 信号与系统(中文和英文)
   - ◇ 数字信号处理(英文)
2. **研究生课程**
   - ◇ 现代信号处理(中文和英文)
3. **留学生研究生**
   - ◇ 现代信号处理(英文)

文章

Journal papers

1. J. Yang, **H. Q. Liu**, L. Gan, X. Jing, Spectral network based on lattice convolution and adversarial training for noise-robust speech super-resolution, The Journal of the Acoustical Society of America, 156, 3143 – 3157, 2024. .
2. L. Wan, **H. Q. Liu**, L. Shi, Y. Zhou, and L. Gan, Cross Domain Optimization for Speech Enhancement: Parallel or Cascade?, *IEEE/ACM Transactions on Audio, Speech and Language Processing*, vol. 32, pp. 4328-4341, 2024.
3. 刘宏清,谢奇洲, 赵宇, 周翊, 基于扩张卷积和Transformer的视听融合语音分离方法, 信号处理, Mar. 2024.
4. X. Kang, J. Wan, D. Li, Q. Liu, **H. Q. Liu**, R. Hu, Z. Chen, Spaceborne Distributed Aperture Radar Maneuvering Target Detection Approach with Space-Time 2D Hybrid Integration Technique, *Signal Processing*, Dec. 2023.
5. A. Ashurov, Z. Yi, **H. Q. Liu**, Z, Yu, and M, Li, Concatenation-based pre-trained convolutional neural networks using attention mechanism for environmental sound classification, *Applied Acoustics*, Vol. 216, Jan. 2024.
6. Y.Liu, **H. Q. Liu**, Y. Zhao, Y. Zhou, A Novel Earprint: Stimulus-Frequency Otoacoustic Emission for Biometric Recognition, *IEEE Transactions on Information Forensics & Security*, vol. 18, pp. 5484-5494, 2023.
7. Q. Liu, D. Li, R. Jiang, S. Liu, **H. Q. Liu**, S. Li, MT-FANet: A Morphology and Topology-based Feature Alignment Network for SAR Ship Rotation Detection, *Remote Sensing*, 15(12), 2023.
8. J. Wan, X. Kang, X. Tan, D. Li, Z. Chen, **H. Q. Liu**, An Efficient Approach for Coherent Integration Detection of High-speed Maneuvering Targets with Arbitrary-Order Doppler Frequency Migrations, *IEEE Transactions on Aerospace and Electronic Systems*, vol. 59, iss. 5, pp. 6729 - 6748, Oct. 2023.
9. **H. Q. Liu**, W. Zhu, Y. Zhou, L. Shi, L. Gan, Nonintrusive wind blade fault detection using deep learning approach by exploring acoustic information, The Journal of the Acoustical Society of America, 153, 538-547, 2023.
10. S. Liu, **H. Q. Liu**, Simultaneous non-convex low rank regularization for fast magnetic resonance spectroscopy reconstruction, *Digital Signal Processing*, vol. 132, Jan. 2023.
11. J. Wan, Z. He, X. Tan, D. Li, **H. Q. Liu**, Y. Shu, and Z. Chen, Coherent Integration for Maneuvering Target Detection via Fast Nonparametric Estimation Method, *Signal Processing*, vol. 203, Feb. 2023.
12. Jian Pang, Hongcheng Li, Tao Jiang, Hui Wang, Xiangning Liao, Le Luo, and **H.Q. Liu**, A Dual-Channel End-to-End Speech Enhancement Method Using Complex Operations in the Time Domain, *Applied Sciences*, 13(13), 2023.

13. S. Berthe, X. Jing, **H. Q. Liu**, and Q. Chen, Low-complexity soft-output signal detector based on adaptive pre-conditioned gradient descent method for uplink multiuser massive MIMO systems, *Digital Communications and Networks*, Vol. 9, iss. 2, Apr. 2023.
14. Z. Luo, T. Liu, Y. Xiang, and **H. Q. Liu**, Robust Hybrid Beamforming in Full-Duplex Broadband mmWave Relay Systems, *Digital Signal Processing*, vol. 129, Sept. 2022 (**Corresponding author**).
15. A. Ashurov, Y. Zhou, L. Shi, Y, Zhao, and **H. Q. Liu**, Environmental sound classification based on transfer learning techniques with multiple optimizers, *Electronics*, 11(15):2279, 2022.
16. Y. Shu, J. Wan, D. Li, Z. Chen and **H. Q. Liu**, Fast Approach for SAR Imaging of Ground Moving Target Based on Range Azimuth Joint Processing, *Remote Sensing*, Jul. 2022.
17. R. Liu, Y. Zhou, **H. Q. Liu**, X. Xu, J. Jia, and B. Chen, A New Neural Beamformer for Multi-channel Speech Separation, *Journal of Signal Processing Systems*, 94, pp. 977-987, 2022.
18. Z. Luo, L. Zhao, **H.Q. Liu**, MmWave Relay Systems with Robust Hybrid Transceiver Designs Under Correlated Channel Estimation Errors, *Digital Signal Processing*, Vol. 127, Jul. 2022.
19. D. Li, J. Ren, **H.Q. Liu**, Z. Yang, J. Wan, and Z. Chen, A Novel ISAR Imaging Approach for Maneuvering Targets with Satellite-borne Platform, *IEEE Geoscience and Remote Sensing Letters*, vol. 19, pp. 1-8, 2022.
20. X. Jing, H. Li, **H.Q. Liu**, and Q. Chen, Precoder and Combiner Design for Dynamically Sub-Connected Hybrid Architecture with Low-Resolution DACs/ADCs in mmWave Massive MIMO Systems, *SCIENCE CHINA Information Sciences*, 2022, 65: 119301.
21. Dong Li, Quanhuan Liang, **H.Q. Liu**, Qinghua Liu, Haijun Liu, and Guisheng Liao, A Novel Multi-Dimensional Domain Deep Learning Network for SAR Ship Detection, *IEEE Trans. Geoscience and Remote Sensing*, vol. 60, pp. 1-13, 2022. **(ESI paper)**.
22. Y. Zhou, C. Huang, **H.Q.Liu**, D. Li, Trieu-Kien Truong, Front wall clutter removal in through-the-wall radar based on weighted nuclear norm minimization, *IEEE Geoscience and Remote Sensing Letters*, vol. 19, pp. 1-5, 2022. (**Corresponding author**).
23. S. Liu, J. Cao, **H.Q. Liu**, and K. Zhang, MRI reconstruction based on Bayesian piecewise sparsity constraint and adaptive 3D transform, *Knowledge-Based Systems*, vol. 232, Nov. 2021.
24. J. Cao, S. Liu, **H.Q. Liu**, and K. Zhang, MRI reconstruction based on Bayesian group sparse representation, *Signal Processing*, vol. 187, Oct. 2021.

25. T. Yang, S. Liu, and **H.Q. Liu**, Stochastic Resonance Benefits in Signal Detection under MAP Criterion, *Communications in Nonlinear Science and Numerical Simulation*, vol. 102, Nov. 2021.
26. Z. Yang, D. Li, **H.Q. Liu**, G. Liao, An Efficient ISAR Imaging Approach for Highly Maneuvering Targets Based on Subarray Averaging and Image Entropy, *IEEE Trans. Geoscience and Remote Sensing*, vol. 60, Jul. 2021.
27. Y. Gong, L. Gan, **H.Q. Liu**, Multi-Channel Modulo Samplers Constructed from Gaussian Integers, *IEEE Signal Processing Letters*, vol. 28, pp. 1828-1832, 2021.
28. Z. Yang, D. Li, X. Tan, **H.Q. Liu**, Y. Liu, G. Liao, ISAR Imaging for Maneuvering Targets with Complex Motion based on Generalized Radon-Fourier Transform and Gradient-based Descent under Low SNR, *Remote Sensing*, 13(11), 2021.
29. Z. Luo, L. Zhao, T. Li, **H.Q. Liu**, and R. Zhang, Robust Hybrid Precoding/Combining Designs for Full-Duplex Millimeter Wave Relay Systems, *IEEE Trans. on Vehicular Technology*, vol. 70, iss.99, pp. 9577-9582, Sept. 2021. (**Corresponding author**).
30. Y. Zhou, H. Wang, Y. Chu, and **H.Q.Liu**, A Robust Dual-Microphone Generalized Sidelobe Canceller Using a Bone-Conduction Sensor for Speech Enhancement, *Sensors*, 21(5), Mar. 2021.
31. Z. Luo, L. Zhao, **H.Q.Liu**, Y .Li, Robust Hybrid Beamforming in Millimeter Wave Systems With Closed-form Least-square Solutions, *IEEE Wireless Communications Letters*, vol. 10, iss. 1, pp. 156-160, Jan. 2021.
32. X. Jing, J. Wen, and **H.Q.Liu**, Low-Complexity Soft-Output Signal Detector for Massive MIMO with Higher Order QAM Constellations, *Digital Signal Processing*, vol. 108, Jan. 2021.
33. 李帅, 刘宏清, 彭鹏, 罗臻, 周翊, Underdetermined Blind Source Separation based on Convolution Model in Reverberant Environment-混响环境下基于卷积模型的欠定盲源分离. 信号处理, 2021, 37(04): 624-632.
34. **H.Q.Liu**, H. Meng, L. Gan, D. Li, Y. Zhou, and T.-K.Truong, Subspace and Sparse Reconstruction based Near-field Sources Localization in Uniform Linear Array, *Digital Signal Processing*, vol. 106, Nov. 2020.
35. Y. Zhou, Y. Chen, Y. Ma, and **H.Q.Liu**, A Real-Time Dual-Microphone Speech Enhancement Algorithm Assisted by Bone Conduction Sensor, *Sensors*, 20(18), Sept., 2020 (**Corresponding author**).
36. Z. Yang, D. Li, X. Tan, **H.Q.Liu**, G. Liao, A Fast Bistatic ISAR Imaging Approach for Rapidly Spinning Targets via Exploiting SAR Technique, *Remote Sensing*, 12(13), Jun., 2020.
37. X. Luo, L. Guo, D. Li, **H.Q.Liu**, M. Qin, A Novel 2-D Geometry Reconstruction Approach for Space Debris via Interpolation-Free Operation under Low SNR Conditions, *Remote Sensing*, 12(13), Jun., 2020.

38. D. Li, H. Ma, **H.Q.Liu**, Z. Chen, J. Su, X. Zhou, and Z. Yang, An efficient ground maneuvering target refocusing method based on principal component analysis and motion parameter estimation, *Remote Sensing*, 12(3), Jan. 2020.

39. X. Shu, Y. Zhou, **H.Q.Liu**, and Trieu-Kien Truong, A human auditory perception loss function using modified bark spectral distortion for speech enhancement, *Neural Processing Letters*, 51, pp. 2945-2957, 2020.

40. J. Cao, S. Liu, **H.Q.Liu**, and H. Lu, CS-MRI reconstruction based on analysis dictionary learning and manifold structure regularization, *Neural Networks*, vol. 123, pp. 217-233, Mar. 2020.

41. L. Li, L. Yan, L. Zhou, D. Li, and **H.Q.Liu**, ℓ_p-norm regularization optimization of impulsive disturbance removal, *Journal of Xidian University*, vol. 44 (2): 165-170, 2020. (In Chinese: ℓ_p 范数约束的去冲击干扰优化算法)

42. X. Tan, Z. Yang, D. Li, **H.Q.Liu**, G. Liao, Y. Wu, and Y. Liu, An efficient range-Doppler domain ISAR imaging approach for rapidly spinning targets, *IEEE Trans. Geoscience and Remote Sensing*, vol. 58, iss. 4, pp. 2670-2681, Apr. 2020.

43. **H.Q.Liu**, C. Huang, L. Gan, Y. Zhou, and Trieu-Kien Truong, Clutter reduction and target tracking in through-the-wall radar, *IEEE Trans. Geoscience and Remote Sensing*, vol. 58, iss. 1, pp. 486-499, Jan. 2020.

44. C. Zeng, D. Li, X. Luo, D. Song, **H.Q.Liu**, and J. Su, Ground maneuvering targets imaging for synthetic aperture radar based on second-order Keystone transform and high-order motion parameter estimation, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 12, iss. 11, pp. 4486-4501, Nov., 2019.

45. L. Li, L. Yan, D. Li, **H.Q.Liu**, and C. Zhang, A Novel ISAR Imaging Method for Maneuvering Target Based on AM-QFM Model under Low SNR Environment, *IEEE Access*, vol. 7, 2019.

46. C. Huang, **H.Q.Liu**, Z. Luo and Y. Zhou, A mitigating clutter method with joint low-rank and sparse model, *Journal of Xidian University*, vol. 44 (2): 165-170, 2019 . (In Chinese: 一种低秩联合稀疏模型下的杂波抑制方法)

47. D. Li, C. Zhang, H. Ma, **H.Q.Liu**, J. Su, Q. Liu, An Efficient SAR Ground Moving Target Refocusing Method Based on PPFFT and Coherently Integrated CPF, *IEEE Access*, vol. 7, pp. 114102-114115, Dec. 2019.

48. D. Xue, X. Jing, and **H.Q.Liu**, Detection of false data injection attacks in smart grid utilizing ELM-based OCON framework, *IEEE Access*, vol. 7, iss. 1, pp. 31762-31773, Dec. 2019.

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51. D. Li, C. Zhang, **H.Q.Liu**, J. Su, X. Tan, Q. Liu, and Guisheng Liao, A fast cross-range scaling algorithm for ISAR images based on the 2D discrete wavelet transform and pseudopolar fourier transform, *IEEE Trans. Geoscience and Remote Sensing*, vol. 57, no. 7, pp. 4231-4245, Jul. 2019. (**Corresponding author**).

52. Y. Li, X. Huang, J. He, **H.Q.Liu**, and Trieu-Kien Truong, On soft-information-based error and erasure decoding of Reed-Solomon codes in burst Rayleigh fading channels, *IEEE Trans. on Communications*, vol. 67, iss. 1, pp. 50-60, Jan. 2019.

53. X. Wu, Y. Li and **H.Q.Liu**, LDPC编码的MIMO-OFDM系统中的联合半盲均衡与解码研究, *系统工程与电子技术*, vol. 40, iss. 8, pp. 1866-1872, 2018.

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66. T. Yang, Shujun Liu, **H.Q.Liu**, M. Tang, X. Tan, and X. Zhou, Noise Benefits Parameter Estimation in LMMSE Sense, *Digital Signal Processing*, vol. 73, pp. 153-163, Feb. 2018.

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68. Dong Li, Muyang Zhan, Jia Su, **H.Q.Liu**, Xuepan Zhang, and Guisheng Liao, Performances Analysis of Coherently Integrated Cubic Phase Function for LFM Signal and Its Application to Ground Moving Target Imaging, *IEEE Trans. Geoscience and Remote Sensing*, vol. 55, no. 11, pp. 6402-6419, Nov., 2017.

69. Shujun Liu, Ting Yang, **H.Q.Liu**, Optimal Detection under the Restricted Bayesian Criterion, *Entropy*, 19(7), 370, 2017. (**Corresponding author**).

70. **H.Q.Liu**, D. Li, Y. Zhou and T.-K. Truong, Joint Wideband Interference Suppression and SAR Signal Recovery based on Sparse Representations, *IEEE Geoscience and Remote Sensing Letters*, vol. 14, no. 9, pp. 1542-1546, Sep. 2017.

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72. Shujun Liu, Jianxin Cao, **H.Q.Liu**, Xichuan Zhou, Kui Zhang, and Zhengzhou Li, MRI reconstruction via enhanced group sparsity and nonconvex regularization, *Neurocomputing*, vol. 272, pp. 108-121, Jan. 2018.

73. Shujun Liu, Jianxin Cao, **H.Q.Liu**, Xiaodong Shen, Kui Zhang, and Pin Wang, MRI Reconstruction Using a Joint Constraint in Patch-Based Total Variational Framework, *Journal of Visual Communication and Image Representation*, vol.46, pp. 150-164, Jul. 2017.

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75. X. Jing, M. Wang, W. Zhou and **H.Q.Liu**, Improved QRD-M Detection Algorithm for Generalized Spatial Modulation Scheme, *International Journal of Antennas and Propagation*, vol.2017 (2017), Article ID 3581592.

76. D. Li, **H.Q.Liu**, Muyang Zhan, Xinzheng Zhang and Zhiping Fang, ISAR Imaging of Nonuniformly Rotating Target Based on the Multi-Component CPS Model under Low SNR Environment, *IEEE Trans. Aerospace and Electronic Systems*, vol. 53, iss. 3, pp. 1119-1135, 2017.

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会议组织

- Technical Program Committee (TPC) member, IEEE International Conference on Signal Processing, Communications and Computing, 2013
- TPC member, 11th EAI International Conference on Communications and Networking in China (Chinacom), 2016
- Committees member, International Conference on Communications, Signal Processing, and Systems (CSPS), 2016
- TPC member, IEEE 85th Vehicular Technology Conference, 2017
- Track chair, International Conference on Mobile Multimedia Communications, 2017

专利

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