Yuejie Chi

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RESEARCH INTERESTS

Theoretical and algorithmic foundations of data science, statistical signal processing, machine learning, large-scale optimization, sampling theory; applications in high-dimensional, multi-modal, and streaming data analysis, inverse problems, imaging science, sensing systems, and biomedical informatics.

EDUCATION

Princeton University, Princeton, NJ, United States

Ph.D. in Electrical Engineering, advisor: Prof. Robert Calderbank — Sep. 2012

Dissertation: "Exploitation of Geometry in Signal Processing and Sensing"

M.A. in Electrical Engineering — Sep. 2009

Tsinghua University, Beijing, P. R. China

B.Eng. in Electronic Engineering — Jul. 2007

EMPLOYMENTS

Carnegie Mellon University, Pittsburgh, PA — **Jan. 2018 - Present**

Associate Professor, Dept. of Electrical and Computer Engineering

Robert E. Doherty Career Development Professor in Electrical and Computer Engineering

Affiliate Faculty, Machine Learning Dept., School of Computer Science

The Ohio State University, Columbus, OH — **Sep. 2012 - Dec. 2017**

Assistant Professor (till Jun. 2017), Associate Professor with Tenure (Jun. - Dec. 2017)

Dept. of Electrical and Computer Engineering (75% FTE), College of Engineering

Dept. of Biomedical Informatics (25% FTE), College of Medicine

Princeton University, Princeton, NJ — **Sep. 2008 - Aug. 2012**

Research Assistant, Dept. of Electrical Engineering

SHORT-TERM APPOINTMENTS

Visiting Faculty Fellow

Information Directorate, **Air Force Research Lab** — Summer 2014

Visiting Scholar

Dept. of Electrical and Computer Engineering, **Duke University** — 2011 - 2012

Dept. of Electrical Engineering, **Stanford University** — Fall 2010

Dept. of Electrical and Computer Engineering, **Colorado State University** — Summer 2009

Research Intern

Imaging Group, **Mitsubishi Electric Research Lab** Summer 2011

Corporate Research and Development, **Qualcomm Inc.** Summer 2010

MAJOR HONORS & AWARDS

- **Plenary Speaker**, SIAM Conference on Imaging Science 2020
- **Pierre-Simon Laplace Early Career Technical Achievement Award**, IEEE Signal Processing Society 2019
  For contributions to high-dimensional structured signal processing.
- **Presidential Early Career Award for Scientists and Engineers (PECASE)**, The White House 2019
  The highest honor bestowed by the United States Government to outstanding scientists and engineers who are beginning their independent research careers and who show exceptional promise for leadership in science and technology.
- **Plenary Speaker**, Signal Processing with Adaptive Sparse Structured Representations Workshop 2019
- **Director of Research Early Career Grant**, Office of Naval Research 2019
- **Robert E. Doherty Career Development Professorship**, Carnegie Mellon University 2018
- **Faculty Early Career Development Program (CAREER) Award**, National Science Foundation 2017
- **Young Investigator Program (YIP) Award**, Office of Naval Research 2015
- **Young Investigator Program (YIP) Award**, Air Force Office of Scientific Research 2015
- **Young Author Best Paper Award**, IEEE Signal Processing Society 2013
- **Best Student Paper Award**, International Conference on Acoustics, Speech, and Signal Processing 2012

OTHER HONORS & AWARDS

- Senior Member, IEEE 2017
- Lumley Research Award, College of Engineering, The Ohio State University 2017
- NSF Junior Oberwolfach Fellowship, Mathematisches Forschungsinstitut Oberwolfach (MFO) 2015
- Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities 2014
- Air Force Summer Faculty Fellowship, Air Force Office of Scientific Research 2014
- Windows Azure for Research Award, Microsoft Research 2014
- SPARS Workshop Best Student Paper Award Finalist 2013
- Google Faculty Research Award, Google Inc. 2013
- CONNECT: Award for Networking, The Ohio State University 2013
- Roberto Padovani Scholarship, Qualcomm Inc. 2010
- Women In Machine Learning Workshop Scholarship 2009
- Grace Hopper Student Scholarship, CRA-W 2008 and 2009
- First Year Engineering Fellowship, Princeton University 2007
- Distinguished Honors Graduate, Tsinghua University 2007
- First-class Scholarship (top 2%), Tsinghua University 2003 - 2007
- First Prize in College Student Physics Contest, Beijing 2005
- Zhou Yukang Freshman Fellowship, Tsinghua University 2003

TEACHING EXPERIENCE

Instructor, Dept. of Electrical and Computer Engineering, Carnegie Mellon University

- ECE 18-461/661: Introduction to Machine Learning for Engineers (Senior/Graduate), Fall 2019, Summer 2020, Fall 2020;
- ECE 18-202: Mathematical Foundations of Electrical Engineering (Sophomore/Junior), Spring 2019, Spring 2020;
- ECE 18-898G: Special Topics in Signal Processing: Sparsity, Structure, and Inference (Graduate), Spring 2018;

Guest Lecturer, Carnegie Mellon University

- ECE 18-859G: Wireless Networks and Mobile Systems (Graduate), Fall 2019;

Instructor, Dept. of Electrical and Computer Engineering, The Ohio State University

- ECE 8201: Subspace Methods for High-Dimensional Data Analysis (Graduate), Fall 2015;
- ECE 6001: Probability and Random Variables (Graduate), Fall 2013;
- ECE 5000: Introduction to Analog and Digital Communications (Graduate & Undergraduate), Fall 2012, Spring 2014, Spring 2015, Fall 2017;
- ECE 3050: Signals and Systems (Undergraduate), Fall 2014, Spring 2017;
- ECE 8193: Independent Studies on Compressed Sensing, multiple offerings.

Guest Lecturer, Dept. of Biomedical Informatics, The Ohio State University

- BMI 5710: Introduction to Biomedical Informatics (Graduate), Fall 2016;
- BMI 7891: Seminars in Biomedical Informatics (Graduate), Fall 2014;

Assistant Instructor, Dept. of Electrical Engineering, Princeton University

- ECE 482: Digital Signal Processing, Spring 2009;

POSTDOCS AND STUDENTS SUPERVISION

Supervised Ph.D. Students:

1. Pedro Valdeira (Ph.D. Student, Fall 2020 - Present, co-advised with João Xavier and Claudia Soares in CMU-Portugal program): TBD.
2. Diogo M. Cardoso (Ph.D. Student, Fall 2019 - Present, co-advised with João Xavier in CMU-Portugal program): decentralized second-order methods.
3. Shicong Cen (Ph.D. Student, Fall 2019 - Present): reinforcement learning.
4. Laixi Shi (Ph.D. Candidate, Fall 2018 - Present): nonconvex optimization for high-dimensional signal estimation, and applications in sensing systems.
5. Boyue Li (Ph.D. Candidate, Fall 2018 - Present): distributed stochastic optimization.
6. Tian Tong (Ph.D. Candidate, Fall 2018 - Present): nonconvex low-rank matrix estimation.
7. Harlin Lee (Ph.D. Candidate, Fall 2017 - Present, co-advised with Jelena Kovačević): graph-structured and graph-regularized signal processing.
8. Vincent Monardo (Ph.D. Candidate, Fall 2016 - Present): inverse problems.

9. Haoyu Fu (Ph.D. 2019, co-advised with Yingbin Liang), "High-dimensional Statistical Inference from Coarse and Nonlinear Data: Algorithms and Guarantees". *Placement:* Research Scientist at Facebook.
10. Yuanxin Li (Ph.D. 2018), "Provable Algorithms for Scalable and Robust Low-Rank Matrix Recovery". *Placement:* Postdoc at CMU. Currently at Samsung.
11. Jiaqing Huang (Ph.D. 2016, co-advised with Jianjie Ma), "Super-Resolution Image Reconstruction for Single-Molecule Localization Microscopy". *Placement:* Software Engineer at Airbnb. Currently at Tencent Inc..

Supervised Postdoctoral Researchers:

1. Maxime Ferreira Da Costa (2018 - present): high-resolution parameter estimation and related topics.
2. Yuanxin Li (2018): nonconvex low-rank matrix estimation from incomplete measurements.
   Current: Senior Research Engineer at Samsung.
3. Myung Cho (2017 - 2018): blind calibration and structured subspace tracking.
   Current: Tenure-track Assistant Professor at Penn State Behrend.
4. Liming Wang (2015 - 2017): blind deconvolution and Poisson streaming data processing.
   Current: Senior Research Engineer at HERE Technologies.

PUBLICATIONS

Google Scholar Profile: `http://scholar.google.com/citations?user=h1NXfKYAAAAJ&hl=en`
Note: * indicates equal contribution. $^{\alpha}$ indicates alphabetical listing of authorships.

Preprints in Submission or in Preparation:

1. Y. Chen$^{\alpha}$, **Y. Chi**$^{\alpha}$, J. Fan$^{\alpha}$, and C. Ma$^{\alpha}$, "Spectral Methods: A Statistical Perspective", research monograph in preparation for *Foundations and Trends in Machine Learning*, white paper accepted.
2. S. Cen, C. Cheng, Y. Chen, Y. Wei, and **Y. Chi**, "Fast Global Convergence of Natural Policy Gradient Methods with Entropy Regularization", submitted to *Operations Research*.
3. T. Tong, C. Ma, and **Y. Chi**, "Accelerating Ill-Conditioned Low-Rank Matrix Estimation via Scaled Gradient Descent", preprint.
4. G. Li, Y. Wei, **Y. Chi**, Y. Gu, and Y. Chen, "Breaking the Sample Size Barrier in Model-Based Reinforcement Learning with a Generative Model", preprint.
5. G. Li, Y. Wei, **Y. Chi**, Y. Gu, and Y. Chen, "Sample Complexity of Asynchronous Q-Learning: Sharper Analysis and Variance Reduction", preprint.
6. C. Ma, Y. Li, **Y. Chi**, "Beyond Procrustes: Balancing-free Gradient Descent for Asymmetric Low-Rank Matrix Sensing", submitted to *IEEE Trans. on Signal Processing*, Apr. 2020.
7. Y. Li, C. Ma, Y. Chen and **Y. Chi**, "Nonconvex Matrix Factorization from Rank-One Measurements", *IEEE Trans. on Information Theory*, revised in Mar. 2020.
8. L. Shi and **Y. Chi**, "Manifold Gradient Descent Solves Multi-channel Sparse Blind Deconvolution Provably and Efficiently", submitted to *IEEE Trans. on Information Theory*, Nov. 2019.

Book Chapters:

1. **Y. Chi**, Y. Li, H. Zhang, and Y. Liang, "Median-Truncated Gradient Descent: A Robust and Scalable Approach for Nonconvex Signal Estimation", *Compressed Sensing and Its Applications*, pp. 237-261, Springer International Publishing, 2019.
2. A. Pezeshki, **Y. Chi**, L. L. Scharf, and E. K. Chong, "Compressed Sensing, Sparse Inversion, and Model Mismatch," *Compressed Sensing and Its Applications*, pp. 75-95, Springer International Publishing, 2015.
3. **Y. Chi**, A. Pezeshki, and R. Calderbank, "Complementary Waveforms for Sidelobe Suppression and Radar Polarimetry," *Principles of Waveform Diversity and Design*, SciTech Publishing Inc., pp. 828-843, 2010.

Peer-Reviewed Journals and Magazines:

1. B. Li, S. Cen, Y. Chen, and **Y. Chi**, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking and Variance Reduction", *Journal of Machine Learning Research*, accepted with minor revisions.

2. Y. Chen$^{\alpha}$, **Y. Chi**$^{\alpha}$, J. Fan$^{\alpha}$, C. Ma$^{\alpha}$, Y. Yan$^{\alpha}$, "Noisy Matrix Completion: Understanding Statistical Guarantees of Convex Relaxation via Nonconvex Optimization", *SIAM Journal on Optimization*, accepted.

3. C. Cai, G. Li, **Y. Chi**, H. V. Poor, and Y. Chen, "Subspace Estimation from Unbalanced and Incomplete Data Matrices: $\ell_{2,\infty}$ Statistical Guarantees", *Annals of Statistics*, in press.

4. M. Ferreira Da Costa and **Y. Chi**, "On the Stable Resolution Limit of Total Variation Regularization for Spike Deconvolution", *IEEE Trans. on Information Theory*, in press.

5. K. Ji, J. Tan, J. Xu and **Y. Chi**, "Learning Latent Features with Pairwise Penalties in Low-Rank Matrix Completion", *IEEE Trans. on Signal Processing*, vol. 68, pp. 4210-4225, 2020.

6. S. Cen, H. Zhang, **Y. Chi**, W. Chen and T.-Y. Liu, "Convergence of Distributed Stochastic Variance Reduced Methods without Sampling Extra Data", *IEEE Trans. on Signal Processing*, vol. 68, pp. 3976-3989, 2020.

7. H. Fu, **Y. Chi** and Y. Liang, "Guaranteed Recovery of One-Hidden-Layer Neural Networks via Cross Entropy", *IEEE Trans. on Signal Processing*, vol. 68, pp. 3225-3235, 2020.

8. Y. Li, **Y. Chi**, H. Zhang, and Y. Liang, "Non-convex Low-Rank Matrix Recovery with Arbitrary Outliers via Median-Truncated Gradient Descent", *Information and Inference: A Journal of the IMA*, vol. 9, no. 2, pp. 289-325, 2020.

9. C. Ma, K. Wang, **Y. Chi** and Y. Chen, "Implicit Regularization in Nonconvex Statistical Estimation: Gradient Descent Converges Linearly for Phase Retrieval, Matrix Completion and Blind Deconvolution", *Foundations of Computational Mathematics*, vol. 20, pp. 451-632, 2020.

10. H. Xiong, **Y. Chi**, B. Hu and W. Zhang, "Analytical Convergence Regions of Accelerated Gradient Descent in Nonconvex Optimization under Regularity Condition", *Automatica*, vol. 113, pp. 108715, 2020.

11. **Y. Chi** and M. Ferreira Da Costa, "Harnessing Sparsity over the Continuum: Atomic Norm Minimization for Super Resolution", *IEEE Signal Processing Magazine*, vol. 37, no. 2, pp. 39-57, 2020.

12. R. Varma*, H. Lee*, J. Kovačević and **Y. Chi**, "Vector-valued Graph Trend Filtering with Non-convex Penalties", *IEEE Transactions on Signal and Information Processing over Networks*, vol. 6, no. 1, pp. 48-62, 2020.

13. **Y. Chi**, Y. M. Lu and Y. Chen, "Nonconvex Optimization meets Matrix Factorization: An Overview", *IEEE Trans. on Signal Processing*, vol. 67, no. 20, pp. 5239-5269, 2019, **invited overview article**.

14. Y. Chen$^{\alpha}$, **Y. Chi**$^{\alpha}$, J. Fan$^{\alpha}$ and C. Ma$^{\alpha}$, "Gradient Descent with Random Initialization: Fast Global Convergence for Nonconvex Phase Retrieval", *Mathematical Programming*, vol. 176, no. 1, pp. 5-37, 2019.

15. A. P. Shikhaliev, L. C. Potter, and **Y. Chi**, "Low-Rank Structured Covariance Matrix Estimation", *IEEE Signal Processing Letters*, vol. 26, no. 5, pp. 700-704, 2019.

16. Y. Li and **Y. Chi**, "Stable Separation and Super-Resolution of Mixture Models," *Applied and Computational Harmonic Analysis*, vol. 46, no. 1, pp. 1-39, 2019.

17. H. Zhang, **Y. Chi**, and Y. Liang, "Median-Truncated Nonconvex Approach for Phase Retrieval with Outliers", *IEEE Trans. on Information Theory*, vol. 64, no. 11, pp. 7287-7310, 2018.

18. **Y. Chi**, "Low-Rank Matrix Completion [Lecture Notes]", *IEEE Signal Processing Magazine*, vol. 35, no. 5, pp. 178-181, 2018.

19. L. Balzano, **Y. Chi**, and Y. M. Lu, "Streaming PCA and Subspace Tracking: The Missing Data Case", *Proceedings of the IEEE*, vol. 106, no. 8, pp. 1293-1310, 2018.

20. Y. Chen$^{\alpha}$ and **Y. Chi**$^{\alpha}$, "Harnessing Structures in Big Data via Guaranteed Low-Rank Matrix Estimation: Recent theory and fast algorithms via convex and nonconvex optimization", *IEEE Signal Processing Magazine*, vol. 35, no. 4, pp. 14-31, 2018.

21. H. Fu and **Y. Chi**, "Quantized Spectral Compressed Sensing: Cramer-Rao Bounds and Recovery Algorithms", *IEEE Trans. on Signal Processing*, vol. 66, no. 12, pp. 3268-3279, 2018.

22. L. Wang and **Y. Chi**, "Stochastic Approximation and Memory-Limited Subspace Tracking for Poisson Streaming Data", *IEEE Trans. on Signal Processing*, vol. 66, no. 4, pp. 1051-1064, 2018.

23. H. Zhang, Y. Zhou, Y. Liang and **Y. Chi**, "A Nonconvex Approach for Phase Retrieval: Reshaped Wirtinger Flow and Incremental Algorithms", *Journal of Machine Learning Research*, vol. 18, no. 141, pp. 1-35, 2017.

24. J. Huang, M. Sun, J. Ma and **Y. Chi**, "Super-Resolution Image Reconstruction for High-Density 3D Single-Molecule Microscopy," *IEEE Trans. on Computational Imaging*, vol. 3, no. 4, pp. 763-773, 2017.

25. **Y. Chi** and H. Fu, "Subspace Learning From Bits," *IEEE Trans. on Signal Processing*, vol. 65, no. 17, pp. 4429-4442, 2017.

26. Y. Li, Y. Sun and **Y. Chi**, "Low-Rank Positive Semidefinite Matrix Recovery from Corrupted Rank-One Measurements", *IEEE Trans. on Signal Processing*, vol. 65, no. 2, pp. 397-408, 2017.

27. L. Wang and **Y. Chi**, "Blind Deconvolution from Multiple Sparse Inputs", *IEEE Signal Processing Letters*, vol. 23, no. 10, pp. 1384-1388, 2016.

28. **Y. Chi** and Y. M. Lu, "Kaczmarz Method for Solving Quadratic Equations", *IEEE Signal Processing Letters*, vol. 23, no. 9, pp. 1183-1187, 2016.

29. **Y. Chi**, "Guaranteed Blind Sparse Spikes Deconvolution via Lifting and Convex Optimization", *IEEE Journal of Selected Topics in Signal Processing*, vol. 10, no. 4, pp. 782-794, 2016.

30. Y. Li and **Y. Chi**, "Off-the-Grid Line Spectrum Estimation and Denoising with Multiple Measurement Vectors", *IEEE Trans. on Signal Processing*, vol. 64, pp. 1257-1269, 2016.

31. Y. Li, **Y. Chi**, C.-H. Huang, and L. Dolecek, "Orthogonal Matching Pursuit on Faulty Circuits", *IEEE Trans. on Communications*, vol. 63, pp. 2541-2554, 2015.

32. J. Huang*, K. Gumpper, **Y. Chi**, M. Sun*, and J. Ma, "Fast Two-dimensional Super-resolution Image Reconstruction Algorithm for Ultra-high Emitter Density", *Optics Letters*, vol. 40, pp. 2989-2992, 2015.

33. Y. Chen, **Y. Chi**, and A. J. Goldsmith, "Exact and Stable Covariance Estimation from Quadratic Sampling via Convex Programming," *IEEE Trans. on Information Theory*, vol. 61, pp. 4034-4059, 2015.

34. J. Huang*, M. Sun*, K. Gumpper, **Y. Chi**, and J. Ma, "3D Multifocus Astigmatism and Compressed Sensing (3D MACS) Based Superresolution Reconstruction", *Biomedical Optics Express*, vol. 6, pp. 902-917, 2015.

35. **Y. Chi**, and Y. Chen, "Compressive Two-Dimensional Harmonic Retrieval via Atomic Norm Minimization," *IEEE Trans. on Signal Processing*, vol. 63, pp. 1030-1042, 2015.

36. Y. Chen and **Y. Chi**, "Robust Spectral Compressed Sensing via Structured Matrix Completion," *IEEE Trans. on Information Theory*, vol. 60, pp. 6576-6601, 2014.

37. **Y. Chi** and F. Porikli, "Classification and Boosting with Multiple Collaborative Representations," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 36, pp. 1519-1531, 2014.

38. **Y. Chi**, Y. C. Eldar, and R. Calderbank, "PETRELS: Parallel Subspace Estimation and Tracking by Recursive Least Squares from Partial Observations," *IEEE Trans. on Signal Processing*, vol. 61, pp. 5947-5959, 2013.

39. **Y. Chi** and B. L. Anderson, "Resolving Spatial Modes of Lasers via Matrix Completion," *Optics Letters*, vol. 38, pp. 3957-3960, 2013.

40. **Y. Chi**, L. L. Scharf, A. Pezeshki, and R. Calderbank, "Sensitivity of Basis Mismatch to Compressed Sensing," *IEEE Trans. on Signal Processing*, vol. 59, pp. 2182-2195, 2011. **IEEE Signal Processing Society Young Author Best Paper Award.**

41. **Y. Chi**, A. Gomaa, N. Al-Dhahir, and R. Calderbank, "Training Signal Design and Tradeoffs for Spectrally-Efficient Multi-User MIMO-OFDM Systems," *IEEE Trans. on Wireless Communications*, vol. 10, pp. 2234-2245, 2011.

Highly-Selective Peer-Reviewed Conference Proceedings in Computer Science (8 pages):

1. B. Li, S. Cen, Y. Chen and **Y. Chi**, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking and Variance Reduction", in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Palermo, Sicily, Italy, Jun. 2020.
2. Y. Li, C. Ma, Y. Chen and **Y. Chi**, "Nonconvex Matrix Factorization from Rank-One Measurements", in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Okinawa, Japan, Apr. 2019.
3. C. Ma, K. Wang, **Y. Chi** and Y. Chen, "Implicit Regularization in Nonconvex Statistical Estimation: Gradient Descent Converges Linearly for Phase Retrieval and Matrix Completion," in *International Conference on Machine Learning (ICML)*, Stockholm, Sweden, Jul. 2018.
4. H. Zhang, **Y. Chi** and Y. Liang, "Provable Non-convex Phase Retrieval with Outliers: Median Truncated Wirtinger Flow", in *International Conference on Machine Learning (ICML)*, New York, NY, Jun. 2016.
5. Y. Chen and **Y. Chi**, "Spectral Compressed Sensing via Structured Matrix Completion," in *International Conference on Machine Learning (ICML)*, Atlanta, GA, Jun. 2013.
6. **Y. Chi** and F. Porikli, "Connecting the Dots in Multi-Class Classification: From Nearest Subspace to Collaborative Representation," in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Providence, RI, Jun. 2012.

Peer-Reviewed Conference and Workshop Proceedings (4–6 pages):

1. K. Ji, J. Tan, J. Xu and **Y. Chi**, "Learning Latent Features with Pairwise Penalties in Low-Rank Matrix Completion", in *IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*, Hangzhou, China, Jun. 2020, **invited paper**.
2. L. Shi and **Y. Chi**, "Manifold Gradient Descent Solves Multi-channel Sparse Blind Deconvolution Provably and Efficiently", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, Spain, May 2020.
3. M. Ferreira Da Costa and **Y. Chi**, "Support Stability of Spike Deconvolution via Total Variation Minimization", in *Conference on Information Sciences and Systems (CISS)*, Princeton, NJ, Mar. 2020, **invited paper**.
4. M. Ferreira Da Costa and **Y. Chi**, "Self-Calibrated Super Resolution", in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2019, **invited paper**.
5. C. Ma, Y. Li, and **Y. Chi**, "Beyond Procrustes: Balancing-free Gradient Descent for Asymmetric Low-Rank Matrix Sensing", in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2019.
6. L. Shi, S. Pan, M. Mirshekari, J. Fagert, **Y. Chi**, H. Y. Noh, and P. Zhang, "Device-free Multiple People Localization through Floor Vibration", in *First ACM Workshop on Device-Free Human Sensing (DFHS)*, New York, NY, Nov. 2019.
7. H. Fu, **Y. Chi**, and Y. Liang, "Local Geometry of Cross Entropy Loss in Learning One-Hidden-Layer Neural Networks", in *IEEE International Symposium on Information Theory (ISIT)*, Paris, France, Jul. 2019.
8. M. Cho and **Y. Chi**, "Shift-Invariant Subspace Tracking with Missing Data", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019, **invited paper**.
9. V. Monardo and **Y. Chi**, "On the Sensitivity of Spectral Initialization for Noisy Phase Retrieval", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
10. V. Monardo, Y. Li and **Y. Chi**, "Solving Quadratic Equations via Amplitude-Based Nonconvex Optimization", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
11. R. Varma*, H. Lee*, **Y. Chi** and J. Kovačević, "Improving Graph Trend Filtering with Non-convex Penalties", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
12. H. Xiong, **Y. Chi**, B. Hu, and W. Zhang, "Convergence analysis of accelerated first-order methods for phase retrieval", in *23rd International Symposium on Mathematical Theory of Networks and Systems (MTNS)*, Hong Kong, Jul. 2018.

13. M. Cho, W. Liao, and **Y. Chi**, "A Non-convex Approach to Joint Sensor Calibration and Spectrum Estimation", in *IEEE Statistical Signal Processing Workshop (SSP)*, Freiburg, Germany, Jun. 2018.

14. H. Fu, P. Wang, T. Koike-Akino, P. V. Orlik, and **Y. Chi**, "Compressed Terahertz Imaging of Binary Reflectance with Variational Bayesian Inference", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Calgary, Canada, Apr. 2018.

15. L. Wang and **Y. Chi**, "Memory-Limited Stochastic Approximation for Poisson Subspace Tracking", in *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Curacao, Dutch Antilles, Dec. 2017, **invited paper**.

16. H. Fu and **Y. Chi**, "Compressive Spectrum Estimation using Quantized Measurements", in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2017, **invited paper**.

17. **Y. Chi**, "Convex Relaxations of Spectral Sparsity for Robust Super-Resolution and Line Spectrum Estimation", in *SPIE Wavelets and Sparsity XVII*, San Diego, CA, Aug. 2017, **invited paper**.

18. Y. Li, **Y. Chi**, H. Zhang and Y. Liang, "Non-Convex Low-Rank Matrix Recovery from Corrupted Random Linear Measurements", in *International Conference on Sampling Theory and Applications (SampTA)*, Tallinn, Estonia, Jul. 2017, **invited paper**.

19. Y. Li, A. Pezeshki, L. L. Scharf, and **Y. Chi**, "Performance Bounds for Modal Analysis using Sparse Linear Arrays", in *SPIE Compressive Sensing VI: From Diverse Modalities to Big Data Analytics*, Anaheim, CA, Apr. 2017.

20. H. Fu and **Y. Chi**, "Principal Subspace Estimation for Low-rank Toeplitz Covariance Matrices with Binary Sensing", in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2016.

21. **Y. Chi**, "Kronecker Covariance Sketching for Spatial-Temporal Data", in *European Signal Processing Conference (EUSIPCO)*, Budapest, Hungary, Aug.-Sep. 2016, **invited paper**.

22. J. Huang, M. Sun, and **Y. Chi**, "Super-Resolution Image Reconstruction For High-Density 3D Single-Molecule Microscopy", in *International Symposium on Biomedical Imaging (ISBI)*, Prague, Czech Republic, Apr. 2016.

23. Y. Sun, Y. Li, and **Y. Chi**, "Outlier-Robust Recovery of Low-Rank Positive Semidefinite Matrices From Magnitude Measurements", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Shanghai, China, Mar. 2016.

24. **Y. Chi**, "Stable Blind Spikes Deconvolution", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Shanghai, China, Mar. 2016.

25. Y. Li, Y. He, **Y. Chi** and Y. M. Lu, "Blind Calibration of Multi-Channel Samplers using Sparse Recovery", in *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Cancun, Mexico, Dec. 2015, **invited paper**.

26. **Y. Chi** and Y. Wu, "Change-Point Estimation of High-Dimensional Streaming Data via Sketching", in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2015.

27. **Y. Chi**, "Blind Super-resolution of Sparse Spike Signals", in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2015.

28. Y. Li and **Y. Chi**, "Super-resolution of Mutually Interfering Signals", in *International Symposium on Information Theory (ISIT)*, Hong Kong, Jun. 2015.

29. Y. Li and **Y. Chi**, "Parameter Estimation for Mixture Models via Convex Optimization", in *International Conference on Sampling Theory and Applications (SAMPTA)*, Washington D.C., May 2015.

30. Y. Jiang and **Y. Chi**, "Covariance Tracking from Sketches of Rapid Data Streams", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, April 2015.

31. **Y. Chi**, "Compressive Graph Clustering via Semidefinite Programming," in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, April 2015.

32. **Y. Chi**, "One-bit Principal Subspace Estimation", in *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Atlanta, GA, Dec. 2014.

33. Y. Li and **Y. Chi**, "Compressive Parameter Estimation With Multiple Measurement Vectors via Structured Low-Rank Covariance Estimation," in *Statistical Signal Processing Workshop (SSP)*, Gold Coast, Australia, Jul. 2014.

34. Y. Chen, **Y. Chi** and A. J. Goldsmith, "Universal and Robust Covariance Estimation via Convex Programming," in *International Symposium on Information Theory (ISIT)*, Honolulu, HI, Jun. 2014.

35. **Y. Chi**, "Joint Sparsity Recovery for Spectral Compressed Sensing", in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.

36. Y. Chen, **Y. Chi** and A. J. Goldsmith, "Estimation of Simultaneously Structured Covariance Matrices from Quadratic Measurements," in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.

37. **Y. Chi**, "Sparse MIMO Radar via Structured Matrix Completion," in *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Austin, TX, Dec. 2013, **invited paper**.

38. Y. Chen and **Y. Chi**, "Compressive Recovery of 2-D Off-Grid Frequencies," in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2013.

39. **Y. Chi**, "Nearest Subspace Classification with Missing Data," in *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2013.

40. **Y. Chi** and R. Calderbank, "Knowledge-Enhanced Matching Pursuit," in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May. 2013.

41. P. Pakrooh, L. L. Scharf, A. Pezeshki, and **Y. Chi**, "Analysis of Fisher Information and the Cramer-Rao Bound for Nonlinear Parameter Estimation after Compressed Sensing," in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May. 2013.

42. **Y. Chi** and R. Calderbank, "Coherence-Based Performance Guarantees for Orthogonal Match Pursuit," in *Allerton Conference on Control, Communications and Computing*, Allerton, IL, Oct. 2012.

43. Y. Xie, **Y. Chi**, L. Applebaum, and R. Calderbank, "Compressive Demodulation of Mutually Interfering Signals," in *IEEE Statistical Signal Processing Workshop*, Ann Arbor, MI, Aug. 2012.

44. **Y. Chi**, Y. C. Eldar, and R. Calderbank, "PETReLS: Subspace Estimation and Tracking from Partial Observations," in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Kyoto, Japan, Mar. 2012, **Best Student Paper Award**.

45. H. Garudadri, **Y. Chi**, S. Baker, S. Majumdar, P. K. Baheti, D. Ballard, "Diagnostic Grade Wireless ECG Monitoring," in *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Boston, MA, Aug.-Sep. 2011.

46. A. Gomaa, **Y. Chi**, N. Al-Dhahir, and R. Calderbank, "On Training Signal Design for Multi-User MIMO-OFDM: Performance Analysis and Tradeoffs," in *IEEE Vehicular Technology Conference (VTC)*, San Francisco, CA, Sep. 2011.

47. **Y. Chi**, A. Gomaa, N. Al-Dhahir, and R. Calderbank, "MMSE-Optimal Training Sequences for Spectrally-Efficient Multi-User MIMO-OFDM Systems," in *European Signal Processing Conference (EUSIPCO)*, Barcelona, Spain, Aug.-Sep. 2011.

48. **Y. Chi**, Y. Wu, and R. Calderbank, "Regularized Blind Detection for MIMO Communications," in *International Symposium on Information Theory (ISIT)*, Austin, TX, Jun. 2010.

49. Y. Wu, **Y. Chi**, and R. Calderbank, "Bayesian Compressed Sensing for Image Separation," in *International Conference on Image Processing (ICIP)*, Hong Kong, Sep. 2010.

50. **Y. Chi**, A. Pezeshki, L. L. Scharf, and R. Calderbank, "Sensitivity to Basis Mismatch in Compressed Sensing," in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Dallas, TX, Mar. 2010.

51. **Y. Chi**, R. Calderbank, and A. Pezeshki, "Golay Complementary Waveforms for Sparse Delay-Doppler Radar Imaging," in *International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Aruba, Dutch Antilles, Dec. 2009, **invited paper**.

52. **Y. Chi**, L. L. Scharf, A. Pezeshki, and R. Calderbank, "The Sensitivity to Basis Mismatch of Compressed Sensing for Spectrum Analysis and Beamforming," in *Workshop on Defense Applications of Signal Processing (DASP)*, Lihue, HI, Oct. 2009.

53. **Y. Chi**, A. Pezeshki, R. Calderbank, and S. Howard, "Range Sidelobe Suppression in a Desired Doppler Band," in *International Waveform Diversity & Design Conference (WDD)*, Orlando, FL, Feb. 2009, **invited paper**.

Peer-Reviewed Conference and Workshop Abstracts (1–4 pages):

1. L. Shi, Y. Zhang, S. Pan, and **Y. Chi**, "Data Quality-Informed Multiple Occupant Localization using Floor Vibration Sensing", in *International Workshop on Mobile Computing Systems and Applications (HotMobile)*, Austin, TX, Mar. 2020.

2. B. Li, S. Cen, Y. Chen, and **Y. Chi**, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking", in *NeurIPS Workshop on Federated Learning for Data Privacy and Confidentiality*, Vancouver, BC, Canada, Dec. 2019.

3. S. Cen, H. Zhang, **Y. Chi**, W. Chen and T.-Y. Liu, "Convergence and Regularization of Distributed Stochastic Variance Reduced Methods", in *NeurIPS Workshop on Federated Learning for Data Privacy and Confidentiality*, Vancouver, BC, Canada, Dec. 2019.

4. Y. Chen, **Y. Chi**, J. Fan and C. Ma, "Gradient Descent with Random Initialization: Fast Global Convergence for Nonconvex Phase Retrieval", in *ICML Workshop on Modern Trends in Nonconvex Optimization for Machine Learning*, Stockholm, Sweden, Jul. 2018.

5. S. Saqueb, V. Monardo, **Y. Chi**, and K. Sertel, "Phase-retrieval in Single-pixel THz Imaging via Reshaped Wirtinger Flow", in *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI)*, Boston, MA, Jul. 2018.

6. H. Zhang, Y. Liang, and **Y. Chi**, "Incremental Reshaped Wirtinger Flow and Its Connection to Kaczmarz Method", in *NeurIPS Workshop on Nonconvex Optimization for Machine Learning*, Barcelona, Spain, Dec. 2016.

7. Y. Xie, **Y. Chi** and R. Calderbank, "Low-Rank Matrix Recovery Under Poisson Noise," in *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Austin, TX, Dec. 2013.

8. Y. Chen and **Y. Chi**, "Compressive Harmonic Retrieval via Matrix Completion," in *Signal Processing with Adaptive Sparse Structured Representations Workshop (SPARS)*, Lausanne, Switzerland, Jul. 2013, **Best Student Paper Award Finalist**.

Editorials:

1. N. Vaswani, **Y. Chi**, T. Bouwmans, "Rethinking PCA for Modern Data Sets: Theory, Algorithms, and Applications", in *Proceedings of the IEEE*, vol. 106, no. 8, pp. 1274-1276, Aug. 2018.

PATENTS

1. P. K. Baheti, H. Garudadri, and **Y. Chi**, "Method and Apparatus for Low Complexity Compression of Signals Employing Differential Operation for Transient Segment Detection", US Patent No. 9,356,731, 5/31/2016.

2. H. Garudadri, P. K. Baheti, and **Y. Chi**, "Method and Apparatus for Low Complexity Compression of Signals", US Patent No. 9,136,980, 09/15/2015.

TALKS AND PRESENTATIONS

Keynote and plenary talks at workshops and conferences:

1. "Nonconvex Low-Rank Matrix Estimation: Geometry, Robustness, and Acceleration", SIAM Conference on Imaging Science, Virtual Presentation, Jul. 2020.

2. "Geometry and Regularization in Nonconvex Low-Rank Estimation", The Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop, Toulouse, France, Jul. 2019.

Tutorials and invited lectures:

1. "Nonconvex Optimization for High-Dimensional Signal Estimation: Spectral and Iterative Methods", with Y. Chen and C. Ma, 3-hour tutorial, European Signal Processing Conference (EUSIPCO), Amsterdam, the Netherlands, Aug. 2020.
2. "Taming Nonconvexity in Information Science", with Y. Chen, 3-hour tutorial, The IEEE Information Theory Workshop (ITW), Guangzhou, China, Nov. 2018.
3. "Special Topics on Low-Rank Estimation", 1-day tutorial lectures, Dept. of Electronic Science, Xiamen University, Xiamen, China, Jun. 2018.
4. "Recent Advances in Nonconvex Methods for High-Dimensional Estimation", with Y. Chen and Y. M. Lu, 3-hour tutorial, The IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Apr. 2018.
5. "Convex Optimization Techniques for Super-resolution Parameter Estimation", with G. Tang, 3-hour tutorial, The IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Shanghai, Mar. 2016.
6. "Compressive Parameter Estimation: The Good, The Bad, and The Ugly", with A. Pezeshki, 3-hour tutorial, IEEE Statistical Signal Processing Workshop (SSP), Gold Coast, Australia, Jul. 2014.

Colloquia, seminars and invited talks in single-track workshops:

1. "Fast Global Convergence of Natural Policy Gradient Methods with Entropy Regularization", LMS-Bath Symposium on the Mathematics of Machine Learning, Virtual Presentation, Aug. 2020.
2. "Nonconvex Low-Rank Matrix Estimation: Geometry, Robustness, and Acceleration", EECS Colloquium, Oregon State University, Virtual Presentation, Apr. 2020.
3. "Distributed Stochastic Optimization with Variance Reduction and Gradient Tracking", The Center for Machine Learning, Georgia Institute of Technology, Atlanta, Jan. 2020.
4. "Distributed Stochastic Optimization with Variance Reduction and Gradient Tracking", TBSI Workshop on Data Science, Shenzhen, China, Dec. 2019.
5. "Local Geometry of One-hidden-layer Neural Networks", Workshop on Deep Learning and Low-dimensional Models, Columbia University, NY, Nov. 2019.
6. "Distributed Stochastic Optimization with Variance Reduction and Gradient Tracking", Berkeley Information Systems Seminar (BLISS), University of California, Berkeley, Nov. 2019.
7. "Distributed Stochastic Optimization with Variance Reduction and Gradient Tracking", Digital Technology Center Seminar Series, University of Minnesota, Minneapolis, MN, Oct. 2019.
8. "Nonconvex Low-Rank Estimation: Geometry, Implicit Regularization, and Robustness", Department of Mathematics, Rensselaer Polytechnic Institute, Troy, NY, Sep. 2019.
9. "Geometry and Regularization in Nonconvex Low-Rank Matrix Estimation", WNCG Seminar Series, University of Texas, Austin, Feb. 2019.
10. "Geometry and Regularization in Nonconvex Statistical Estimation", London Workshop for Non-Convex Optimization and Matrix Factorization, London, United Kingdom, Sep. 2018.
11. "Blind Deconvolution with Geometric Priors", ShanghaiTech Workshop on Information, Learning, and Decision (SWILD), Shanghai, P. R. China, Jul. 2018.
12. "Geometry and Regularization in Nonconvex Statistical Estimation", Program on Bridging Mathematical Optimization, Information Theory, and Data Science, Princeton Center for Statistics and Machine Learning, Princeton, NJ, May 2018.
13. "Implicit Regularization in Nonconvex Statistical Estimation", Department of Mathematics, Peking University, Beijing, P. R. China, May 2018.

14. “Implicit Regularization in Nonconvex Statistical Estimation”, Microsoft Research Asia, Beijing, P. R. China, May 2018.

15. “Implicit Regularization in Nonconvex Statistical Estimation”, Electrical Engineering Seminar Series, Harvard University, Boston, MA, Mar. 2018.

16. “Implicit Regularization in Nonconvex Statistical Estimation”, Electrical Engineering Colloquia, Pennsylvania State University, University Park, PA, Mar. 2018.

17. “Implicit Regularization in Nonconvex Statistical Estimation”, Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, Mar. 2018.

18. “Nonconvex Phase Retrieval with Random Gaussian Measurements”, International Matheon Conference on Compressed Sensing and its Applications, Technical University Berlin, Germany, Dec. 2017.

19. “Recent Progress on Algorithmic Phase Retrieval”, AFRL ATR Center Summer Program, Wright State University, Dayton, OH, Jun. 2017.

20. “Exploiting Geometry for High-Resolution Source Localization”, Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, May 2017.

21. “Exploiting Geometry for High-Resolution Source Localization”, Department of Electrical Engineering & Computer Science, University of Michigan, Ann Arbor, MI, Mar. 2017.

22. “Exploiting Geometry for High-Resolution Source Localization”, The Preston M. Green Department of Electrical & Systems Engineering, Washington University in St. Louis, St. Louis, MO, Feb. 2017.

23. “Solving Corrupted Systems of Quadratic Equations, Provably”, *Shannon Centennial Lecture Series*, Michigan Institute for Data Science (MIDAS), University of Michigan, Ann Arbor, MI, Nov. 2016.

24. “Solving Corrupted Systems of Quadratic Equations, Provably”, Department of Electrical and Computer Engineering, Michigan State University, East Lancing, MI, Nov. 2016.

25. “Solving Corrupted Quadratic Equations, Provably”, London Workshop on Sparse Signal Processing, Imperial College London, London, United Kingdom, Sep. 2016.

26. “Covariance Estimation and Super-resolution for High-dimensional Streaming Data”, Sensor Directorate, Air Force Research Lab, Dayton, OH, Jan. 2016.

27. “Sparse Inversion of Mixture and Bilinear Models via Convex Optimization”, Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, Oct. 2015.

28. “Blind Spikes Deconvolution with Lifting”, Applied Harmonic Analysis and Sparse Approximation Workshop, Oberwolfach, Germany, Aug. 2015.

29. “Covariance Sketching via Quadratic Sampling”, Department of Electronics Engineering, Tsinghua University, Beijing, P. R. China, Jun. 2015.

30. “Parameter Estimation in Mixture and Bilinear Models via Convex Optimization”, Department of Electrical and Computer Engineering, George Mason University, Washington D.C., May 2015.

31. “Sparse Parameter Estimation via Structured Matrix Completion”, University Lecturer’s Program, Auburn University at Montgomery, AL, Mar. 2015.

32. “Sparsity meets Matrix Pencil”, Compressive Sensing Study Group, Department of Electrical Engineering and Computer Science, Colorado School of Mines, Golden, CO, Dec. 2014.

33. “Sparsity as a Prior in Biomedical Data Analysis”, Faculty Seminar, Department of Biomedical Informatics, The Ohio State University, Columbus, OH. Dec. 2014.

34. “Tracking and Sketching of Covariance Structures For High-dimensional Streaming Data”, Information Directorate, Air Force Research Lab, Rome, NY, Jul. 2014.

35. “Combining Sparsity with Physically-Meaningful Constraints in Sparse Parameter Estimation”, Coordinated Science Laboratory Seminar, University of Illinois at Urbana Champaign, Urbana, IL, Mar. 2014.

36. "Combining Sparsity with Physically-Meaningful Constraints in Sparse Parameter Estimation", Information Science Laboratory Colloquium, Stanford University, Palo Alto, CA, Mar. 2014.
37. "Exact and Stable Covariance Estimation from Quadratic Sampling via Convex Programming," AI Seminar, Department of Computer Science and Engineering, The Ohio State University, Columbus, OH, Oct. 2013.
38. "Robust Spectral Compressed Sensing via Structured Matrix Completion", Department of Electrical Engineering and Computer Science Seminar, Syracuse University, Syracuse, NY, Mar. 2013.
39. "Robust Spectral Compressed Sensing via Structured Matrix Completion", Department of Electrical and Computer Engineering Seminar, Duke University, Durham, NC, Mar. 2013.
40. "Geometry as a Prior in Signal Processing", Shanghai Jiao Tong Univeristy-University of Michigan Joint Institute, Shanghai, China, Apr. 2012.
41. "Geometry as a Prior in Signal Processing", Department of Electrical and Computer Engineering Seminar, The Ohio State University, Columbus, OH, Apr. 2012.
42. "Geometry as a Prior in Signal Processing", Information Science and Networks Seminar, Cornell University, Ithaca, NY, Apr. 2012.
43. "Geometry as a Prior in Signal Processing", Department of Electrical and Computer Engineering Seminar, Colorado State University, Fort Collins, CO, Mar. 2012.
44. "Geometry as a Prior in Signal Processing", Department of Electrical Engineering Seminar, University of Southern California, Los Angeles, CA, Feb. 2012.
45. "PETRELS: Parallel Subspace Estimation and Tracking by Recursive Least Squares from Partial Observations", Network and Imaging Science Laboratory Seminar, Duke University, Durham, NC, Oct. 2011.
46. "Sense and Sensitivity", Wireless Sensor Laboratory Seminar, Stanford University, Palo Alto, CA, Nov. 2010.
47. "Sense and Sensitivity", Department of Electrical and Computer Engineering Seminar, Colorado State University, Fort Collins, CO, Sep. 2009.

Invited short talks at workshops and conferences (non-proceedings):

1. "Distributed Stochastic Optimization with Variance Reduction", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2019.
2. "Noisy Matrix Completion: Understanding Statistical Guarantees of Convex Relaxation via Nonconvex Optimization", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2019.
3. "Implicit Regularization in Nonconvex Low-Rank Matrix Completion", Mini-symposium on recent advances in convex and non-convex optimization for machine learning, The Sixth International Conference on Continuous Optimization (ICCOPT), Berlin, Aug. 2019.
4. "Distributed Stochastic Optimization with Variance Reduction", Machine Learning in Science and Engineering Symposium (MLSE), Georgia Tech, Atlanta, Jun. 2019.
5. "Stochastic and Accelerated Gradient Descent for Non-convex Phase Retrieval", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Oct. 2018.
6. "Nonconvex Matrix Factorization from Rank-One Measurements", The 56rd Annual Allerton Conference on Communication, Control, and Computing, Monticello, Illinois, Oct. 2018.
7. "Achieving Statistical and Computational Efficiency for Quadratic Inverse Problems via Gradient Descent", The 52nd Conference on Information Sciences and Systems (CISS), Princeton, NJ, Mar. 2018.
8. "Median-truncated gradient descent for robust low-rank estimation", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2017.
9. "Provably robust and fast low-rank matrix recovery with outliers", Mini-symposium on compressed sensing and matrix completion, Meeting of the International Linear Algebra Society (ILAS), Ames, IA, Jul. 2017.

10. “Super resolution of parametric mixture models and its application in single-molecule localization microscopy”, Mini-symposium on super-resolution in imaging and inverse problems, Applied Inverse Problems (AIP) Conference, Hangzhou, China, May 2017.
11. “Provably robust phase retrieval via median-truncated gradient descent”, Mini-symposium on nonconvex optimization in data analysis, SIAM Conference on Optimization (OP), Vancouver, Canada, May 2017.
12. “Estimating subspaces and spectrum from 1-bit measurements”, Information Theory and Applications Workshop (TA), La Jolla, CA, Feb. 2017.
13. “Convex Relaxations of Structured Low-Rank Modeling for Sparse Inversion”, Forty-Six Years (and counting) of Statistical Signal Processing - A workshop honoring the career contributions of Louis Scharf, Asilomar, CA, Nov. 2015.
14. “Guaranteed Blind Sparse Spikes Deconvolution”, The 53rd Annual Allerton Conference on Communication, Control, and Computing, Monticello, Illinois, Sep.-Oct. 2015.
15. “Super-resolution of Mutually Interfering Signals”, Information Theory and Applications Workshop (ITA), La Jolla, CA, Feb. 2015.
16. “Recovering Geometry from Incomplete Data”, OSU-Battelle Joint Workshop on Big Data and Cyber Security, The Ohio State University, Columbus, OH, Nov. 2012.
17. “Compressive Blind Source Separation”, Women in Machine Learning workshop, Vancouver, Canada, Dec. 2009.

PROFESSIONAL SERVICES

Elected Memberships in Professional Societies:

- *Elected Member*, Sensor Array and Multichannel Signal Processing (SAM) Technical Committee, IEEE Signal Processing Society, Jan. 2019 - Dec. 2021;
- *Member*, Data Science Initiative, IEEE Signal Processing Society, Jul. 2020 - Dec. 2021;
- *Elected Member*, Signal Processing Theory and Methods (SPTM) Technical Committee, IEEE Signal Processing Society, Jan. 2016 - Dec. 2018;
- *Elected Member*, Machine Learning for Signal Processing (MLSP) Technical Committee, IEEE Signal Processing Society, Jan. 2016 - Dec. 2018;
- *Senior Member*, IEEE, IEEE Signal Processing Society, and IEEE Information Theory Society;

Editorships:

- Associate Editor, IEEE Transactions on Signal Processing, 2018 - present.
- Co-organizer and Guest Editor, Special Issue on “Rethinking PCA for Modern Data Sets: Theory, Algorithms, and Applications”, Proceedings of the IEEE, 2018.

Conference, Workshop and Symposium Organizer/Chair:

- Student and Young Professional Activities Co-Chair, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Kos, Greece, 2023;
- Technical Program Co-Chair, IEEE International Workshop on Machine Learning for Signal Processing (MLSP), 2019;
- Awards Co-Chair, IEEE Data Science Workshop (DSW), 2019;
- Publications Chair, IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2018;
- Data Competition Co-Chair, IEEE International Workshop on Machine Learning for Signal Processing (MLSP), 2017, 2018;

- Co-Chair, IEEE GlobalSIP Symposium on Information Processing for Big Data, 2014;
- Co-Organizer, The Information Modeling and Control of Complex Systems (IMaCCS) Workshop, 2016, 2017;

Special Session and Mini-Symposium Organizer:

- "Interface of Statistics, Optimization and Learning", co-organized with Y. Chen, special session at INFORMS Annual Meeting, 2020.
- "Optimization Meets Statistical Data Science", co-organized with Y. Chen, mini-symposium at SIAM Conference on Optimization (OPT), 2020. (Cancelled due to COVID-19)
- "Nonconvex Optimization Meets Data Science", co-organized with Y. Chen, mini-symposium at SIAM Conference on Mathematics of Data Science (MDS), 2020. (Cancelled due to COVID-19)
- "Large-Scale Optimization and Statistical Inference in Distributed Environments", special session at The Conference on Information Sciences and Systems (CISS), 2020. (Cancelled due to COVID-19)
- "Nonlinear Inverse Problems and Matrix Factorization", co-organized with W. Dai and G. Tang, special session at The International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2019.
- "Taming Nonconvexity in High-Dimensional Statistical Inference", co-organized with Y. Chen, special session at The Asilomar Conference on Signals, Systems, and Computers, 2018.
- "Bilinear Inverse Problems", special session at The Asilomar Conference on Signals, Systems, and Computers, 2016.
- "Wireless Health", special session at The Asilomar Conference on Signals, Systems, and Computers, 2013.

Invited Workshop Participation (with travel support):

- IMA Workshop on Computational Imaging, 2019;
- Facebook Connectivity Lab Research Workshop, 2018;
- Oberwolfach Applied Harmonic Analysis and Sparse Approximation Workshop, 2015.
- NSF/Intel Ideas Lab on Cyber-Physical Systems Security and Privacy, 2015.
- NSF IPAM Workshop on Structure and Randomness in System Identification and Learning, 2013.

Member of Technical Program Committee:

- Conference on Machine Learning and Systems (MLSys), 2020;
- IEEE Data Science Workshop (DSW), 2019;
- OSA Mathematics in Imaging (MATH) Conference, 2019;
- Workshop on Machine Learning Approaches in High Resolution Microscopy Imaging, in conjunction with IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2018, 2019;
- IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), 2018;
- IEEE Globecom Workshop on Signal Processing for Big Data in Wireless Networks, 2016;
- IEEE International Workshop on Machine Learning for Signal Processing (MLSP), 2016, 2017;
- IEEE Workshop on Statistical Signal Processing (SSP), 2016, 2018, 2020;
- IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), 2015, 2017, 2019;
- European Signal Processing Conference (EUSIPCO), 2015, 2017, 2018;
- IEEE GlobalSIP Symposium on Network Sensing, Inference, and Communication, 2013;
- IEEE Wireless Communications and Networking Conference, 2013, 2014, 2015;
- International Workshop on Hot Topics in Peer-to-Peer Computing and Online Social Networking, 2013.

Review Activities:

- Reviewer for Grants and Proposals:
  - Ad-hoc Reviewer, Air Force Office of Scientific Research, 2020.
  - Ad-hoc Reviewer, Army Research Office, 2020.
  - Panelist, National Institutes of Health, 2020.
  - Ad-hoc Reviewer, US-Israel Binational Science Foundation, 2019.
  - Panelist, CISE, National Science Foundation, 2016, 2017, 2018, 2020.
  - Panelist, ENG, National Science Foundation, 2017.
  - Ad-hoc Reviewer, CISE, National Science Foundation, 2016 and 2018.
  - Ad-hoc Reviewer, Air Force Office of Scientific Research, 2016 - 2018.
  - Review Committee, Simons Foundation Collaboration Grants for Mathematicians, 2017.
  - Reviewer, Ohio Supercomputing Center, 2015.
- Reviewer for Peer-reviewed Journals:
  - Journal of Machine Learning Research; SIAM Journal on Imaging Sciences; SIAM Journal on Mathematics of Data Science; SIAM Journal on Optimization; SIAM Journal on Matrix Analysis and Applications; Annals of Statistics; IEEE Trans. on Information Theory; IEEE Trans. on Signal Processing; IEEE Journal of Selected Topics in Signal Processing; IEEE Trans. on Pattern Analysis and Machine Intelligence; IEEE Trans. on Computational Imaging; IEEE Trans. on Wireless Communications; IEEE Trans. on Mobile Computing; IEEE Access; IEEE Signal Processing Letters; IEEE Communications Letters; IEEE Trans. on Communications; IEEE Trans. on Vehicular Technology; IEEE Trans. on Industrial Informatics; IEEE/ACM Trans. on Computational Biology and Bioinformatics; Journal of Mathematical Imaging and Vision; EURASIP Journal on Advances in Signal Processing; Elsevier Signal Processing; Elsevier Pattern Recognition; Applied and Computational Harmonic Analysis; Geoscience and Remote Sensing Letters; Scientific Reports.
- Reviewer for Peer-reviewed Conferences:
  - Conference on Neural Information Processing Systems (NeurIPS); International Conference on Machine Learning (ICML); Conference On Learning Theory (COLT); IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP); IEEE International Symposium on Information Theory (ISIT); IEEE Information Theory Workshop (ITW); IEEE Global Conference on Signal and Information Processing (GlobalSIP); IEEE Data Science Workshop (DSW); IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM); IEEE Wireless Communications and Networking Conference (WCNC); IEEE Global Communications Conference (Globecom); Conference on Information Sciences and Systems (CISS); European Signal Processing Conference (EUSIPCO); The Allerton Conference on Communication, Control, and Computing (Allerton); IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP); Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop; The ACM Conference on Bioinformatics, Computational Biology and Health Informatics (ACM-BCB).

UNIVERSITY SERVICES

University Service at Carnegie Mellon University:

- Departmental Service:
  - Chair, Ph.D. Graduate Admission Committee, Dept. of Electrical and Computer Engineering, 2019-2020.
  - Member, Faculty Search Committee, Dept. of Electrical and Computer Engineering, 2019.
  - Member, Ph.D. Graduate Admission Committee, Dept. of Electrical and Computer Engineering, 2018, 2019.
- University Service:
  - Member, CMU Portugal Ph.D. Scholarships Evaluation Panel, CMU/Portugal Program, 2020.

  - Member, Selection Committee, Moonshot 2020, College of Engineering, 2020.
  - Member, Faculty Search Committee, Dept. of Civil and Environmental Engineering, 2019-2020.
  - Member, Review Committee for MS Program in Computational Biology (MSCB), 2018.
- University Outreach:
  - Panelist, Panel on Work Life Balance at Faculty Orientation, Center for Faculty Success, Aug. 2019.
  - Panelist, NSF Career Proposal Preparation Workshop, Center for Faculty Success, May 2019.
  - Panelist, Future Faculty program, Center for Faculty Success, Mar. 2019.
  - Faculty Participant, EGO-HKN Lunch and Learn, Mar. 2019.

University Service at The Ohio State University:

- Departmental Service:
  - Member, Faculty Search Committee, Dept. of ECE, 2016.
  - Member, Recruiting & Financial Aid Committee, Dept. of ECE, 2015 - 2017.
  - Member, Graduate Admission Committee, Dept. of ECE, 2012 - 2015.
  - Faculty Presenter, AFRL Sensor Directorate Visit at Dept. of ECE, Oct. 2015.
  - Faculty Presenter, Industrial Advisory Board Meeting, Dept. of ECE, Nov. 2014.
- University Outreach:
  - Faculty Judge, Edward F. Hayes Graduate Research Forum, 2015.
  - Faculty Judge, Richard J. and Martha D. Denman Undergraduate Research Forum, 2014.
  - Panelist, “How to Find a Faculty Job”, IEEE OSU Graduate Student Body, Nov. 2013.
  - Faculty Presenter, IEEE OSU Student Branch, Nov. 2012.

Last updated: September 7, 2020