Yuejie Chi

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CURRENT APPOINTMENTS

Carnegie Mellon University, Pittsburgh, PA, United States

Sense of Wonder Group Endowed Professor of Electrical and Computer Engineering in AI Systems Mar. 2023-Present Affiliate Appointments in Machine Learning Department and CyLab Security & Privacy Institute

SUMMARY AND HIGHLIGHTS

Research Impact and Visibility

- SIAM Activity Group on Imaging Science Best Paper Prize, 2024.
- IEEE Fellow for contributions to statistical signal processing with low-dimensional structures, 2023.
- Presidential Early Career Award for Scientists and Engineers (PECASE), 2019.
- Inaugural recipient of IEEE Signal Processing Society Pierre-Simon Laplace Early Career Technical Achievement Award, *for contributions to high-dimensional structured signal processing*, 2019.
- Named as Goldsmith Lecturer of IEEE Information Theory Society, Distinguished Lecturer of IEEE Signal Processing Society, and Distinguished Speaker of ACM. Delivered plenary talks and tutorials at many conferences and workshops.
- IEEE Signal Processing Society Young Author Best Paper Award, 2013.
- ICASSP Best Student Paper Award, 2012.
- Publish in top venues across applied mathematics, statistics, optimization, signal processing, operations research, and machine learning. Google Scholar citation 7k+, 21 papers cited above 100 times, h-index = 40, i10-index = 80.

Professional Service and Leadership

- Conference chairing: General Co-Chair, IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), 2024; PC Co-Chair, Conference on Parsimony and Learning (CPAL), 2024; PC Co-Chair, Conference on Machine Learning and Systems (MLSys), 2022; TPC Co-Chair, IEEE International Workshop on Machine Learning for Signal Processing (MLSP), 2019; Co-Chair, IEEE GlobalSIP Symposium on Information Processing for Big Data, 2014.
- Editorial boards: SIAM Journal on Mathematics of Data Science, Information and Inference: A Journal of the IMA, IEEE Trans. on Signal Processing, IEEE Trans. on Pattern Analysis and Machine Intelligence, IEEE Trans. on Information Theory, Foundations and Trends in Signal Processing.

Teaching and Mentoring

- Mentoring a research group of 10 Ph.D. students and 1 postdoc; formerly graduated 8 Ph.D. and mentored 4 postdocs, with them taking faculty and research positions in academia and industry.
- Teaching students at all levels in mathematical foundations of machine learning, signal processing, and data science, with publicly open notes.

Funding

- Raised over \$8 million (personal share) as PI and Co-PI since 2013 from NSF, ONR, AFOSR, ARO, AFRL, NIH, DOT, DARPA, industry and private foundations, where I have led and participated in large grants involving multiple PIs such as NSF medium awards, NIH R01 and centers of excellence.
- Received prestigious early career awards from The White House (PECASE), NSF (CAREER), ONR (YIP and ECG), AFOSR (YIP), and ORAU.

RESEARCH INTERESTS

Theoretical and algorithmic **foundations** of data science, machine learning, signal processing, and inverse problems; focusing on issues at the **intersection** of statistics, learning, optimization, and sensing; dealing with high-dimensional, multi-modal, large-scale, streaming, and messy data; **applications** in imaging science, decision making, sensing systems across scientific and engineering domains (e.g., materials, wireless, health, and AI systems) to improve performance and efficiency.

Foundations and Applications of Generative AI

- Design and analysis of diffusion-based generative models, in particular for inverse problems;
- Understanding and accelerating the training and inference of foundation models.

Algorithmic Foundations of Reinforcement Learning and Decision Making

- Demystify the statistical and computational (in)efficacy of popular reinforcement learning heuristics (e.g. model-based plug-in estimators, Q-learning, and policy gradient methods);
- Design and analysis of provably resource-efficient algorithms in terms of statistical, computational, and communication complexities in online/offline and single/multi-agent/federated reinforcement learning.

High-dimensional Statistical Learning and Signal Processing

- Provable statistical and computational near-optimal approaches for high-dimensional estimation with sparse and low-rank priors in the presence of corruptions and ill-conditioning;
- Superresolution methods for linear and bilinear inverse problems, with applications in sensing and imaging.

Decentralized Optimization and Federated Learning

- Design and analysis of communication-efficient federated learning and optimization algorithms;
- Resiliency and privacy in federated learning.

EDUCATION

Princeton University, Princeton, NJ, United States	
Ph.D. in Electrical Engineering, advisor: Prof. Robert Calderbank	2012
Dissertation: "Exploitation of Geometry in Signal Processing and Sensing"	
M.A. in Electrical Engineering	2009
Tsinghua University, Beijing, P. R. China	
B.Eng. in Electronic Engineering	2007

PREVIOUS APPOINTMENTS

Carnegie Mellon University, Pittsburgh, PA, United States	
Professor, Department of Electrical and Computer Engineering	Jul. 2021-Feb. 2023
Associate Professor, Department of Electrical and Computer Engineering	Jan. 2018-Jun. 2021
Inaugural Robert E. Doherty Career Development Professor in Electrical and Computer Enginee	ering 2018-2020
The Ohio State University, Columbus, OH, United States	
Associate Professor, Department of Electrical and Computer Engineering (75% FTE)	Jul. 2017-Dec. 2017
Assistant Professor, Department of Electrical and Computer Engineering (75% FTE)	Sep. 2012-Jun. 2017
Joint Appointment in Department of Biomedical Informatics (25% FTE)	Sep. 2012-Dec. 2017
Princeton University, Princeton, NJ, United States	

Research Assistant, Department of Electrical Engineering

SELECTED HONORS & AWARDS

Research Honor and Awards

• SIAM Activity Group on Imaging Science Best Paper Prize, SIAM (one selection for every two years)	2024
"for the deep understanding and analysis of the interaction between optimization algorithms and the geo landscape in which they operate."	ometry of the
• Fellow, IEEE	2023
"for contributions to statistical signal processing with low-dimensional structures".	
Distinguished Speaker, Association for Computing Machinery (ACM)	2023-2026
Distinguished Lecturer, IEEE Signal Processing Society	2022-2023
Goldsmith Lecturer, IEEE Information Theory Society	2021
George Nicholson Student Paper Competition Finalist, INFORMS (as advisor)	2021
Audience Choice Award, IEEE Data Science & Learning Workshop	2021
• Pierre-Simon Laplace Early Career Technical Achievement Award, IEEE Signal Processing Society	2019
Inaugural recipient, "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 a their independent research careers and who show exceptional promise for leadership in science and techno	ıre beginning ology.
Director of Research Early Career Grant, Office of Naval Research	2019
• 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
NSF Junior Oberwolfach Fellowship, Mathematisches Forschungsinstitut Oberwolfach (MFO)	2015
Windows Azure for Research Award, Microsoft Research	2014
• Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities	2014
Air Force Summer Faculty Fellowship, Air Force Office of Scientific Research	2014
Google Faculty Research Award, Google Inc.	2013
Young Author Best Paper Award, IEEE Signal Processing Society	2013
Best Student Paper Award Finalist, SPARS Workshop	2013
• Best Student Paper Award, International Conference on Acoustics, Speech, and Signal Processing	2012
Academic Recognition and Fellowships	
• Fellow, Executive Leadership in Academic Technology, Engineering and Science (ELATES)	2024-2025
College of Engineering Philip and Marsha Dowd Fellowship, Carnegie Mellon University	2023
• Sense of Wonder Group Endowed Professorship in AI Systems, Carnegie Mellon University	2023
Robert E. Doherty Career Development Professorship, Carnegie Mellon University	2018-2020
College of Engineering Lumley Research Award, The Ohio State University	2017
Roberto Padovani Scholarship, Qualcomm Inc.	2010

First Year Engineering Fellowship, Princeton University	2007
Distinguished Honors Graduate, Tsinghua University	2007
• First-class Scholarship (top 2%) in four consecutive years, Tsinghua University	2003-2007
• Zhou Yukang Freshman Fellowship, Tsinghua University	2003

MAJOR PROFESSIONAL ACTIVITIES

Leadership Roles in Conference Organization

- Board Member, Conference on Machine Learning and Systems (MLSys), 2022-2025;
- Program Co-Chair, Conference on Parsimony and Learning (CPAL), 2024;
- General Co-Chair, IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), 2024;
- Program Co-Chair, Conference on Machine Learning and Systems (MLSys), 2022;
- Technical Program Co-Chair, IEEE International Workshop on Machine Learning for Signal Processing, 2019;
- Co-Chair, IEEE GlobalSIP Symposium on Information Processing for Big Data, 2014;

Plenary and Keynote Speakers

- IEEE Information Theory Workshop (ITW), 2024, scheduled;
- IEEE International Workshop on Machine Learning for Signal Processing (MLSP), 2024, scheduled.
- NIST/IEEE Conference on Computational Imaging Using Synthetic Apertures (CISA), 2024, scheduled;
- Mitsubishi Electric Research Laboratories (MERL) Virtual Open House, 2023;
- Inaugural SIAM New York-New Jersey-Pennsylvania (NNP) Section Annual Meeting, 2023;
- IEEE Promoting Diversity in Signal Processing (PROGRESS) Workshop, 2023;
- Inaugural Center for Approximation and Mathematical Data Analytics (CAMDA) Conference, 2023;
- IEEE Annual Computing and Communication Workshop and Conference (CCWC), 2023;
- IEEE Data Science and Learning Workshop, 2022;
- MIT LIDS Student Conference, 2022;
- SIAM Conference on Imaging Science, 2020;
- Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop, 2019.

Tutorial and Short Course Speakers

- North American Summer School of Information Theory (NASIT), 2024, scheduled;
- IEEE International Symposium on Information Theory (ISIT), 2024, scheduled;
- Joint Statistical Meetings (JSM), 2023;
- The ACM SIGMETRICS Conference, 2023;
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2016, 2018, 2022, 2023;
- International Workshop on Intelligent Signal Processing, 2021, 2022;
- ICSA Applied Statistics Symposium, 2021;

- IEEE East Asian School of Information Theory (EASIT), 2021;
- The European Signal Processing Conference (EUSIPCO), 2021;
- IEEE Information Theory Workshop (ITW), 2018.

Editorial Boards

- Editor, Foundations and Trends in Signal Processing, 2023-Present;
- Associate Editor, SIAM Journal on Mathematics of Data Science, 2023-Present;
- Associate Editor, Information and Inference: A Journal of the IMA, 2022-Present;
- Associate Editor for Machine Learning and Statistics, IEEE Transactions on Information Theory, 2021-2024;
- Associate Editor, IEEE Transactions on Pattern Analysis and Machine Intelligence, 2020-2022;
- Associate Editor, IEEE Transactions on Signal Processing, 2018-2022;
- Guest Editor, Special issue on "Seeking Low Dimensionality in Deep Neural Networks", IEEE Journal of Selected Topics in Signal Processing, 2024;
- Guest Editor, Special issue on "Rethinking PCA for Modern Data Sets: Theory, Algorithms, and Applications", Proceedings of the IEEE, 2018.

SHORT-TERM VISITING APPOINTMENTS

Visiting Faculty Fellow

Information Directorate, Air Force Research Lab	Summer 2014
Visiting Scholar	
Department of Electrical and Computer Engineering, Duke University	2011 - 2012
Department of Electrical Engineering, Stanford University	Fall 2010
Department 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

TEACHING EXPERIENCE

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

- ECE 18-786/780: Introduction to Deep Learning (Graduate), Spring 2024.
- ECE 18-813B: Special Topics in Artificial Intelligence: Foundations of Reinforcement Learning (Graduate), Spring 2023.
- ECE 18-461/661: Introduction to Machine Learning for Engineers (Senior/Master), Fall 2019, Summer 2020, Fall 2020, Fall 2021, Fall 2022, Fall 2023.
- ECE 18-202: Mathematical Foundations of Electrical Engineering (Sophomore/Junior), Spring 2019, Spring 2020, Spring 2021.
- ECE 18-898G: Special Topics in Signal Processing: Sparsity, Structure, and Inference (Graduate), Spring 2018.

Guest Lecturer, Dept. of Electrical and Computer Engineering, Carnegie Mellon University

- ECE 18-786: Introduction to Deep Learning (Graduate), Spring 2023;
- 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.

STUDENTS AND POSTDOCS SUPERVISION

Supervised Ph.D. Students

- 1. Timofey Efimov (Ph.D. Student, Fall 2023-Present).
- 2. Tong Yang (Ph.D. Student, Fall 2023-Present).
- 3. Xingyu Xu (Ph.D. Student, Spring 2023-Present).
 - Points of Pride: Axel Berny Presidential Graduate Fellowship, 2024.
- 4. He Wang (Ph.D. Student, Fall 2022-Present).
 - Points of Pride: Bob Lee Gregory Fellowship, 2023.
- 5. Zixin Wen (Ph.D. Student, Fall 2021-Present, co-advised with Aarti Singh).
- 6. Lingjing Kong (Ph.D. Student, Fall 2021-Present, co-advised with Eric Xing and Kun Zhang).
- 7. Harry Dong (Ph.D. Candidate, Fall 2021-Present).
 - *Points of Pride:* Wei Shen and Xuehong Zhang Presidential Fellowship, 2024; NSF Graduate Research Fellowship Program Honorable Mention, 2023; Liang Ji-Dian Graduate Fellowship, 2023; Michel and Kathy Doreau Graduate Fellowship, 2023.
- 8. Jiin Woo (Ph.D. Candidate, Fall 2021-Present, co-advised with Gauri Joshi).
 - Points of Pride: Hsu Chang Memorial Fellowship, 2023.
- 9. Pedro Valdeira (Ph.D. Candidate, Fall 2020-Present, co-advised with João Xavier and Cláudia Soares).
 - Thesis: Communication-efficient vertical federated learning;
 - Points of Pride: CMU-Portugal Program Ph.D. Scholarship, 2020 2025.
- 10. Shicong Cen (Ph.D. Candidate, Fall 2019-Present).

- Thesis: "Algorithmic Foundations of Policy Optimization in Reinforcement Learning and Multi-agent Systems";
- *Points of Pride:* Rising Stars in Data Science, 2023; JP Morgan AI PhD Fellowship, 2023; Wei Shen and Xuehong Zhang Presidential Fellowship, 2023 and 2021; Boeing Scholarship, 2023; Nicholas Minnici Dean's Graduate Fellowship, 2022; INFORMS George Nicholson Student Paper Competition Finalist, 2021.
- 11. Laixi Shi (Ph.D. 2023, CMU).
 - Thesis: "Provable Algorithms for Reinforcement Learning: Scalability, Efficiency, and Robustness";
 - Current: Postdoctoral Fellow at California Institute of Technology;
 - *Points of Pride:* Rising Stars in Machine Learning, 2023; Rising Stars in Computational and Data Sciences, 2023; Rising Stars in Data Science, 2022; Leo Finzi Memorial Fellowship, 2022; Wei Shen and Xuehong Zhang Presidential Fellowship, 2022; Liang Ji-Dian Graduate Fellowship, 2021; Presidential Fellowship, 2018.
- 12. Boyue Li (Ph.D. 2023, CMU).
 - Thesis: "Communication-Efficient Optimization Algorithms for Decentralized Machine Learning";
 - Current: Machine Learning Engineer at Apple;
 - Points of Pride: Wei Shen and Xuehong Zhang Presidential Fellowship, 2022.
- 13. Vincent Monardo (Ph.D. 2022, CMU).
 - Thesis: "Efficient Algorithms for Solving Nonlinear Inverse Problems in Image Reconstruction";
 - Current: Lecturer of EECS at Massachusetts Institute of Technology;
 - Points of Pride: ECE Outstanding Teaching Assistant Award, 2019.
- 14. Tian Tong (Ph.D. 2022, CMU).
 - Thesis: "Scaled Gradient Methods for Ill-Conditioned Low-rank Matrix and Tensor Estimation";
 - Current: Applied Scientist at Amazon;
 - Points of Pride: IEEE Data Science & Learning Workshop Audience Choice Award, 2021.
- 15. Harlin Lee (Ph.D. 2021, CMU, co-advised with Jelena Kovačević).
 - *Thesis:* "Better Inference with Graph Regularization";
 - Current: Assistant Professor of Data Science at University of North Carolina at Chapel Hill.
 - *Points of Pride:* Rising Stars in Data Science, 2022; Rising Stars in Computational and Data Sciences, 2022; ECE Outstanding Woman in Engineering Award, 2021; ECE Outstanding Teaching Assistant Award, 2020; David H. Barakat and LaVerne Owen-Barakat CIT Dean's Fellowship, 2020.
- 16. Haoyu Fu (Ph.D. 2019, OSU, co-advised with Yingbin Liang).
 - Thesis: "High-dimensional Statistical Inference from Coarse and Nonlinear Data: Algorithms and Guarantees";
 - Current: Research Scientist at Meta.
- 17. Yuanxin Li (Ph.D. 2018, OSU).
 - Thesis: "Provable Algorithms for Scalable and Robust Low-Rank Matrix Recovery";
 - Current: Senior Engineer at Samsung.
- 18. Jiaqing Huang (Ph.D. 2016, OSU, co-advised with Jianjie Ma).
 - Thesis: "Super-Resolution Image Reconstruction for Single-Molecule Localization Microscopy";
 - Current: Software Engineer at Google.

Supervised Postdoctoral Researchers

- 1. Sudeep Salgia (2023-Present, CMU).
- 2. Zhize Li (2022-2023, CMU). Current: Assistant Professor at Singapore Management University.

- 3. Maxime Ferreira Da Costa (2018-2020, CMU). Current: Associate Professor at CentraleSupélec.
- 4. Yuanxin Li (2018, CMU). Current: Staff Engineer at Samsung.
- 5. Myung Cho (2017-2018, CMU/OSU). Current: Assistant Professor at California State University, Northridge.
- 6. Liming Wang (2015-2017, OSU). Current: Lead Data Scientist at HERE Technologies.

Supervised Master and Undergraduate Students (Selected)

- 1. Yiqi Wang (2022-Present, CMU, co-advised with L. Shi). Next: RI at CMU.
- 2. Gore Kao (2022-2023, CMU, co-advised with L. Shi). Next: Tiktok.
- 3. Sijin Chen (2022-2023, CMU, co-advised with Z. Li). Next: PhD at Princeton.
- 4. Ruicheng Ao (2022, CMU, co-advised with S. Cen). Next: PhD at MIT.
- 5. Abhiram Iyer (2020-2021, CMU, co-advised with V. Monardo). Next: PhD at MIT.
- 6. Diogo M. Cardoso (2019-2023, CMU, co-advised with J. Xavier). Next: PhD at CMU.
- 7. Shicong Cen (Summer 2018, CMU). Next: PhD at CMU.
- 8. Azer Shikhaliev (2015-2017, OSU, co-advised with L. Potter). Next: PhD at The Ohio State University.
- 9. Subrata Sarkar (2015-2016, OSU). Next: PhD at The Ohio State University.
- 10. Yue Sun (Summer 2015, OSU). Next: PhD at University of Washington.

PUBLICATIONS¹

Summary: Google Scholar citation 7k+, 60+ journal papers, 1 paper cited above 1000 times, 21 papers cited above 100 times, h-index = 40, i10-index = 80 as of March 2024.

Preprints

- 1. Harry Dong, Beidi Chen, and Yuejie Chi, "Prompt-prompted Mixture of Experts for Efficient LLM Generation", preprint.
- 2. Xingyu Xu and Yuejie Chi, "Provably Robust Score-Based Diffusion Posterior Sampling for Plug-and-Play Image Reconstruction", preprint.
- 3. Yu Huang*, Zixin Wen*, Yuejie Chi, and Yingbin Liang, "Transformers Provably Learn Feature-Position Correlations in Masked Image Modeling", preprint.
- 4. Harry Dong, Xinyu Yang, Zhenyu Zhang, Zhangyang Wang, Yuejie Chi, and Beidi Chen, "Get More with LESS: Synthesizing Recurrence with KV Cache Compression for Efficient LLM Inference", preprint.
- 5. Laixi Shi, Eric Mazumdar, Yuejie Chi, and Adam Wierman, "Sample-Efficient Robust Multi-Agent Reinforcement Learning in the Face of Environmental Uncertainty", preprint.
- 6. Jiin Woo, Laixi Shi, Gauri Joshi, and Yuejie Chi, "Federated Offline Reinforcement Learning: Collaborative Single-Policy Coverage Suffices", submitted.
- 7. Shicong Cen, Jincheng Mei, Hanjun Dai, Dale Schuurmans, Yuejie Chi, and Bo Dai, "Beyond Expectations: Learning with Stochastic Dominance Made Practical", submitted.
- 8. Gen Li*, Yu Huang*, Timofey Efimov, Yuting Wei, Yuejie Chi, and Yuxin Chen, "Accelerating Convergence of Score-Based Diffusion Models, Provably", preprint.
- 9. Tong Yang, Shicong Cen, Yuting Wei, Yuxin Chen, and Yuejie Chi, "Federated Natural Policy Gradient Methods for Multi-task Reinforcement Learning", submitted.

¹Note: * indicates equal contribution. α indicates alphabetical listing of authorships.

- 10. He Wang and Yuejie Chi, "Communication-Efficient Federated Optimization over Semi-Decentralized Networks", preprint.
- 11. Jiin Woo, Gauri Joshi, and Yuejie Chi, "The Blessing of Heterogeneity in Federated Q-Learning: Linear Speedup and Beyond", submitted.
- 12. Laixi Shi, Gen Li, Yuting Wei, Yuxin Chen, Matthieu Geist, and Yuejie Chi, "The Curious Price of Distributional Robustness in Reinforcement Learning with a Generative Model", submitted.
- 13. Pedro Valdeira, Yuejie Chi, Claudia Soares, and Joao Xavier, "A Multi-Token Coordinate Descent Method for Vertical Federated Learning", submitted to *IEEE Trans. on Signal Processing*.
- 14. Boyue Li and Yuejie Chi, "Convergence and Privacy of Decentralized Nonconvex Optimization with Gradient Clipping and Communication Compression", submitted to *SIAM Journal on Mathematics of Data Science*.
- 15. Xingyu Xu, Yandi Shen, Yuejie Chi, and Cong Ma, "The Power of Preconditioning in Overparameterized Low-Rank Matrix Sensing", submitted to *Mathematical Programming*.
- 16. Gen Li, Yanxi Chen, Yuejie Chi, H. Vincent Poor, and Yuxin Chen, "Fast Computation of Optimal Transport via Entropy-Regularized Extragradient Methods", submitted to *SIAM Journal on Optimization*.
- 17. Laixi Shi and Yuejie Chi, "Distributionally Robust Model-Based Offline Reinforcement Learning with Near-Optimal Sample Complexity", *Journal of Machine Learning Research*, under revision.

Books and Monographs

Yuxin Chen^α, Yuejie Chi^α, Jianqing Fan^α, and Cong Ma^α, "Spectral Methods for Data Science: A Statistical Perspective", *Foundations and Trends in Machine Learning*, vol. 14, no. 5, pp. 566-806, 2021.

Book Chapters

- 1. Cong Ma, Xingyu Xu, Tian Tong, and Yuejie Chi, "Provably Accelerating Ill-Conditioned Low-rank Estimation via Scaled Gradient Descent, Even with Overparameterization", *Explorations in the Mathematics of Data Science*, Springer International Publishing, 2024+.
- Yuejie Chi, Yuanxin Li, Huishuai Zhang, and Yingbin 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.
- 3. Ali Pezeshki, Yuejie Chi, Louis L. Scharf, and Edwin K. Chong, "Compressed Sensing, Sparse Inversion, and Model Mismatch", *Compressed Sensing and Its Applications*, pp. 75-95, Springer International Publishing, 2015.
- Yuejie Chi, Ali Pezeshki, and Robert 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. Gen Li*, Weichen Wu*, Yuejie Chi, Cong Ma, Alessandro Rinaldo, and Yuting Wei, "High-probability Sample Complexities for Policy Evaluation with Linear Function Approximation", *IEEE Transactions on Information Theory*, accepted.
- Gen Li, Laixi Shi, Yuxin Chen, Yuejie Chi, and Yuting Wei, "Settling the Sample Complexity of Model-Based Offline Reinforcement Learning", *Annals of Statistics*, vol. 52, no. 1, pp. 233-260, 2024.
- 3. Shicong Cen, Yuting Wei, and Yuejie Chi, "Fast Policy Extragradient Methods for Competitive Games with Entropy Regularization", *Journal of Machine Learning Research*, vol. 25, no. 4, pp. 1-48, 2024.
- 4. Gen Li, Changxiao Cai, Yuxin Chen, Yuting Wei, and Yuejie Chi, "Is Q-Learning Minimax Optimal? A Tight Sample Complexity Analysis", *Operations Research*, vol. 72, no. 1, pp. 222-236, 2024.
- 5. Gen Li, Yuting Wei, Yuejie Chi, and Yuxin Chen, "Breaking the Sample Size Barrier in Model-Based Reinforcement Learning with a Generative Model", *Operations Research*, vol. 72, no. 1, pp. 203-221, 2024.
- 6. Harry Dong, Sean Donegan, Megna Shah, and Yuejie Chi, "A Lightweight Transformer for Faster and Robust EBSD Data Collection", *Scientific Reports*, vol. 13, pp. 21253, 2023.

- Harry Dong, Tian Tong, Cong Ma, and Yuejie Chi, "Fast and Provable Tensor Robust Principal Component Analysis via Scaled Gradient Descent", *Information and Inference: A Journal of the IMA*, vol. 12, no. 3, pp. 1716-1758, 2023.
- Gen Li, Yuting Wei, Yuejie Chi, and Yuxin Chen, "Softmax Policy Gradient Methods Can Take Exponential Time to Converge", *Mathematical Programming*, vol. 201, pp. 707-802, 2023.
- Wenhao Zhan*, Shicong Cen*, Baihe Huang, Yuxin Chen, Jason D. Lee, and Yuejie Chi, "Policy Mirror Descent for Regularized Reinforcement Learning: A Generalized Framework with Linear Convergence", SIAM Journal on Optimization, vol. 33, no. 2, pp. 1061-1091, 2023.
- Maxime Ferreira Da Costa and Yuejie Chi, "Local Geometry of Nonconvex Spike Deconvolution from Low-Pass Measurements", *IEEE Journal on Selected Areas in Information Theory*, vol. 4, pp. 1-15, 2023.
- Gen Li, Laixi Shi, Yuxin Chen, and Yuejie Chi, "Breaking the Sample Complexity Barrier to Regret-Optimal Model-free Reinforcement Learning", *Information and Inference: A Journal of the IMA*, vol. 12, no. 2, pp. 969-1043, 2023.
- Shicong Cen, Chen Cheng, Yuxin Chen, Yuting Wei, and Yuejie Chi, "Fast Global Convergence of Natural Policy Gradient Methods with Entropy Regularization", *Operations Research*, vol. 70, no. 4, pp. 2563-2578, 2022.
 2021 INFORMS George Nicholson Student Paper Competition Finalist.
- 13. Boyue Li, Zhize Li, and Yuejie Chi, "DESTRESS: Computation-Optimal and Communication-Efficient Decentralized Nonconvex Finite-Sum Optimization", *SIAM Journal on Mathematics of Data Science*, vol. 4, no. 3, pp. 1031-1051, 2022.
- 14. Harlin Lee, Boyue Li, Shelly DeForte, Mark Splaingard, Yungui Huang, Yuejie Chi, Simon Linwood, "A Large Collection of Real-world Pediatric Sleep Studies", *Scientific Data*, 9:412, 2022.
- Tian Tong, Cong Ma, Ashley Prater-Bennette, Erin Tripp, and Yuejie Chi, "Scaling and Scalability: Provable Nonconvex Low-Rank Tensor Estimation from Incomplete Measurements", *Journal of Machine Learning Research*, vol. 23, no. 163, pp. 1-77, 2022.
- 16. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and Yuxin Chen, "Sample Complexity of Asynchronous Q-Learning: Sharper Analysis and Variance Reduction", *IEEE Trans. on Information Theory*, vol. 68, no. 1, pp. 448-473, 2022.
- 17. Tian Tong, Cong Ma, and Yuejie Chi, "Accelerating Ill-Conditioned Low-Rank Matrix Estimation via Scaled Gradient Descent", *Journal of Machine Learning Research*, vol. 22, no. 150, pp. 1-63, 2021.
- 18. Laixi Shi and Yuejie Chi, "Manifold Gradient Descent Solves Multi-channel Sparse Blind Deconvolution Provably and Efficiently", *IEEE Trans. on Information Theory*, vol. 67, no. 7, pp. 4784-4811, 2021.
- 19. Tian Tong, Cong Ma, and Yuejie Chi, "Low-Rank Matrix Recovery with Scaled Subgradient Methods: Fast and Robust Convergence without the Condition Number", *IEEE Trans. on Signal Processing*, vol. 69, pp. 2396-2409, 2021.
- 20. Changxiao Cai, Gen Li, Yuejie Chi, H. Vincent Poor, and Yuxin Chen, "Subspace Estimation from Unbalanced and Incomplete Data Matrices: $\ell_{2,\infty}$ Statistical Guarantees", *Annals of Statistics*, vol. 49, no. 2, pp. 944-967, 2021.
- 21. Yuanxin Li, Cong Ma, Yuxin Chen, and Yuejie Chi, "Nonconvex Matrix Factorization from Rank-One Measurements", *IEEE Trans. on Information Theory*, vol. 67, no. 3, pp. 1928-1950, 2021.
- 22. Cong Ma, Yuanxin Li, Yuejie Chi, "Beyond Procrustes: Balancing-free Gradient Descent for Asymmetric Low-Rank Matrix Sensing", *IEEE Trans. on Signal Processing*, vol. 69, pp. 867-877, 2021.
- 23. Maxime Ferreira Da Costa and Yuejie Chi, "Compressed Super-Resolution of Positive Sources", *IEEE Signal Processing Letters*, vol. 28, pp. 56-60, 2021.
- Yuxin Chen^α, Yuejie Chi^α, Jianqing Fan^α, Cong Ma^α, and Yuling Yan^α, "Noisy Matrix Completion: Understanding Statistical Guarantees of Convex Relaxation via Nonconvex Optimization", *SIAM Journal on Optimization*, vol. 30, no. 4, pp. 3098-3121, 2020.
- 25. Maxime Ferreira Da Costa and Yuejie Chi, "On the Stable Resolution Limit of Total Variation Regularization for Spike Deconvolution", *IEEE Trans. on Information Theory*, vol. 66, no. 11, pp. 7237-7252, 2020.
- 26. Boyue Li, Shicong Cen, Yuxin Chen, and Yuejie Chi, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking and Variance Reduction", *Journal of Machine Learning Research*, vol. 21, no. 180, pp. 1-51, 2020.

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- 28. Shicong Cen, Huishuai Zhang, Yuejie Chi, Wei Chen, and Tie-Yan Liu, "Convergence of Distributed Stochastic Variance Reduced Methods without Sampling Extra Data", *IEEE Trans. on Signal Processing*, vol. 68, pp. 3976-3989, 2020.
- 29. Haoyu Fu, Yuejie Chi, and Yingbin Liang, "Guaranteed Recovery of One-Hidden-Layer Neural Networks via Cross Entropy", *IEEE Trans. on Signal Processing*, vol. 68, pp. 3225-3235, 2020.
- Yuanxin Li, Yuejie Chi, Huishuai Zhang, and Yingbin 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.
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- 32. Huaqing Xiong, Yuejie Chi, Bin Hu, and Wei Zhang, "Analytical Convergence Regions of Accelerated Gradient Descent in Nonconvex Optimization under Regularity Condition", *Automatica*, vol. 113, pp. 108715, 2020.
- 33. Yuejie Chi and Maxime 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.
- 34. Rohan Varma,* Harlin Lee,* Jelena Kovačević and Yuejie 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.
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- 37. Azar P. Shikhaliev, Lee C. Potter, and Yuejie Chi, "Low-Rank Structured Covariance Matrix Estimation", *IEEE Signal Processing Letters*, vol. 26, no. 5, pp. 700-704, 2019.
- Yuanxin Li and Yuejie Chi, "Stable Separation and Super-Resolution of Mixture Models", *Applied and Computational Harmonic Analysis*, vol. 46, no. 1, pp. 1-39, 2019.
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- 41. Laura Balzano, Yuejie Chi, and Yue M. Lu, "Streaming PCA and Subspace Tracking: The Missing Data Case", *Proceedings of the IEEE*, vol. 106, no. 8, pp. 1293-1310, 2018.
- Yudong Chen^α and Yuejie Chi^α, "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.
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- Liming Wang and Yuejie 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.
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- 49. Liming Wang and Yuejie Chi, "Blind Deconvolution from Multiple Sparse Inputs", *IEEE Signal Processing Letters*, vol. 23, no. 10, pp. 1384-1388, 2016.
- 50. Yuejie Chi and Y. M. Lu, "Kaczmarz Method for Solving Quadratic Equations", *IEEE Signal Processing Letters*, vol. 23, no. 9, pp. 1183-1187, 2016.
- 51. Yuejie 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.
- 52. Yuanxin Li and Yuejie Chi, "Off-the-Grid Line Spectrum Estimation and Denoising with Multiple Measurement Vectors", *IEEE Trans. on Signal Processing*, vol. 64, pp. 1257-1269, 2016.
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- 54. Jiaqing Huang^{*}, Kristyn Gumpper, Yuejie Chi, Mingzhai Sun^{*}, and Jianjie Ma, "Fast Two-dimensional Super-resolution Image Reconstruction Algorithm for Ultra-high Emitter Density", *Optics Letters*, vol. 40, pp. 2989-2992, 2015.
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- 58. Yuxin Chen and Yuejie Chi, "Robust Spectral Compressed Sensing via Structured Matrix Completion", *IEEE Trans. on Information Theory*, vol. 60, pp. 6576-6601, 2014.
- 59. Yuejie Chi and Fatih Porikli, "Classification and Boosting with Multiple Collaborative Representations", *IEEE Trans.* on Pattern Analysis and Machine Intelligence, vol. 36, pp. 1519-1531, 2014.
- 60. Yuejie Chi, Yonina C. Eldar, and Robert 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.
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- Yuejie Chi, Louis L. Scharf, Ali Pezeshki, and Robert Calderbank, "Sensitivity of Basis Mismatch to Compressed Sensing", *IEEE Trans. on Signal Processing*, vol. 59, pp. 2182-2195, 2011.
 2013 IEEE Signal Processing Society Young Author Best Paper Award.
- Yuejie Chi, Ahmad Gomaa, Naofal Al-Dhahir, and Robert 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 Science²

- 1. Gen Li, Yuting Wei, Yuxin Chen, and Yuejie Chi, "Towards Non-Asymptotic Convergence for Diffusion-Based Generative Models", *International Conference on Learning Representations (ICLR)*, Vienna, Austria, May 2024.
- 2. Sijin Chen, Zhize Li, and Yuejie Chi, "Escaping Saddle Points in Heterogeneous Federated Learning via Distributed SGD with Communication Compression", *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Valencia, Spain, May 2024.

²Peer-reviewed conferences are typically highly selective and the primary mode of publication in computer science.

- Laixi Shi, Gen Li, Yuting Wei, Yuxin Chen, Matthieu Geist, and Yuejie Chi, "The Curious Price of Distributional Robustness in Reinforcement Learning with a Generative Model", *Conference on Neural Information Processing Systems* (*NeurIPS*), New Orleans, Dec. 2023.
- 4. Hanqi Yan, Lingjing Kong, Lin Gui, Yuejie Chi, Eric Xing, Yulan He, and Kun Zhang, "Counterfactual Generation with Identifiability Guarantee", *Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, Dec. 2023.
- Lingjing Kong, Biwei Huang, Feng Xie, Eric Xing, Yuejie Chi, and Kun Zhang, "Identification for Nonlinear Latent Hierarchical Causal Models", *Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, Dec. 2023.
- 6. Wenhao Ding^{*}, Laixi Shi^{*}, Yuejie Chi, and Ding Zhao, "Seeing is not Believing: Robust Reinforcement Learning against Spurious Correlation", *Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, Dec. 2023.
- Gen Li*, Wenhao Zhan*, Jason D. Lee, Yuejie Chi, and Yuxin Chen, "Reward-agnostic Fine-tuning: Provable Statistical Benefits of Hybrid Reinforcement Learning", *Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, Dec. 2023.
- 8. Laixi Shi, Robert Dadashi, Yuejie Chi, Pablo Samuel Castro, and Matthieu Geist, "Offline Reinforcement Learning with On-Policy Q-Function Regularization", *European Conference on Machine Learning (ECML)*, Turin, Italy, Sep. 2023.
- 9. Yiqi Wang, Mengdi Xu, Laixi Shi, and Yuejie Chi, "A Trajectory is Worth Three Sentences: Multimodal Transformer for Offline Reinforcement Learning", *Conference on Uncertainty in Artificial Intelligence (UAI)*, Pittsburgh, PA, Jul. 2023.
- 10. Jiin Woo, Gauri Joshi, and Yuejie Chi, "The Blessing of Heterogeneity in Federated Q-Learning: Linear Speedup and Beyond", *International Conference on Machine Learning (ICML)*, Honolulu, Hawaii, Jul. 2023.
- 11. Xingyu Xu, Yandi Shen, Yuejie Chi, and Cong Ma, "The Power of Preconditioning in Overparameterized Low-Rank Matrix Sensing", *International Conference on Machine Learning (ICML)*, Honolulu, Hawaii, Jul. 2023.
- 12. Lingjing Kong, Martin Q. Ma, Guangyi Chen, Eric Xing, Yuejie Chi, Louis-Philippe Morency, and Kun Zhang, "Understanding Masked Autoencoders via Hierarchical Latent Variable Models", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Vancouver, Canada, Jun. 2023, highlight presentation (top 2.6% submission).
- 13. Ruicheng Ao^α, Shicong Cen^α, and Yuejie Chi^α, "Asynchronous Gradient Play in Zero-Sum Multi-agent Games", *International Conference on Learning Representations (ICLR)*, Kigali, Rwanda, May 2023.
- Shicong Cen^α, Yuejie Chi^α, Simon S. Du^α, and Lin Xiao^α, "Faster Last-iterate Convergence of Policy Optimization in Zero-Sum Markov Games", *International Conference on Learning Representations (ICLR)*, Kigali, Rwanda, May 2023.
- 15. Zhize Li, Haoyu Zhao, Boyue Li, and Yuejie Chi, "SoteriaFL: A Unified Framework for Private Federated Learning with Communication Compression", *Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, Dec. 2022.
- 16. Gen Li, Yuejie Chi, Yuting Wei and Yuxin Chen, "Minimax-Optimal Multi-Agent RL in Markov Games With a Generative Model", *Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, Dec. 2022, oral presentation.
- 17. Haoyu Zhao, Boyue Li, Zhize Li, Peter Richtarik, and Yuejie Chi, "BEER: Fast O(1/T) Rate for Decentralized Nonconvex Optimization with Communication Compression", *Conference on Neural Information Processing Systems* (*NeurIPS*), New Orleans, Dec. 2022.
- Yuheng Zhang, Yinglong Xia, Yan Zhu, Yuejie Chi, Lei Ying, and Hanghang Tong, "Active Heterogeneous Graph Neural Networks with Per-step Meta-Q-Learning", *IEEE International Conference on Data Mining (ICDM)*, Orlando, FL, Nov. 2022.
- Laixi Shi, Gen Li, Yuting Wei, Yuxin Chen, and Yuejie Chi, "Pessimistic Q-Learning for Offline Reinforcement Learning: Towards Optimal Sample Complexity", *International Conference on Machine Learning (ICML)*, Baltimore, MD, Jul. 2022.
- 20. Tian Tong, Cong Ma, Ashley Prater-Bennette, Erin Tripp, and Yuejie Chi, "Scaling and Scalability: Provable Nonconvex Low-Rank Tensor Completion", *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Virtual, Apr. 2022.

- 21. Yuheng Zhang, Hanghang Tong, Yinglong Xia, Yan Zhu, Yuejie Chi, and Lei Ying, "Batch Active Learning with Graph Neural Networks via Multi-Agent Deep Reinforcement Learning", *AAAI Conference on Artificial Intelligence (AAAI)*, Virtual, Feb. 2022.
- 22. Gen Li, Laixi Shi, Yuxin Chen, Yuantao Gu, and Yuejie Chi, "Breaking the Sample Complexity Barrier to Regret-Optimal Model-free Reinforcement Learning", *Conference on Neural Information Processing Systems (NeurIPS)*, Virtual, Dec. 2021, **spotlight presentation (top** 3% **submission)**.
- 23. Shicong Cen, Yuting Wei, and Yuejie Chi, "Fast Policy Extragradient Methods for Competitive Games with Entropy Regularization", *Conference on Neural Information Processing Systems (NeurIPS)*, Virtual, Dec. 2021.
- 24. Gen Li, Yuxin Chen, Yuejie Chi, Yuantao Gu, and Yuting Wei, "Sample-Efficient Reinforcement Learning Is Feasible for Linearly Realizable MDPs with Limited Revisiting", *Conference on Neural Information Processing Systems (NeurIPS)*, Virtual, Dec. 2021.
- 25. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and Yuxin Chen, "Softmax Policy Gradient Methods Can Take Exponential Time to Converge", *Conference on Learning Theory (COLT)*, Boulder, CO, Aug. 2021.
- 26. Gen Li, Changxiao Cai, Yuxin Chen, Yuantao Gu, Yuting Wei, and Yuejie Chi, "Tightening the Dependence on Horizon in the Sample Complexity of Q-Learning", *International Conference on Machine Learning (ICML)*, Virtual, Jul. 2021.
- 27. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and Yuxin Chen, "Breaking the Sample Size Barrier in Model-Based Reinforcement Learning with a Generative Model", *Conference on Neural Information Processing Systems (NeurIPS)*, Virtual, Dec. 2020.
- 28. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and Yuxin Chen, "Sample Complexity of Asynchronous Q-Learning: Sharper Analysis and Variance Reduction", *Conference on Neural Information Processing Systems (NeurIPS)*, Virtual, Dec. 2020.
- 29. Boyue Li, Shicong Cen, Yuxin Chen and Yuejie Chi, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking and Variance Reduction", *International Conference on Artificial Intelligence and Statistics (AIS-TATS)*, Virtual, Jun. 2020.
- 30. Yuanxin Li, Cong Ma, Yuxin Chen and Yuejie Chi, "Nonconvex Matrix Factorization from Rank-One Measurements", *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Okinawa, Japan, Apr. 2019.
- 31. Cong Ma, Kaizheng Wang, Yuejie Chi and Yuxin Chen, "Implicit Regularization in Nonconvex Statistical Estimation: Gradient Descent Converges Linearly for Phase Retrieval and Matrix Completion", *International Conference on Machine Learning (ICML)*, Stockholm, Sweden, Jul. 2018.
- 32. Huishuai Zhang, Yuejie Chi and Yingbin Liang, "Provable Non-convex Phase Retrieval with Outliers: Median Truncated Wirtinger Flow", *International Conference on Machine Learning (ICML)*, New York, NY, Jun. 2016.
- 33. Yuxin Chen and Yuejie Chi, "Spectral Compressed Sensing via Structured Matrix Completion", *International Conference on Machine Learning (ICML)*, Atlanta, GA, Jun. 2013.
- 34. Yuejie Chi and Fatih Porikli, "Connecting the Dots in Multi-Class Classification: From Nearest Subspace to Collaborative Representation", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Providence, RI, Jun. 2012.

Peer-Reviewed Conference and Workshop Proceedings

- 1. He Wang and Yuejie Chi, "Communication-Efficient Federated Optimization over Semi-Decentralized Networks", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Seoul, Korea, Apr. 2024, invited paper.
- 2. Harry Dong, Beidi Chen, and Yuejie Chi, "Towards Structured Sparsity in Transformers for Efficient Inference", *ICML Workshop on Efficient Systems for Foundation Models*, Honolulu, Hawaii, Jul. 2023.
- 3. Harry Dong, Megna Shah, Sean Donegan, and Yuejie Chi, "Deep Unfolded Tensor Robust PCA with Self-supervised Learning", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Rhodes island, Greece, Jun. 2023.

- 4. Shicong Cen, Fan Chen, and Yuejie Chi, "Independent Natural Policy Gradient Methods for Potential Games: Finitetime Global Convergence with Entropy Regularization", *IEEE Conference on Decision and Control (CDC)*, Cancun, Mexico, Dec. 2022, **invited paper**.
- 5. Diogo Cardoso, Boyue Li, Yuejie Chi, and Joao Xavier, "Harvesting Curvatures for Communication-Efficient Distributed Optimization", *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2022.
- 6. Tze Meng Low, Yuejie Chi, James Hoe, Swarun Kumar, Akarsh Prabhakara, Laixi Shi, Upasana Sridhar, Nicholai Tukanov, Chengyue Wang, and Yuchen Wu, "Zoom Out: Abstractions for Efficient Radar Algorithms on COTS Architectures", *IEEE International Symposium on Phased Array Systems and Technology (PAST)*, Waltham, MA, Oct. 2022.
- Harlin Lee, Andrea Bertozzi, Jelena Kovačević, and Yuejie Chi, "Privacy-Preserving Federated Multi-task Linear Regression: A One-Shot Linear Mixing Approach Inspired by Graph Regularization", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Singapore, May 2022.
- 8. Tian Tong, Cong Ma, and Yuejie Chi, "Accelerating Ill-Conditioned Robust Low-Rank Tensor Regression", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Singapore, May 2022.
- 9. Wenhao Zhan*, Shicong Cen*, Baihe Huang, Yuxin Chen, Jason D. Lee, and Yuejie Chi, "Policy Mirror Descent for Regularized Reinforcement Learning: A Generalized Framework with Linear Convergence", *International OPT Workshop on Optimization for Machine Learning*, Virtual, Dec. 2021, **oral presentation**.
- 10. Boyue Li, Zhize Li, and Yuejie Chi, "DESTRESS: Computation-Optimal and Communication-Efficient Decentralized Nonconvex Finite-Sum Optimization", *International OPT Workshop on Optimization for Machine Learning*, Virtual, Dec. 2021, spotlight presentation.
- Vincent Monardo, Abhiram Iyer, Sean Donegan, Marc De Graef, and Yuejie Chi, "Plug-and-Play Image Reconstruction Meets Stochastic Variance-Reduced Gradient Methods", *IEEE International Conference on Image Processing*, Virtual, Sep. 2021.
- 12. Tian Tong, Cong Ma, and Yuejie Chi, "Low-Rank Matrix Recovery with Scaled Subgradient Methods: Fast and Robust Convergence without the Condition Number", *IEEE Data Science and Learning Workshop (DSLW)*, Virtual, Jun. 2021, Audience Choice Award.
- 13. Kaiyi Ji, Jian Tan, Jinfeng Xu and Yuejie Chi, "Learning Latent Features with Pairwise Penalties in Low-Rank Matrix Completion", *IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*, Hangzhou, China, Jun. 2020, **invited paper**.
- 14. Laixi Shi and Yuejie Chi, "Manifold Gradient Descent Solves Multi-channel Sparse Blind Deconvolution Provably and Efficiently", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, Spain, May 2020.
- 15. Maxime Ferreira Da Costa and Yuejie Chi, "Support Stability of Spike Deconvolution via Total Variation Minimization", *Conference on Information Sciences and Systems (CISS)*, Princeton, NJ, Mar. 2020, **invited paper**.
- 16. Maxime Ferreira Da Costa and Yuejie Chi, "Self-Calibrated Super Resolution", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2019, invited paper.
- 17. Cong Ma, Yuanxin Li, and Yuejie Chi, "Beyond Procrustes: Balancing-free Gradient Descent for Asymmetric Low-Rank Matrix Sensing", *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2019.
- Laixi Shi, Shijia Pan, Mostafa Mirshekari, Jonathon Fagert, Yuejie Chi, Hae Young Noh, and Pei Zhang, "Device-free Multiple People Localization through Floor Vibration", *First ACM Workshop on Device-Free Human Sensing (DFHS)*, New York, NY, Nov. 2019.
- 19. Haoyu Fu, Yuejie Chi, and Yingbin Liang, "Local Geometry of Cross Entropy Loss in Learning One-Hidden-Layer Neural Networks", *IEEE International Symposium on Information Theory (ISIT)*, Paris, France, Jul. 2019.
- 20. Myung Cho and Yuejie Chi, "Shift-Invariant Subspace Tracking with Missing Data", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019, **invited paper**.

- 21. Vincent Monardo and Yuejie Chi, "On the Sensitivity of Spectral Initialization for Noisy Phase Retrieval", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
- 22. Vincent Monardo, Yuanxin Li and Yuejie Chi, "Solving Quadratic Equations via Amplitude-Based Nonconvex Optimization", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
- 23. Rohan Varma,* Harlin Lee,* Yuejie Chi and Jelena Kovačević, "Improving Graph Trend Filtering with Non-convex Penalties", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
- 24. Huaqing Xiong, Yuejie Chi, Bin Hu, and Wei Zhang, "Convergence analysis of accelerated first-order methods for phase retrieval", *International Symposium on Mathematical Theory of Networks and Systems (MTNS)*, Hong Kong, Jul. 2018.
- 25. Myung Cho, Wenjing Liao, and Yuejie Chi, "A Non-convex Approach to Joint Sensor Calibration and Spectrum Estimation", *IEEE Statistical Signal Processing Workshop (SSP)*, Freiburg, Germany, Jun. 2018.
- 26. Haoyu Fu, Pu Wang, Toshiaki Koike-Akino, Philip V. Orlik, and Yuejie Chi, "Terahertz Imaging of Binary Reflectance with Variational Bayesian Inference", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Calgary, Canada, Apr. 2018.
- 27. Liming Wang and Yuejie Chi, "Memory-Limited Stochastic Approximation for Poisson Subspace Tracking", *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Curacao, Dutch Antilles, Dec. 2017, **invited paper**.
- 28. Haoyu Fu and Yuejie Chi, "Compressive Spectrum Estimation using Quantized Measurements", *Asilomar Conference* on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2017, **invited paper**.
- 29. Yuejie Chi, "Convex Relaxations of Spectral Sparsity for Robust Super-Resolution and Line Spectrum Estimation", *SPIE Wavelets and Sparsity XVII*, San Diego, CA, Aug. 2017, **invited paper**.
- 30. Yuanxin Li, Yuejie Chi, Huishuai Zhang and Yingbin Liang, "Non-Convex Low-Rank Matrix Recovery from Corrupted Random Linear Measurements", *International Conference on Sampling Theory and Applications (SampTA)*, Tallinn, Estonia, Jul. 2017, **invited paper**.
- Yuanxin Li, Ali Pezeshki, Louis L. Scharf, and Yuejie Chi, "Performance Bounds for Modal Analysis using Sparse Linear Arrays", SPIE Compressive Sensing VI: From Diverse Modalities to Big Data Analytics, Anaheim, CA, Apr. 2017.
- 32. Haoyu Fu and Yuejie Chi, "Principal Subspace Estimation for Low-rank Toeplitz Covariance Matrices with Binary Sensing", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2016.
- 33. Yuejie Chi, "Kronecker Covariance Sketching for Spatial-Temporal Data", *European Signal Processing Conference* (*EUSIPCO*), Budapest, Hungary, Aug.-Sep. 2016, **invited paper**.
- Jiaqing Huang, Mingzhai Sun, and Yuejie Chi, "Super-Resolution Image Reconstruction For High-Density 3D Single-Molecule Microscopy", *IEEE International Symposium on Biomedical Imaging (ISBI)*, Prague, Czech Republic, Apr. 2016.
- 35. Yue Sun, Yuanxin Li, and Yuejie Chi, "Outlier-Robust Recovery of Low-Rank Positive Semidefinite Matrices From Magnitude Measurements", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Shanghai, China, Mar. 2016.
- 36. Yuejie Chi, "Stable Blind Spikes Deconvolution", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Shanghai, China, Mar. 2016.
- Yuanxin Li, Yingsheng He, Yuejie Chi and Yue M. Lu, "Blind Calibration of Multi-Channel Samplers using Sparse Recovery", *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Cancun, Mexico, Dec. 2015, invited paper.
- 38. Yuejie Chi and Yihong Wu, "Change-Point Estimation of High-Dimensional Streaming Data via Sketching", *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2015.

- 39. Yuejie Chi, "Blind Super-resolution of Sparse Spike Signals", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2015.
- 40. Yuanxin Li and Yuejie Chi, "Super-resolution of Mutually Interfering Signals", *IEEE International Symposium on In*formation Theory (ISIT), Hong Kong, Jun. 2015.
- 41. Yuanxin Li and Yuejie Chi, "Parameter Estimation for Mixture Models via Convex Optimization", International Conference on Sampling Theory and Applications (SAMPTA), Washington D.C., May 2015.
- 42. Yiran Jiang and Yuejie Chi, "Covariance Tracking from Sketches of Rapid Data Streams", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, April 2015.
- 43. Yuejie Chi, "Compressive Graph Clustering via Semidefinite Programming", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, April 2015.
- 44. Yuejie Chi, "One-bit Principal Subspace Estimation", *IEEE Global Conference on Signal and Information Processing* (*GlobalSIP*), Atlanta, GA, Dec. 2014.
- 45. Yuanxin Li and Yuejie Chi, "Compressive Parameter Estimation With Multiple Measurement Vectors via Structured Low-Rank Covariance Estimation", *IEEE Statistical Signal Processing Workshop (SSP)*, Gold Coast, Australia, Jul. 2014.
- Yuxin Chen, Yuejie Chi and Andrea J. Goldsmith, "Universal and Robust Covariance Estimation via Convex Programming", *IEEE International Symposium on Information Theory (ISIT)*, Honolulu, HI, Jun. 2014.
- 47. Yuejie Chi, "Joint Sparsity Recovery for Spectral Compressed Sensing", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.
- Yuxin Chen, Yuejie Chi and Andrea J. Goldsmith, "Estimation of Simultaneously Structured Covariance Matrices from Quadratic Measurements", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.
- 49. Yuejie Chi, "Sparse MIMO Radar via Structured Matrix Completion", *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Austin, TX, Dec. 2013, **invited paper**.
- 50. Yuejie Chi and Yuxin Chen, "Compressive Recovery of 2-D Off-Grid Frequencies", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2013.
- 51. Yuejie Chi, "Nearest Subspace Classification with Missing Data", Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2013.
- 52. Yuejie Chi and Robert Calderbank, "Knowledge-Enhanced Matching Pursuit", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.
- 53. Pooria Pakrooh, Louis L. Scharf, Ali Pezeshki, and Yuejie Chi, "Analysis of Fisher Information and the Cramer-Rao Bound for Nonlinear Parameter Estimation after Compressed Sensing", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.
- 54. Yuejie Chi and Robert Calderbank, "Coherence-Based Performance Guarantees for Orthogonal Match Pursuit," in *Allerton Conference on Control, Communications and Computing*, Allerton, IL, Oct. 2012.
- 55. Yao Xie, Yuejie Chi, Lorne Applebaum, and Robert Calderbank, "Compressive Demodulation of Mutually Interfering Signals", *IEEE Statistical Signal Processing Workshop*, Ann Arbor, MI, Aug. 2012.
- Yuejie Chi, Yonina C. Eldar, and Robert Calderbank, "PETReLS: Subspace Estimation and Tracking from Partial Observations", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Kyoto, Japan, Mar. 2012, Best Student Paper Award.
- 57. Harinath Garudadri, Yuejie Chi, Steve Baker, Somdeb Majumdar, Pawan K. Baheti, Dan Ballard, "Diagnostic Grade Wireless ECG Monitoring", *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Boston, MA, Aug.-Sep. 2011.
- Ahmad Gomaa, Yuejie Chi, Naofal Al-Dhahir, and Robert Calderbank, "On Training Signal Design for Multi-User MIMO-OFDM: Performance Analysis and Tradeoffs", *IEEE Vehicular Technology Conference (VTC)*, San Francisco, CA, Sep. 2011.

- 59. Yuejie Chi, Ahmad Gomaa, Naofal Al-Dhahir, and Robert Calderbank, "MMSE-Optimal Training Sequences for Spectrally-Efficient Multi-User MIMO-OFDM Systems", *European Signal Processing Conference (EUSIPCO)*, Barcelona, Spain, Aug.-Sep. 2011.
- 60. Yuejie Chi, Yiyue Wu, and Robert Calderbank, "Regularized Blind Detection for MIMO Communications", *IEEE International Symposium on Information Theory (ISIT)*, Austin, TX, Jun. 2010.
- 61. Yiyue Wu, Yuejie Chi, and Robert Calderbank, "Bayesian Compressed Sensing for Image Separation", *IEEE International Conference on Image Processing (ICIP)*, Hong Kong, Sep. 2010.
- 62. Yuejie Chi, Ali Pezeshki, Louis L. Scharf, and Robert Calderbank, "Sensitivity to Basis Mismatch in Compressed Sensing", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Dallas, TX, Mar. 2010.
- 63. Yuejie Chi, Robert Calderbank, and Ali Pezeshki, "Golay Complementary Waveforms for Sparse Delay-Doppler Radar Imaging", *International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Aruba, Dutch Antilles, Dec. 2009, **invited paper**.
- 64. Yuejie Chi, Louis L. Scharf, Ali Pezeshki, and Robert Calderbank, "The Sensitivity to Basis Mismatch of Compressed Sensing for Spectrum Analysis and Beamforming", *Workshop on Defense Applications of Signal Processing (DASP)*, Lihue, HI, Oct. 2009.
- 65. Yuejie Chi, Ali Pezeshki, Robert Calderbank, and Stephen Howard, "Range Sidelobe Suppression in a Desired Doppler Band", *International Waveform Diversity & Design Conference (WDD)*, Orlando, FL, Feb. 2009, **invited paper**.

Selected Peer-Reviewed Conference and Workshop Abstracts

- 1. Laixi Shi, Yu Zhang, Shijia Pan, and Yuejie Chi, "Data Quality-Informed Multiple Occupant Localization using Floor Vibration Sensing", *International Workshop on Mobile Computing Systems and Applications (HotMobile)*, Austin, TX, Mar. 2020.
- Syed Saqueb, Vincent Monardo, Yuejie Chi, and Kubilay Sertel, "Phase-retrieval in Single-pixel THz Imaging via Reshaped Wirtinger Flow", *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI)*, Boston, MA, Jul. 2018.
- 3. Yao Xie, Yuejie Chi and Robert Calderbank, "Low-Rank Matrix Recovery Under Poisson Noise", *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Austin, TX, Dec. 2013.
- 4. Yuxin Chen and Yuejie Chi, "Compressive Harmonic Retrieval via Matrix Completion", *Signal Processing with Adaptive Sparse Structured Representations Workshop (SPARS)*, Lausanne, Switzerland, Jul. 2013, **Best Student Paper Award Finalist**.

Editorials and Expositions

- 1. Shicong Cen and Yuejie Chi, "Global Convergence of Policy Gradient Methods in Reinforcement Learning, Games and Control", SIAG/OPT Views and News, vol. 31 no. 1, pp. 12-22, **invited**.
- 2. Namrata Vaswani, Yuejie Chi, Thierry Bouwmans, "Rethinking PCA for Modern Data Sets: Theory, Algorithms, and Applications", *Proceedings of the IEEE*, vol. 106, no. 8, pp. 1274-1276, Aug. 2018.

PATENTS

- 1. Pawan K. Baheti, Harinath Garudadri, and Yuejie 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.
- Harinath Garudadri, Pawan K. Baheti, and Yuejie 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 Conferences and Workshops

- 1. "Solving Inverse Problems with Generative Priors: From Low-rank to Diffusion Models", NIST/IEEE Conference on Computational Imaging Using Synthetic Apertures (CISA), Boulder, CO, May 2024, scheduled.
- 2. "Sample Complexity of Q-learning: from Single-agent to Federated Learning", Mitsubishi Electric Research Laboratories (MERL) Virtual Open House, Nov. 2023.
- 3. "A Tale of Preconditioning and Overparameterization in Ill-conditioned Low-rank Estimation", SIAM-NNP Section Annual Meeting, Newark, New Jersey, Oct. 2023.
- 4. "Scaling and Scalability: Accelerating Ill-conditioned Low-rank Estimation via Scaled Gradient Descent", IEEE Promoting Diversity in Signal Processing (PROGRESS) Workshop, Rhodes Island, Greece, Jun. 2023.
- 5. "A Tale of Preconditioning and Overparameterization in Ill-conditioned Low-rank Estimation", Inaugural Center for Approximation and Mathematical Data Analytics (CAMDA) Conference, College Station, TX, May 2023.
- 6. "Accelerating Ill-conditioned Low-rank Estimation via Scaled Gradient Descent", IEEE Annual Computing and Communication Workshop and Conference (CCWC), Virtual, Mar. 2023.
- 7. "Understanding the Efficacy of Reinforcement Learning Through a Non-asymptotic Lens", IEEE Data Science and Learning Workshop, Virtual, May 2022.
- 8. "Model-Free Reinforcement Learning: Non-asymptotic Statistical and Computational Guarantees", MIT Laboratory for Information & Decision Systems (LIDS) Student Conference, Virtual, Jan. 2022.
- 9. "Nonconvex Low-Rank Matrix Estimation: Geometry, Robustness, and Acceleration", SIAM Conference on Imaging Science, Virtual, Jul. 2020.
- 10. "Geometry and Regularization in Nonconvex Low-Rank Estimation", Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop, Toulouse, France, Jul. 2019.

Tutorials and Short Courses

- 1. "Generative Priors in Data Science: From Low-rank to Diffusion Models", 3-hour tutorial, North American Summer School of Information Theory (NASIT), Ottawa, Canada, Jul. 2024, scheduled.
- 2. "Information-Theoretic, Statistical and Algorithmic Foundations of Reinforcement Learning", 3-hour tutorial, with Y. Wei and Y. Chen, IEEE International Symposium on Information Theory (ISIT), Athens, Greece, Jul. 2024, scheduled.
- 3. "Statistical and Algorithmic Foundations of Reinforcement Learning", 1-day short course, with Y. Wei and Y. Chen, Joint Statistical Meetings (JSM), Toronto, Canada, Aug. 2023.
- 4. "Non-asymptotic Analysis for Reinforcement Learning", 3-hour tutorial, with Y. Wei and Y. Chen, The ACM SIGMET-RICS Conference, Jun. 2023.
- 5. "Advances in Federated Optimization: Efficiency, Resiliency, and Privacy", 3-hour tutorial, with Z. Li, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Jun. 2023.
- 6. "Reinforcement Learning: Fundamentals, Algorithms, and Theory", 2-hour tutorial, International Workshop on Intelligent Signal Processing, Virtual, Oct. 2022.
- 7. "Reinforcement Learning: Fundamentals, Algorithms, and Theory", 3-hour tutorial, with Y. Wei and Y. Chen, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), May 2022.
- 8. "Statistical and Algorithmic Foundations of Reinforcement Learning", 1-day short course, with Y. Chen, Y. Wei and Z. Zhou, ICSA Applied Statistics Symposium, Sep. 2021.
- 9. "Scalable and Robust Nonconvex Approaches for Low-rank Structure Estimation", 2-hour tutorial, International Workshop on Intelligent Signal Processing, Virtual, Sep. 2021.
- 10. "Non-asymptotic Statistical and Computational Guarantees of Reinforcement Learning Algorithms", Goldsmith Lecture, 3-hour tutorial, IEEE East Asian School of Information Theory (EASIT), Aug. 2021.

- 11. "Nonconvex Optimization for High-Dimensional Signal Estimation: Spectral and Iterative Methods", 3-hour tutorial, with Y. Chen and C. Ma, The European Signal Processing Conference (EUSIPCO), Jan. 2021.
- 12. "Taming Nonconvexity in Information Science", 3-hour tutorial, with Y. Chen, IEEE Information Theory Workshop (ITW), Guangzhou, China, Nov. 2018.
- 13. "Special Topics on Low-Rank Estimation", 1-day tutorial lectures, Dept. of Electronic Science, Xiamen University, Xiamen, China, Jun. 2018.
- 14. "Recent Advances in Nonconvex Methods for High-Dimensional Estimation", 3-hour tutorial, with Y. Chen and Y. M. Lu, The IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Apr. 2018.
- 15. "Convex Optimization Techniques for Super-resolution Parameter Estimation", 3-hour tutorial, with G. Tang, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Shanghai, Mar. 2016.
- 16. "Compressive Parameter Estimation: The Good, The Bad, and The Ugly", 3-hour tutorial, with A. Pezeshki, IEEE Statistical Signal Processing Workshop (SSP), Gold Coast, Australia, Jul. 2014.

University Colloquia, Seminars, and Invited Talks in Single-track Workshops

- 1. IMS-NUS Workshop on Statistical Machine Learning for High-Dimensional Data, Singapore, May 2024, scheduled.
- 2. Fields Institute Bootcamp on Machine Learning in Quantitative Finance, Toronto, Canada, Apr. 2024.
- 3. Ming Hsieh Department of Electrical and Computer Engineering, University of Southern California, Apr. 2024.
- 4. Department of Electrical and Systems Engineering, University of Pennsylvania, Apr. 2024.
- 5. School of Computational Science and Engineering, Georgia Institute of Technology, Apr. 2024.
- 6. Probability Seminar Series, Harvard University, Mar. 2024.
- 7. Department of Statistics, University of Chicago, Feb. 2024.
- 8. Foundations of Data Science Colloquium, Yale University, Feb. 2024.
- 9. Department of Statistics, Chinese University of Hong Kong, Jan. 2024.
- 10. Conference on the Mathematical Theory of Deep Neural Networks (DeepMath), Nov. 2023.
- 11. Department of Statistics and Data Science, Yale University, Nov. 2023.
- 12. Department of Electrical and Computer Engineering, Boston University, Nov. 2023.
- 13. CentraleSupélec, IEEE SPS France Chapter, Oct. 2023.
- 14. Universidad Carlos III de Madrid, IEEE Joint Comsoc/SPS Spain Chapter, Oct. 2023.
- 15. Women in Data Science and Mathematics Seminar Series, Virtual, Jul. 2023.
- 16. Workshop of Statistical Network Analysis and Beyond (SNAB), Anchorage, Alaska, Jun. 2023.
- 17. ICASSP Workshop on Signal Processing for Synthetic Apertures, Rhodes island, Greece, Jun. 2023.
- 18. Future of Large Scale Machine Learning Workshop, Rice University, Apr. 2023.
- 19. Charles L. and Ann Brown Distinguished Colloquium, University of Virginia, Mar. 2023.
- 20. One World Mathematics of Information, Data, and Signals (MINDS) Seminar, Virtual, Mar. 2023.
- 21. Department of Statistics Annual Winter Workshop, University of Florida, Jan. 2023.
- 22. IEEE Joint Comsoc/SPS Utah Chapter, Nov. 2022.
- 23. ECE Communications and Signal Processing Seminar Series, University of Michigan, Oct. 2022.
- 24. Department of Computer Science, Cornell University, Oct. 2022.

- 25. Department of Industrial and Systems Engineering, Lehigh University, Oct. 2022.
- 26. Department of Mathematics, Applied Mathematics and Statistics, Case Western Reserve University, Oct. 2022.
- 27. Keynote at Symposium on Acoustic, Speech and Signal Processing (SASSP), IEEE SPS Malaysia Chapter, Sep. 2022.
- 28. Google Brain, Aug. 2022.
- 29. CVPR Workshop on Federated Learning for Computer Vision (FedVision), Jun. 2022;
- 30. Institute of Informatics and Communications (IIC), University of Delhi, IEEE SPS Delhi Chapter, Jun. 2022.
- 31. IEEE SPS Atlanta Chapter, Jun. 2022.
- 32. New Advances in Statistics and Data Science, Honolulu, Hawaii, May 2022.
- 33. IEEE Signal Processing Society Webinar, May 2022.
- 34. IEEE SPS Student Branch, IIT Kharagpur, May 2022.
- 35. IEEE SPS Madras Chapter, May 2022.
- 36. IEEE SPS Wuhan Chapter, Apr. 2022.
- 37. Fairleigh Dickinson University, IEEE SPS North New Jersey Chapter, Mar. 2022.
- 38. IEEE SPS Santa Clara Valley Chapter, Feb. 2022.
- 39. Keynote at GTTI-SPS Thematic Meeting on Multimedia Signal Processing, IEEE SPS Italy Chapter, Feb. 2022.
- 40. CIF Workshop on Machine Learning, National Science Foundation, Jan. 2022.
- 41. IEEE Sensor Array and Multichannel (SAM) Technical Committee Webinar Series, Dec. 2021.
- 42. Seminar Series on Mathematics, Physics & Machine Learning, Instituto Superior Técnico (IST), Jun. 2021.
- 43. Center of Statistics and Machine Learning (CSML) and ECE Seminar, Princeton University, Apr. 2021.
- 44. Department of Electrical and Computer Engineering, University of Pittsburgh, Mar. 2021.
- 45. Online Seminar on Mathematical Foundations of Data Science, Jan. 2021.
- 46. Workshop on Seeking Low Dimensionality in Deep Neural Networks, Nov. 2020.
- 47. ECE Colloquium, Rutgers University, Nov. 2020.
- 48. Algorithmic Foundations of Data Science Seminar, Fudan University, Nov. 2020.
- 49. CMKL Seminar Series, CMU Thailand, Oct. 2020.
- 50. LMS-Bath Symposium on the Mathematics of Machine Learning, Aug. 2020.
- 51. EECS Colloquium, Oregon State University, Apr. 2020.
- 52. Center for Machine Learning, Georgia Institute of Technology, Jan. 2020.
- 53. TBSI Workshop on Data Science, Shenzhen, China, Dec. 2019.
- 54. Workshop on Deep Learning and Low-dimensional Models, Columbia University, Nov. 2019.
- 55. Berkeley Information Systems Seminar (BLISS), University of California, Berkeley, Nov. 2019.
- 56. Digital Technology Center Seminar Series, University of Minnesota, Oct. 2019.
- 57. Department of Mathematics, Rensselaer Polytechnic Institute, Sep. 2019.
- 58. WNCG Seminar Series, University of Texas, Austin, Feb. 2019.
- 59. London Workshop for Non-Convex Optimization and Matrix Factorization, Sep. 2018.

- 60. ShanghaiTech Workshop on Information, Learning, and Decision (SWILD), Shanghai, P. R. China, Jul. 2018.
- 61. Bridging Mathematical Optimization, Information Theory, and Data Science, Princeton University, May 2018.
- 62. Department of Mathematics, Peking University, Beijing, P. R. China, May 2018.
- 63. Microsoft Research Asia, Beijing, P. R. China, May 2018.
- 64. Electrical Engineering Seminar Series, Harvard University, Mar. 2018.
- 65. Electrical Engineering Colloquia, Pennsylvania State University, Mar. 2018.
- 66. Department of Electrical and Computer Engineering, Carnegie Mellon University, Mar. 2018.
- 67. International Matheon Conference on Compressed Sensing and its Applications, Berlin, Germany, Dec. 2017.
- 68. AFRL ATR Center Summer Program, Wright State University, Jun. 2017.
- 69. Department of Electrical and Computer Engineering, Carnegie Mellon University, May 2017.
- 70. Department of Electrical Engineering & Computer Science, University of Michigan, Mar. 2017.
- 71. Department of Electrical & Systems Engineering, Washington University in St. Louis, Feb. 2017.
- 72. Shannon Centennial Lecture Series, Michigan Institute for Data Science (MIDAS), Nov. 2016.
- 73. Department of Electrical and Computer Engineering, Michigan State University, Nov. 2016.
- 74. London Workshop on Sparse Signal Processing, Sep. 2016.
- 75. Sensor Directorate, Air Force Research Lab, Jan. 2016.
- 76. Department of Electrical and Computer Engineering, Carnegie Mellon University, Oct. 2015.
- 77. Applied Harmonic Analysis and Sparse Approximation Workshop, Oberwolfach, Germany, Aug. 2015.
- 78. Department of Electronics Engineering, Tsinghua University, Beijing, P. R. China, Jun. 2015.
- 79. Department of Electrical and Computer Engineering, George Mason University, May 2015.
- 80. University Lecturer's Program, Auburn University at Montgomery, Mar. 2015.
- 81. Department of Electrical Engineering and Computer Science, Colorado School of Mines, Dec. 2014.
- 82. Department of Biomedical Informatics, The Ohio State University, Dec. 2014.
- 83. Information Directorate, Air Force Research Lab, Rome, NY, Jul. 2014.
- 84. Coordinated Science Laboratory Seminar, University of Illinois at Urbana Champaign, Mar. 2014.
- 85. Information Science Laboratory Colloquium, Stanford University, Mar. 2014.
- 86. AI Seminar, Department of Computer Science and Engineering, The Ohio State University, Oct. 2013.
- 87. Department of Electrical Engineering and Computer Science Seminar, Syracuse University, Mar. 2013.
- 88. Department of Electrical and Computer Engineering Seminar, Duke University, Mar. 2013.
- 89. Shanghai JiaoTong University University of Michigan Joint Institute, Shanghai, China, Apr. 2012.
- 90. Department of Electrical and Computer Engineering Seminar, The Ohio State University, Apr. 2012.
- 91. Information Science and Networks Seminar, Cornell University, Apr. 2012.
- 92. Department of Electrical and Computer Engineering Seminar, Colorado State University, Mar. 2012.
- 93. Department of Electrical Engineering Seminar, University of Southern California, Feb. 2012.
- 94. Network and Imaging Science Laboratory Seminar, Duke University, Oct. 2011.

- 95. Wireless Sensor Laboratory Seminar, Stanford University, Nov. 2010.
- 96. Department of Electrical and Computer Engineering Seminar, Colorado State University, Sep. 2009.

Invited Short Talks at Workshops and Mini-Symposiums (non-proceedings)

- 1. Information Theory and Applications Workshop (ITA), San Diego, CA, Feb. 2023.
- 2. SIAM Conference on Mathematics of Data Science (MDS), San Diego, Sep. 2022.
- 3. International Conference on Continuous Optimization (ICCOPT), Lehigh, Jul. 2022.
- 4. Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2021.
- 5. The INFORMS Annual Meeting, Oct. 2021.
- 6. Joint Statistical Meetings, Aug. 2021.
- 7. The First Workshop on Edge Computing and Communications (EdgeComm), Nov. 2020.
- 8. Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Nov. 2019.
- 9. International Conference on Continuous Optimization (ICCOPT), Berlin, Aug. 2019.
- 10. Machine Learning in Science and Engineering Symposium (MLSE), Georgia Tech, Atlanta, Jun. 2019.
- 11. Asilomar Conference on Signals, Systems, and Computers (Asilomar), Pacific Grove, CA, Oct. 2018.
- 12. The Annual Allerton Conference on Communication, Control, and Computing, Oct. 2018.
- 13. Conference on Information Sciences and Systems (CISS), Princeton, NJ, Mar. 2018.
- 14. The Asilomar Conference on Signals, Systems, and Computers (Asilomar), Nov. 2017.
- 15. Meeting of the International Linear Algebra Society (ILAS), Ames, IA, Jul. 2017.
- 16. Applied Inverse Problems (AIP) Conference, Hangzhou, China, May 2017.
- 17. SIAM Conference on Optimization (OP), Vancouver, Canada, May 2017.
- 18. Information Theory and Applications Workshop (ITA), La Jolla, CA, Feb. 2017.
- Forty-Six Years (and counting) of Statistical Signal Processing A workshop honoring the career contributions of Louis Scharf, Asilomar, CA, Nov. 2015.
- 20. The Annual Allerton Conference on Communication, Control, and Computing, Sep.-Oct. 2015.
- 21. Information Theory and Applications Workshop (ITA), La Jolla, CA, Feb. 2015.
- 22. OSU-Battelle Joint Workshop on Big Data and Cyber Security, The Ohio State University, Nov. 2012.
- 23. Women in Machine Learning workshop, Vancouver, Canada, Dec. 2009.

PROFESSIONAL SERVICES

Committee Service in Professional Societies

- Member, Nominating Committee, SIAM Activity Group on Imaging Science (SIAG/IS), 2023.
- Member, Thomas M. Cover Dissertation Award Committee, IEEE Information Theory Society, 2023-2025.
- Expert Network, World Economic Forum, since 2022.
- Elected Member, Computational Imaging (CI) Technical Committee, IEEE Signal Processing Society, 2023-2025;
- Elected Member, Sensor Array and Multichannel Signal Processing (SAM) Technical Committee, IEEE Signal Processing Society, 2019-2021;

- Member, Data Science Initiative, IEEE Signal Processing Society, 2020-2023;
- Elected Member, Signal Processing Theory and Methods (SPTM) Technical Committee, IEEE Signal Processing Society, 2016-2018;
- Elected Member, Machine Learning for Signal Processing (MLSP) Technical Committee, IEEE Signal Processing Society, 2016-2018;

Conference, Workshop and Symposium Organization

- Organizing Committee, SIAM Conference on the Mathematics of Data Science (MDS), 2024;
- Recent Results Co-Chair, IEEE International Symposium on Information Theory (ISIT), 2024;
- Co-Organizer, CMU/RX/AFOSR Joint Workshop at the Intersection of Materials Science and Machine Learning, 2023;
- Student and Young Professional Activities Co-Chair, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Kos, Greece, 2023;
- Organizing Committee, Workshop on Seeking Low Dimensionality in Deep Neural Networks, 2021-2023;
- 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-Organizer, The Information Modeling and Control of Complex Systems (IMaCCS) Workshop, 2016, 2017.

Special Sessions and Mini-Symposiums Organization

- "The Intersection of Computational Imaging and Materials Science", co-organized with R. Jayan and J. Simmons, IS&T Electronic Imaging Symposium (EI), 2024.
- "Policy Optimization Methods for Reinforcement Learning and Control", co-organized with S. Cen, M. Fazel and L. Xiao, mini-symposium at SIAM Conference on Optimization (OPT), 2023.
- "Interface of Statistics, Optimization and Learning in Data Science", co-organized with Y. Chen, mini-symposium at SIAM Conference on Mathematics of Data Science (MDS), 2022.
- "Policy Optimization for Reinforcement Learning", special session at International Conference on Continuous Optimization (ICCOPT), 2022.
- "Multi-Agent and Safe Reinforcement Learning", special session at The Conference on Information Sciences and Systems (CISS), 2022.
- "Provable Tensor and Matrix Methods for Sensing and Learning", co-organized with X. Fu, special session at The International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2022.
- "Computational Imaging for Materials and Microscopy", co-organized with J. Simmons, S. Venkatakrishnan and D. Gursoy, IEEE International Conference on Image Processing (ICIP), 2021.
- "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.

Member of Technical Program Committees

- Area Chair, Conference on Neural Information Processing Systems (NeurIPS), 2023;
- ACM/IEEE Symposium on Edge Computing, 2022;
- IEEE International Symposium on Information Theory (ISIT), 2021, 2022;
- Conference on Machine Learning and Systems (MLSys), 2020, 2021;
- 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.

Selected Invited Workshop Participation

- NSF-IEEE Workshop on Toward Explainable, Reliable and Sustainable Machine Learning in Signal & Data Science, 2023.
- Simons Foundation Mathematical and Scientific Foundations of Deep Learning Annual Meeting, 2022, 2023.
- 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.
- Women In Machine Learning Workshop, 2009.
- Grace Hopper Celebration, 2008 and 2009.

Review Activities

- Reviewer for Grants and Proposals:
 - Panelist, CISE, National Science Foundation, 2016, 2017, 2018, 2020, 2021, 2023.
 - Panelist, ENG, National Science Foundation, 2017, 2022, 2023.
 - Ad-hoc Reviewer, National Science Foundation, 2016, 2018, 2022.
 - Ad-hoc Reviewer, Army Research Office, 2020.
 - Panelist, National Institutes of Health, 2020 (twice).
 - Ad-hoc Reviewer, Air Force Office of Scientific Research, 2016, 2017, 2018, 2020.
 - Reviewer, C3.ai Digital Transformation Institute COVID-19 Research Grant, 2020.
 - Ad-hoc Reviewer, US-Israel Binational Science Foundation, 2019.
 - Review Committee, Simons Foundation Collaboration Grants for Mathematicians, 2017.
 - Reviewer, Ohio Supercomputing Center, 2015.
- Reviewer for Peer-reviewed Journals:
 - Signal Processing: IEEE Signal Processing Magazine; IEEE Trans. on Signal Processing; IEEE Journal of Selected Topics in Signal Processing; IEEE Trans. on Computational Imaging; EURASIP Journal on Advances in Signal Processing; Elsevier Signal Processing; IEEE Signal Processing Letters;
 - *Machine Learning:* Journal of Machine Learning Research; IEEE Trans. on Pattern Analysis and Machine Intelligence; Journal of Mathematical Imaging and Vision; Elsevier Pattern Recognition;
 - Information Theory and Communications: IEEE Trans. on Information Theory; IEEE Trans. on Wireless Communications; IEEE Trans. on Mobile Computing; IEEE Communications Letters; IEEE Trans. on Communications; IEEE Trans. on Vehicular Technology;
 - Mathematics and Statistics: Applied and Computational Harmonic Analysis; SIAM Journal on Imaging Sciences; SIAM Journal on Mathematics of Data Science; SIAM Journal on Optimization; SIAM Journal on Matrix Analysis and Applications; The Annals of Statistics; Operations Research;
 - Miscellaneous: IEEE Access; IEEE Trans. on Industrial Informatics; IEEE/ACM Trans. on Computational Biology and Bioinformatics; Geoscience and Remote Sensing Letters; Scientific Reports.
- Reviewer for Peer-reviewed Conferences:
 - Signal Processing: IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP); IEEE Global Conference on Signal and Information Processing (GlobalSIP); IEEE Data Science Workshop (DSW); IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM); IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP); Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop; European Signal Processing Conference (EUSIPCO);
 - Machine Learning: Conference on Neural Information Processing Systems (NeurIPS); International Conference on Machine Learning (ICML); Conference On Learning Theory (COLT);
 - Information Theory and Communications: IEEE International Symposium on Information Theory (ISIT); IEEE Information Theory Workshop (ITW); IEEE Wireless Communications and Networking Conference (WCNC); IEEE Global Communications Conference (Globecom); Conference on Information Sciences and Systems (CISS); The Allerton Conference on Communication, Control, and Computing (Allerton);
 - *Miscellaneous:* The ACM Conference on Bioinformatics, Computational Biology and Health Informatics (ACM-BCB).

UNIVERSITY SERVICES

Service at Carnegie Mellon University

- Member, Faculty Search Committee, Dept. of Electrical and Computer Engineering, 2019-2020, 2021-2024.
- Member, Curriculum Core Committee, Dept. of Electrical and Computer Engineering, 2021-2023.

- Member, PRT Ad hoc Committee, College of Engineering, 2021-2022, 2023-2024.
- Member, Faculty Search Committee, Dept. of Mathematics, 2021-2022.
- Chair, Ph.D. Graduate Admission Committee, Dept. of Electrical and Computer Engineering, 2019-2021.
- Member, 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, Ph.D. Graduate Admission Committee, Dept. of Electrical and Computer Engineering, 2018-2019.
- Member, Review Committee for MS Program in Computational Biology (MSCB), 2018.

Service at The Ohio State University

- Member, Faculty Search Committee, Dept. of Electrical and Computer Engineering, 2016.
- Member, Recruiting & Financial Aid Committee, Dept. of Electrical and Computer Engineering, 2015-2017.
- Member, Graduate Admission Committee, Dept. of Electrical and Computer Engineering, 2012-2015.

OUTREACH ACTIVITIES

Professional Outreach Activities

- Panelist, NSF CAREER Panel at ICASSP 2023, Jun. 2023.
- Panelist, Pittsburgh Women in Mathematics and Computing Symposium (WMCS), Feb. 2023.
- Faculty Mentor, Rising Stars in EECS Workshop, Nov. 2020.
- Panelist, Women in ECE Panel Discussion, IEEE Pittsburgh Section, Oct. 2020.
- Faculty Presenter, IEEE OSU Student Branch, Nov. 2012.

Outreach Activities at Carnegie Mellon University

- Panelist, "AI Fusion and AI Engineering", Software Engineering Institute Research Review, Nov. 2021.
- Organizer and Moderator, "Women in Academia: Yes We Can", ECE Carnival, Apr. 2021.
- Co-organizer and Presenter, a series of four workshops on graduate applications for minority-serving institutions, College of Engineering, Sep.-Oct. 2020.
- 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.

Outreach Activities at The Ohio State University

- 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.