

Curriculum Vitae updated January 2019.

RESEARCH INTERESTS

High dimensional signal processing
Sparse recovery and sparse learning
Optimization
Graph signal processing
Adaptive filtering

ADMINISTRATIVE

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EDUCATION

Ph.D. (Hons.) in Electronic Engineering July 2003
Tsinghua University Beijing, CHINA
Thesis: Studies on the Convergence Performance of LMS and Its Applications
Advisor: Prof. Kun Tang

B.E. in Electronic Engineering July 1998
Xi'an Jiaotong University Xi'an, Shanxi, CHINA

POSITIONS

Full Professor Dec. 2018 – present
Tsinghua University Beijing, CHINA

Associate Professor Dec. 2006 – Dec. 2018
Tsinghua University Beijing, CHINA

Assistant Professor Aug. 2003 – Dec. 2006
Tsinghua University Beijing, CHINA

Visiting Scholar Sept. 2015 – Oct. 2015
University of Michigan Ann Arbor, MI, USA

Visiting Scientist May 2013 – Aug. 2013
Stanford University Stanford, CA, USA

Visiting Scientist Aug. 2012 – May 2013
Massachusetts Institute of Technology Cambridge, MA, USA

Visiting Scientist Dec. 2005 – Feb. 2006
Microsoft Research Asia Beijing, CHINA

SELECTED HONORS AND AWARDS

- Zhang Si-Ying Outstanding Youth Author Award (Senior coauthor), CCDC (2017)
- Best Paper Award, IEEE GlobalSIP (2015)

- Award for Best Presentation of Journal Paper, IEEE ChinaSIP (2015)
- Best Ph.D. Thesis Award, Tsinghua University (2003)

PROFESSIONAL ACTIVITIES AND SERVICES

Elected Membership

- IEEE Signal Processing Theory and Methods Technical Committee (December 2016 – present)
- IEEE Senior Member (March 2017 – present)

Editorial Board

- Associate Editor, IEEE Transactions on Signal Processing (February 2015 – present)
- Handling Editor, Elsevier Digital Signal Processing (February 2015 – February 2017)
- Editor, China Communications (November 2016 – present)

Conference Organizer

- Track chair: IEEE Statistical Signal Processing Workshop (2016)
- Co-chair: IEEE GlobalSIP - Symposium on Real-Time Signal Processing for Low-Cost and Low-Power Smart Devices (2015)
- Special session chair: IEEE International Conference on Digital Signal Processing (2014)

Technical Program Committee

- IEEE Data Science Workshop (2018)
- IEEE Globecom - Signal Processing for Communications Symposium (2003, 2009, 2015, 2018)
- IEEE Statistical Signal Processing Workshop (2018)
- IEEE 29th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (2018)
- 26th European Signal Processing Conference - Statistical signal processing (2018)
- 25th European Signal Processing Conference - Compressed Sensing and Sparse Modeling (2017)
- 23rd European Signal Processing Conference - Signal processing theory and methods (2015)
- 3rd International Workshop on Compressed Sensing Theory and its Applications to Radar, Sonar, and Remote Sensing (2015)
- IEEE ICASSP - Signal Processing Theory and Methods (2014)
- IEEE ICASSP - Image, Video, and Multidimensional Signal Processing (2014)
- International Conference on Wireless Communications and Signal Processing (2013 – 2015)
- IEEE Globecom - Wireless Communications Symposium (2012)
- IEEE International Conference on Ultra-Wideband (2011)

Reviewer

- NSFC Reviewer for Department of Information Sciences: Signal Processing Theory and Methods; High-dimensional Statistics; Compressed Sensing; Sampling Theory; Adaptive Filtering and Adaptive Systems.
- MOE Reviewer for Academic Degree and Graduate Education.

- Reviewer for IEEE Transactions on: (1) Signal Processing; (2) Image Processing; (3) Information Theory; (4) Communications; (5) Cybernetics; (6) Neural Networks and Learning Systems; (7) Vehicular Technology; (8) Automatic Control; (9) Circuits and Systems; (10) IEEE Signal Processing Magazine; (11) IEEE Vehicular Technology Magazine; (12) IEEE Journal of Selected Topics in Signal Processing; (13) IEEE Journal on Selected Areas in Communications; (14) IEEE Internet of Things Journal; (15) IEEE Signal Processing Letters; (16) IEEE Communications Letters; and more.
- Reviewer for other International Journals: (1) Signal Processing; (2) IET Signal Processing; (3) IET Communications; (4) Elsevier Digital Signal Processing; (5) Signal, Image and Video Processing; (6) EURASIP Journal on Advances in Signal Processing; (7) Journal of Visual Communication and Image Representation; (8) International Journal of Adaptive Control and Signal Processing; (9) Journal of the Franklin Institute; (10) Electronics Letters; (11) IEICE Electronics Express; (12) Ocean Engineering; and more.
- Reviewer for Conferences and Workshops: ICACCI-2018, IEEE PIMRC 2018, Globecom2018 SPC, EUSIPCO 2018, SSP 2018, EUSIPCO 2017, SSP 2016, WCSP'15, GC'15 - SPC, GlobalSIP 2015 GS, EUSIPCO 2015, CoSeRa2015, WCSP'14, ICASSP2014 - SPTM, ICASSP2014 - IVMSP, WCSP'13, GC12 WC, ICUWB 2011, GC'09 SPC, ICANN 2009, Globecom'03, and more.

SEMINARS AND INVITED TALKS

Invited Talks at Workshops and Tutorials

- T1. Restricted isometry property of random projection for low-dimensional subspaces, *2018 Chinese Automation Congress*, December 1, 2018, Xi'an, China.
- T2. Restricted isometry property of random projection for low-dimensional subspaces, *2018 Symposium on Applicable and Computational Analysis*, November 23-26, 2018, Tsinghua Sanya International Mathematics Forum (TSIMF), Sanya, China.
- T3. Restricted isometry property of random projection for low-dimensional subspaces, *2018 International Workshop on Modern Optimization and Applications*, June 16-18, 2018, Beijing, China.
- T4. Restricted isometry property of random projection for low-dimensional subspaces, *Vision And Learning SEMinar (VALSE) Webinar*, May 2, 2018.
- T5. Restricted Isometry Property of Random Projection for Low Dimensional Subspaces, *The 6th ICCM CAM Conference on Geometry and Imaging*, December 15-17, 2017, Yau Mathematical Sciences Center (YMSC), Tsinghua University, Beijing, China.
- T6. Non-Convex Sparse Recovery with Convergence Guarantee, *Workshop on Imaging and Algorithm*, Beijing Computational Science Research Center, Beijing, China, December 16-17, 2016.
- T7. From ℓ_p Minimization to Weakly Convex Optimization, *Signal Processing and Wireless Communication Workshop*, Beijing, China, October 26-27, 2016.
- T8. Non-Convex Optimization for Sparse Recovery, *Conference on Signal Processing Technologies and Applications*, Beijing, China, July 30-31, 2016.
- T9. From ℓ_p Minimization to Weakly Convex Optimization, *IEEE Signal and Data Science Forum*, Wuhan, China, April 24-26, 2016.
- T10. From ℓ_p Minimization to Weakly Convex Optimization, *High Performance Computation Technologies and Applications*, Xi'ning, China, July 17, 2015.

Invited Talks at Departmental Seminars

- T11. Restricted Isometry Property of Random Projection for Low-Dimensional Subspaces, *Information Theory Forum*, Stanford University, February 23, 2018.
- T12. Restricted Isometry Property of Random Projection for Low-Dimensional Subspaces, *BLISS Seminar*, UC Berkeley, February 22, 2018.
- T13. Restricted Isometry Property of Random Projection for Low-Dimensional Subspaces, University of South California, February 20, 2018.

- T14. Restricted Isometry Property of Random Projection for Low-Dimensional Subspaces, North Carolina State University, February 19, 2018.
- T15. Restricted Isometry Property of Gaussian Random Projection for Low-Dimensional Subspaces, Duke University, February 19, 2018.
- T16. Restricted Isometry Property of Gaussian Random Projection for Low-Dimensional Subspaces, *CIS Seminar*, The Johns Hopkins University, February 16, 2018.
- T17. Restricted Isometry Property of Gaussian Random Matrix, *ECE Seminar*, University of Maryland, February 14, 2018.
- T18. Restricted Isometry Property of Gaussian Random Matrix, Princeton University, February 12, 2018.
- T19. Restricted Isometry Property of Gaussian Random Matrix for Low-Dimensional Subspaces, *Electrical Engineering Seminar Series*, Harvard University, February 9, 2018.
- T20. Restricted Isometry Property of Gaussian Random Matrix for Low-Dimensional Subspaces, *ECE Seminar*, Boston University, February 8, 2018.
- T21. Restricted Isometry Property of Gaussian Random Matrix for Low-Dimensional Subspaces, Mitsubishi Electric Research Laboratories, February 7, 2018.
- T22. Distance-Preserving Property of Random Projection for Low Dimensional Subspaces, University of Waterloo, November 16, 2017.
- T23. Distance-Preserving Property of Random Projection for Low Dimensional Subspaces, University of Surry, July 26, 2017.
- T24. Distance-Preserving Property of Random Projection for Low Dimensional Subspaces, Imperial College London, July 24, 2017.
- T25. Distance-Preserving Property of Random Projection for Sparse Subspaces, Tsinghua-Berkeley Shenzhen Institute, Shenzhen, China, April 10, 2017.
- T26. Sparse Signal Recovery via Non-convex Optimization, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China, June 16, 2015.
- T27. Image Denoising via Non-convex Sparse Recovery with Guarantee, The Johns Hopkins University, Baltimore, MD, May 2, 2013.

TEACHING AND EDUCATION

Honors and Awards

- Excellent Teacher Award, Baosteel Education Fund (2018)
- Distinguished Youth Teacher Award, Beijing Municipal Education Commission (2018)
- Annual Teaching Excellence Award, Tsinghua University (2016, 2017)
- Teaching Achievement Award for First Prize, Beijing Municipal Education Commission (2017)
- Teaching Achievement Award for First Prize, Tsinghua University (2008, 2016)
- Excellent Textbooks Award, Tsinghua University (2012)
- Quality Textbooks in Higher Education, Beijing Municipal Education Commission (2011)
- Teaching Excellence Award to Young Teachers, Tsinghua University (2009)

Teaching Courses

- C1. **Signals and Systems** (30230104, 1 of 10 core courses for Tsinghua EE Dept. undergraduates, 64 class hours, 4 credits, Spring semester)

This course is an introduction to analog and digital signal processing, a topic that forms an integral part of engineering systems in many diverse areas, including communications, speech processing, image processing, and consumer electronics and products. The course presents the basic concepts for

both continuous-time and discrete-time signals and systems, from both time and frequency domains, including convolution, Fourier Transform, sampling theory, Laplacian Transform, transfer function, frequency response, filtering, analog modulation, digital filter, Z transform, and the basic concepts of feedback systems.

- 2018, Enrollment 171/180, Evaluation */100, Ranked **Top 5%** (* /228)
- 2017, Enrollment 175/180, Evaluation 92.80/100, Ranked **Top 3%** (5/214)
- 2016, Enrollment 119/120, Evaluation 92.27/100, Ranked **Top 3%** (7/253)
- 2015, Enrollment 110/120, Evaluation 93.45/100, Ranked **Top 1** (1/241)
- 2014, Enrollment 118/120, Evaluation 96.93/100, Ranked **Top 5%** (8/238)
- 2012, Enrollment 126/120, Evaluation 96.99/100, Ranked **Top 3%** (3/232)
- 2011, Enrollment 120/120, Evaluation 96.93/100, Ranked **Top 5%** (7/218)
- 2010, Enrollment 135/140, Evaluation 94.23/100
- 2009, Enrollment 142/140, Evaluation 95.95/100, Ranked Top 15%
- 2008, Enrollment 123/120, Evaluation 95.18/100, Ranked Top 15%
- 2007, Enrollment 114/120, Evaluation 92.48/100
- 2006, Enrollment 123/120, Evaluation NA

C2. MATLAB Programming with Engineering Applications (20230242, a compulsory course for Tsinghua EE Dept. undergraduates, 32 class hours, 2 credits, Summer semester)

This course is to provide basic knowledge and proper techniques of MATLAB, which is versatile and very useful for all disciplines of engineering and other professionals. This course begins with the essentials of MATLAB, and later focuses on advanced topics such as programming, graphics, and data visualization. The students acquired many skillful techniques after accomplishing several exciting EE projects, including speech synthesis, music synthesis, image compression, information hiding, and hacking a picture matching game.

- 2018, Enrollment 288, Evaluation NA
- 2017, Enrollment 273, Evaluation NA
- 2016, Enrollment 273, Evaluation NA
- 2015, Enrollment 291, Evaluation NA
- 2014, Enrollment 264, Evaluation NA
- 2013, Enrollment 260, Evaluation NA
- 2012, Enrollment 302, Evaluation NA
- 2011, Enrollment 297, Evaluation NA
- 2010, Enrollment 310, Evaluation NA
- 2009, Enrollment 319, Evaluation NA
- 2008, Enrollment 313, Evaluation NA
- 2007, Enrollment 301, Evaluation NA
- 2006, Enrollment 311, Evaluation NA
- 2005, Enrollment 345, Evaluation NA

C3. Signals and Linear Systems (40250144, a compulsory course for Tsinghua Automation Dept. undergraduates, 64 class hours, 4 credits, Fall semester)

I was invited to teach this course at Automation Department to take over a faculty during his visit aboard in 2014. Although this course has a large overlap with **Signal and Systems** in EE Department, in order to better fit the context of Automation Department, I replaced the elementary part of feedback systems with Fast Fourier Transforms and digital filter design.

- 2014, Enrollment 131, Evaluation 94.15/100, Ranked **Top 1%** (2/277)

C4. Introduction to Mathematics and Signal Processing (10230031, Tsinghua EE Dept. undergraduates, 16 class hours, 1 credit, Spring semester)

This course introduces students to linear algebra, probability theory, optimization, and their applications in signal processing, including echo cancellation, channel equalization, satellite navigation, face recognition, image segmentation, and visual object tracking.

- 2008, Enrollment 27/30, Evaluation 92.87/100

- 2007, Enrollment 40/40, Evaluation 91.81/100

- 2006, Enrollment 24/30, Evaluation NA

- 2005, Enrollment 23/30, Evaluation NA

Textbooks

[1] **Y. Gu**, *Signals and Systems – Exercises and Solutions*, Higher Education Press, August 2011, Beijing, China. (Up to July 2018, printed 9 times, sold 26,000 copies)

[2] **Y. Gu**, Q. Ying, J. Zheng, *Signals and Systems – Practicing with MATLAB*, Higher Education Press, Jan. 2008, Beijing, China. (Up to July 2018, printed 8 times, sold 16,000 copies)

Refereed Papers on Teaching and Education

Names with underline are my research advisees, including graduate and undergraduate students.

[1] **Y. Gu**, Z. Chen, P. Liu, X. Wang, Y. Liu, and J. Zheng, More Exercises, Higher Score: A Case Study by Using Online Teaching Assistant System, *IEEE International Conference on Digital Signal Processing (DSP)*, October 16-18, 2016, Beijing, China.

[2] J. Zheng and **Y. Gu**, Integration of Theory and Practice in Signals and Systems, *Journal of Electrical and Electronic Education*, 36(3): 1-5, 2014.

[3] J. Zheng and **Y. Gu**, The History and Evolution of Signals and Systems, *Journal of Electrical and Electronic Education*, 34(2): 1-6, 2012.

RESEARCH ADVISING

Research Scientists

- Yancheng Li (2008 – 2009; Job at Google, New York)

Postdoctoral Fellows

- Jiong Chen (2011 – 2012, Job at NIO, Shanghai)

Current Ph.D. students

S1. Yuchen Jiao (G1, On signal processing and machine learning)

S2. Linghang Meng (G2, On data mining and machine learning)

S3. Gen Li (G3, On random matrix theory and application)

S4. Yue Wu (G4, On mmWave MIMO communications)

S5. Chengzhu Yang (Co-advised; G4, On sparse signal recovery and non-convex optimization)

S6. Xianghui Mao (G5, On distributed optimization and graph signal processing)

Graduated Ph.D. students

S7. Xinyue Shen (Structural Data Recovery via Non-convex Optimization: Theory and Algorithms, 2018; Job at Hulu Corp.)

- S8. Kai Qiu (Spatio-Temporal Signal Reconstruction Based on Graph, 2017; Job at China Electronics Tech. Group Corp.)
- S9. Laming Chen (with Honor, Theory and Algorithms of Sparse Recovery via Non-convex Optimization, 2016; Job at Hulu Corp.)
- S10. Xiaohan Wang (Sampling and Reconstruction for Graph Signals, 2016; Job at Huawei Corp.)
- S11. Pengfei Liu (Dimensionality Reduction and Reconstruction for Graph Signals, 2015; Job at China Electronics Tech. Group Corp.)
- S12. Jiang Zhu (Co-advised; Parameter Estimation from Binary Measurements in Multiplicative Gaussian Noise Environments, 2015; Job at Zhejiang University)
- S13. Peng Wang (Co-advised; Research on Opportunistic Routing Based on State Transition in Wireless Networks, 2013; Job at NetEase Inc.)
- S14. Jian Jin (Co-advised; Research on sparse signal recovery algorithms for compressive sensing, 2012; Job at General Electric)
- S15. Hongquan Liu (Research on Reliable Data Transport Based on Coding Technology in Wireless Mesh Networks, 2012; Job at China Electronics Tech. Group Corp.)

M.S. students

- Current: Zhishen Meng, Yijia Tao, Hao Peng, Qiong Mao
- Graduated: Yating Liu (2018), Yanfei Jiang (2018), Ye Chen (2018), Xiongfei Liu (2017), Qi Hou (2017), Xiangqian Che (2016), Zhaoqun Chen (2015), Bing Liu (2014), Haoran Li (2014), Yingwei Bi (2013), Zhimin Xiang (2013), Leigang Luo (2013), Yuan Chen (2012), Haifu Zhao (2012), Siming Song (2011), Feng Zhu (2010), Jianwei Cui (2009), Yancheng Li (Co-advised, 2008), Zhengwei Jiang (Co-advised, 2005)

Selected undergraduate students

I have been supervising more than 100 undergraduates through Student Research Training (SRT) programs in Tsinghua for many years. Many of them have conducted solid research works during my supervision. Some of them continued their studies as Ph.D. candidates.

- U1. Yuchen Jiao (B.E., Tsinghua, 2018; Ph.D. candidate, Tsinghua)
- U2. Yanxi Chen (B.E., Tsinghua, 2018; Ph.D. candidate, Princeton)
- U3. Qinghua Liu (B.E., Tsinghua, 2018; Ph.D. candidate, Princeton)
- U4. Jingkai Yan (B.E., Tsinghua, 2018; Ph.D. candidate, Columbia University)
- U5. Jiayang Wang (B.E., Tsinghua, 2018; Ph.D. candidate, University of South California)
- U6. Gen Li (B.E., Tsinghua, 2016; Ph.D. candidate, Tsinghua)
- U7. Jiaxuan Chen (B.E., Tsinghua, 2016; Ph.D. candidate, Tsinghua)
- U8. Jialin Liu (B.E., Tsinghua, 2015; Ph.D. candidate, UCLA)
- U9. Jiawei Zhou (B.E., Tsinghua, 2015; Ph.D. candidate, Harvard)
- U10. Jinye Zhang (B.E., Tsinghua, 2014; Ph.D. candidate, Stanford)
- U11. Dong Yin (B.E., Tsinghua, 2014; Ph.D. candidate, UC Berkeley)
- U12. Yujie Tang (B.E., Tsinghua, 2013; Ph.D. candidate, California Institute of Technology)
- U13. Jie Ding (B.E., Tsinghua, 2012; Ph.D., Harvard, 2017; assistant professor at University of Minnesota Twin Cities)
- U14. Jingbo Liu (B.E., Tsinghua, 2012; Ph.D., Princeton, 2017; PostDoc at MIT)
- U15. Yaming Wang (B.E., Tsinghua, 2012; Ph.D., University of Maryland, 2018; Job at Facebook)
- U16. Xiaohan Wang (B.E., Tsinghua, 2011; Ph.D., Tsinghua, 2016; Job at Huawei Corp.)

- U17. Guolong Su (B.E., Tsinghua, 2011; Ph.D., MIT, 2017; Job at Google)
- U18. Hao Nan (B.E., Tsinghua, 2011; Ph.D., Stanford, 2018; Working on a Start-up)
- U19. Qing Qu (B.E., Tsinghua, 2011; Ph.D., Columbia University, 2018; PostDoc at New York University)
- U20. Laming Chen (B.E., Tsinghua, 2010; Master & Ph.D., Tsinghua, 2016; Job at Hulu Corp.)

SELECTED TSINGHUA COMMITTEES AND SERVICE

University Service

- Undergraduates Admissions (2006 – 2009, 2017 – 2018)
- Engineering Doctoral Admissions (2017)

Department Service

- Graduate Admissions (2010 – 2018)
- Member of Faculty Search Committee (2015, 2017, 2018)
- Teacher in charge of a class of undergraduate students (2004, 2005 – 2009, 2013 – 2017)

Member of Qualifying Examination Committee

- Rui She, Shanxun Liu, Dan Shao, Xinyu Liu, Ruixi Sun, Yuanpeng Liu, Yue Zheng, Yidong Wang, Xiaoxin Zhang, Sixing Wu (March 2018)
- Ping Wang, Xiangming Zhu, Yanhua Jiao, Zhong Tian, Danlan Huang, Yawei Lu, Wei Huang, Mir Talha (September 2017)
- Ruoxi Sun, Le Xiao, Xinyue Zhang, Xiudong Wang, Haining Duan, Yanhua Jiao, Xu Ma, Zhong Tian, Qingyu Li (March 2017)
- Xiaoping Dong, Xinyue Shen, Weicheng Ling, Baihong Lin, Tianchu Zhao, Wen Sun, Meng Wang, Xianghai Mao, Xi Zhao, Xiudong Wang, Jingchun Cheng, Yongde Guo (September 2016)
- Tao Li, Kai Qiu, Chuang Zhang, Xiaohan Wang, Jiang Zhu, Xiangming Meng, Dong Wang, Xiang Chen, Wei Feng, Jiaqiang Liu, Jingchu Liu, Xiaoping Dong (September 2014)
- Xi Wang, Zhen Gao, Guopeng Ding, Zhiqing Xiao, Xueru Li, Pengfei Liu, Yong Niu, Xiao Zhang, Xiangming Meng, Xiaolin Gao (March 2014)
- Yipeng Sun, Yang Li, Xiaoling Gao, Wenyun Gao, Kai Liu, Quanhe Yu, Pengfei Liu, Zhao Wu, Peng Wang (September 2013)

SELECTED RESEARCH GRANTS

Current

- G1. Non-convex Optimization for Robust Sparse Recovery: Fast Algorithms and Theoretical Analysis, *Natural Science Foundation of China*, January 2016 – December 2019, Principal Investigator.
- G2. Research on the generalized sampling theory and reconstruction methods for graph signals, *Natural Science Foundation of China*, January 2016 – December 2019, Principal Investigator.
- G3. Mechanism and estimation method of the conversion of rainfall and runoff to water resources in headwater and arid regions, *National Key Research and Development Program of China*, January 2017 – December 2020, Co-PI (with PI Prof. Tiejian Li).

Completed

- G4. Research on the structural and functional features of tree-style physical channels, *Tsinghua University Initiative Scientific Research Program*, January 2015 – December 2017, Co-PI (with PI Prof. Tiejian Li).

- G5. Research on the theory of compressed subspace clustering and its applications, *Natural Science Foundation of China*, January 2014 – December 2017, Principal Investigator.
- G6. Hydrological prediction of Sanjiangyuan based on big data methods, *Natural Science Foundation of China*, October 2014 – December 2016, Co-PI (with PI Prof. Jiahua Wei).
- G7. High Resolution MRI CINE Imaging, *Tsinghua National Laboratory for Information Science and Technology (TNList) Cross-discipline Foundation*, January 2014 – December 2015, Principal Investigator (with Co-PI Prof. Hua Guo).
- G8. Compressive Sensing based Analog-to-Digital Converters, *Agilent Technologies Foundation*, January 2010 – December 2011, Principal Investigator.
- G9. Wireless Network Resources Management and Services Quality Control in Digital Home, *Natural Science Foundation of China*, January 2009 – December 2012, Co-PI (with PI Prof. Yuli Fu).
- G10. ℓ_1 Norm Constraint Adaptive Filter and Sparse System Identification, *Natural Science Foundation of China*, January 2009 – December 2011, Principal Investigator.
- G11. Development of Wireless Video Transmission Technology and Demo System using UWB Module, *Sony (China) Limited*, January 2008 – December 2009, Principal Investigator.
- G12. Adaptive Filter Length Control of LMS Algorithm, *Natural Science Foundation of China*, January 2005 – December 2005, Principal Investigator.

PUBLICATIONS

Names with underline are my research advisees, including graduate and undergraduate students.

Refereed Journal Publication

- [J1] X. Mao, **Y. Gu**, and W. Yin, Walk Proximal Gradient: An Energy Efficient Algorithm for Consensus Optimization, accepted for publication at *IEEE Internet of Things Journal*, 2018.
- [J2] Q. Liu, **Y. Gu**, and H. C. So, Smoothed Sparse Recovery via Locally Competitive Algorithm and Forward Euler Discretization Method, *Signal Processing*, 157:97-102, 2019.
- [J3] L. Meng, G. Li, J. Yan, and **Y. Gu**, A General Framework for Understanding Compressed Subspace Clustering Algorithms, *IEEE Journal of Selected Topics in Signal Processing*, 12(6):1504-1519, 2018.
- [J4] Y. Jiao, Y. Chen, and **Y. Gu**, Subspace Change-Point Detection: A New Model and Solution, *IEEE Journal of Selected Topics in Signal Processing*, 12(6):1224-1239, 2018.
- [J5] X. Mao, K. Qiu, T. Li, and **Y. Gu**, Spatio-Temporal Signal Recovery Based on Low Rank and Differential Smoothness, *IEEE Transactions on Signal Processing*, 66(23):6281-6296, 2018.
- [J6] C. Yang, X. Shen, H. Ma, **Y. Gu**, and H. C. So, Sparse Recovery Conditions and Performance Bounds for ℓ_p -Minimization, *IEEE Transactions on Signal Processing*, 66(19):5014-5028, 2018.
- [J7] X. Shen and **Y. Gu**, Nonconvex Sparse Logistic Regression with Weakly Convex Regularization, *IEEE Transactions on Signal Processing*, 66(12):3199-3211, 2018.
- [J8] Q. Liu, C. Yang, **Y. Gu**, and H. C. So, Robust Sparse Recovery via Weakly Convex Optimization in Impulsive Noise, *Signal Processing*, 152:84-89, 2018.
- [J9] G. Li and **Y. Gu**, Restricted Isometry Property of Gaussian Random Projection for Finite Set of Subspaces, *IEEE Transactions on Signal Processing*, 66(7):1705-1720, 2018.
- [J10] J. Wang, G. Li, L. Rencker, W. Wang, and **Y. Gu**, An RIP-Based Performance Guarantee of Covariance-Assisted Matching, *IEEE Signal Processing Letters*, 25(6):828-832, 2018.
- [J11] Y. Chen, G. Li, and **Y. Gu**, Active Orthogonal Matching Pursuit for Sparse Subspace Clustering, *IEEE Signal Processing Letters*, 25(2):164-168, 2018.
- [J12] Y. Wu, **Y. Gu**, and Z. Wang, Channel Estimation for mmWave MIMO with Transmitter Hardware Impairments, *IEEE Communications Letters*, 22(2):320-323, 2018.

- [J13] K. Qiu, X. Mao, X. Shen, X. Wang, T. Li, and **Y. Gu**, Time-Varying Graph Signal Reconstruction, *IEEE Journal of Selected Topics in Signal Processing*, 11(6):870-883, 2017.
- [J14] X. Wang and **Y. Gu**, Cross-label Suppression: A Discriminative and Fast Dictionary Learning with Group Regularization, *IEEE Transactions on Image Processing*, 26(8):3859-3873, 2017.
- [J15] Q. Liu, H. C. So, and **Y. Gu**, Off-grid DOA estimation with nonconvex regularization via joint sparse representation, *Signal Processing*, 140:171-176, 2017.
- [J16] X. Wang, J. Chen, and **Y. Gu**, Local Measurement and Reconstruction for Noisy Bandlimited Graph Signals, *Signal Processing*, 129: 119-129, 2016.
- [J17] X. Shen, L. Chen, **Y. Gu**, and H. C. So, Square-root Lasso with Non-convex Regularization: An ADMM Approach, *IEEE Signal Processing Letters*, 23(7):934-938, 2016.
- [J18] J. Zhu, R. S. Blum, X. Lin, and **Y. Gu**, Robust Transmit Beamforming for Parameter Estimation using Distributed Sensors, *IEEE Communications Letters*, 20(7):1329-1332, 2016.
- [J19] S. Jiang and **Y. Gu**, Block-Sparsity-Induced Adaptive Filter for Multi-Clustering System Identification, *IEEE Transactions on Signal Processing*, 63(20):5318-5330, 2015.
- [J20] J. Liu, J. Jin, and **Y. Gu**, Robustness of Sparse Recovery via F -minimization: A Topological Viewpoint, *IEEE Transactions on Information Theory*, 61(7):3996-4014, 2015.
- [J21] J. Zhu, X. Lin, R. Blum, and **Y. Gu**, Parameter Estimation for Bandwidth-Constrained Wireless Sensor Networks in Multiplicative Noise Environments, *IEEE Transactions on Signal Processing*, 63(15):4037-4050, 2015.
- [J22] L. Chen and **Y. Gu**, On the Null Space Constant for ℓ_p Minimization, *IEEE Signal Processing Letters*, 22(10):1600-1603, 2015.
- [J23] X. Wang, P. Liu, and **Y. Gu**, Local-set-based Graph Signal Reconstruction, *IEEE Transactions on Signal Processing*, 63(9):2432-2444, 2015.
- [J24] X. Wang, M. Wang, and **Y. Gu**, A Distributed Tracking Algorithm for Reconstruction of Graph Signals, *IEEE Journal of Selected Topics in Signal Processing*, 9(4):728-740, 2015.
- [J25] X. Shen and **Y. Gu**, Restricted Isometry Property of Subspace Projection Matrix Under Random Compression, *IEEE Signal Processing Letters*, 22(9):1326-1330, 2015.
- [J26] L. Chen and **Y. Gu**, The Convergence Guarantees of a Non-convex Approach for Sparse Recovery, *IEEE Transactions on Signal Processing*, 62(15):3754-3767, 2014. **Award for Best Presentation of Journal Paper, IEEE ChinaSIP, 2015.**
- [J27] J. Zhu, X. Wang, X. Lin, and **Y. Gu**, Maximum Likelihood Estimation from Sign Measurements with Sensing Matrix Perturbation, *IEEE Transactions on Signal Processing*, 62(15):3741-3753, 2014.
- [J28] Y. Tang, L. Chen, and **Y. Gu**, On the Performance Bound of Sparse Estimation with Sensing Matrix Perturbation, *IEEE Transactions on Signal Processing*, 61(17):4372-4386, 2013.
- [J29] L. Chen and **Y. Gu**, Oracle-order Recovery Performance of Greedy Pursuits with Replacement against General Perturbations, *IEEE Transactions on Signal Processing*, 61(18):4625-4636, 2013.
- [J30] X. Wang, Z. Chen, P. Liu, and **Y. Gu**, Edge Balance Ratio: Power Law from Vertices to Edges in Directed Complex Networks, *IEEE Journal of Selected Topics in Signal Processing*, 7(2):184-194, 2013.
- [J31] Y. Cheng, **Y. Gu**, and X. Lin, Combined Power Control and Link Selection in Device-to-device Enabled Cellular Systems, *IET Communications*, 7(12):1221-1230, 2013.
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- [J53] X. Shen, G. Li, and Y. Gu, Compressed Principal Component Analysis, *submitted*.

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- [J55] W. Fu, J. Li, T. Li, **Y. Gu**, J. Wei, and G. Wang, A Graph-based Method for Data Reconstruction and Its Application in MODIS NDVI Data, *submitted*.
- [J56] X. Mao, K. Yuan, Y. Hu, **Y. Gu**, A. H. Sayed, and W. Yin, Walkman: A Communication-Efficient Random-Walk Algorithm for Decentralized Optimization, *submitted*.
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- [J59] G. Li, Q. Liu, and **Y. Gu**, Rigorous Restricted Isometry Property for Low-Dimensional Subspaces, *submitted*.
- [J60] C. Yang, X. Shen, H. Ma, B. Chen, **Y. Gu**, and H.C. So, Robust Sparse Recovery via Weakly Convex Regularization, *in revision*.
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- [C3] X. Shen, Y. Jiao, and **Y. Gu**, Subspace Data Visualization with Dissimilarity Based on Principal Angle, *IEEE Data Science Workshop (DSW)*, 16-20, June 4-6, 2018, EPFL, Lausanne, Switzerland.
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- [C5] Y. Liu and **Y. Gu**, A Novel Backbone Network Anomaly Detector via Clustering in Sketch Space, *IEEE Data Science Workshop (DSW)*, 31-35, June 4-6, 2018, EPFL, Lausanne, Switzerland.
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