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Christopher A. Metzler

Academic Appointments and Education

Since 01/21 **Assistant Professor**, *University of Maryland*, Computer Science, UMIACS, and Electrical and Computer Engineering (by courtesy), College Park, MD.

02/19–12/20 **Postdoctoral Researcher**, *Stanford University*, Electrical Engineering, Stanford, CA.
Advisor: Gordon Wetzstein

01/15–1/19 **Doctor of Philosophy**, *Rice University*, Electrical and Computer Engineering, Houston, TX.
Thesis: Data-driven Computational Imaging with Applications to Imaging Through and Around Obstacles
Advisors: Richard Baraniuk and Ashok Veeraraghavan

08/13–12/14 **Master of Science**, *Rice University*, Electrical and Computer Engineering, Houston, TX.
Thesis: Denoising-based Approximate Message Passing for Compressed Sensing
Advisor: Richard Baraniuk

08/9–05/13 **Bachelor of Science**, *Rice University*, Electrical and Computer Engineering, Houston, TX.
Magna Cumme Laude

Research Interests

I develop new systems and algorithms for solving problems in computational imaging and sensing, machine learning, and wireless communications.

Fellowships

2023 **NSF CAREER**, *NSF*, Neural Computational Imaging - A Path Towards Seeing Through Scattering, .

2022 **AFOSR Young Investigator Program Award**, *USAF*, Adversarial Sensing: A Self-Supervised Approach to AI-Based Multimodal Sensor Fusion, .

2019 **Intelligence Community Postdoctoral Research Fellowship**, *DoE*, Combining Domain Expertise and Machine Learning to Enable Practical, Low-Cost Infrared Imaging with Compressive Sensing, .

2018 **Texas Space Grant Consortium Fellowship**, *NASA*, .

2017 **Ken Kennedy Institute High Performance Computing Fellowship**, *Rice University*, .

2015 **NSF Graduate Research Fellowship**, *NSF*, .

2014 **NDSEG Fellowship**, *DoD*, .

2013 **Texas Instruments Fellowship**, *Rice University*, .

Grants

2023 **Collaborative Proposal**, *ONR*, Imaging in the Presence of Dynamic Distortions; Fundamental Limits and Practical Approaches, .

2023 **UMD Grand Challenges Seed Grant**, *UMD*, Effective and Equitable Weather Forecasting in a Changing Climate with Machine Learning (co-PI), .

2023 **Brain and Behavior Institute Seed Grant**, *UMD*, Toward an adaptive view of neural synchrony: Assessing moment-to-moment dynamics during caregiver-child brain-to-brain synchrony in majority-BIPOC low-SES dyads (co-PI), .

2023 **SAAB Seed Grant**, *SAAB*, Multimodal Underwater Perception Using Sound and Light (PI), .

2022 **Northrop Grumman Seed Grant**, *Northrop Grumman*, Few-Shot Learning with Supervision by Denoising: Enabling Robust Multimodal Automatic Target Recognition, .

Awards

2023 **Best Poster Award**, *International Conference on Computational Photography*.

2022 **Third Place in Atmospheric Turbulence Mitigation Challenge**, *CVPR Workshop on Bridging the Gap Between Computational Photography and Visual Recognition*.

2019 **Best Contribution Award**, *International Biomedical and Astronomical Signal Processing Frontiers Workshop*.

2019 **Alan Berman Research Publication Award**, *Naval Research Laboratory*.

2017 **Runner-up Best Paper**, *International Conference on Computational Photography*.

2015 **Top 10% Paper**, *International Conference on Image Processing*.

Industrial and National Lab Positions

Since 06/22 **Applied Research Laboratory for Intelligence and Security (ARLIS)**, *Affiliate Assistant Research Scientist*.

Since 04/19 **Aerospace, Automotive, Defense, and Medical Device Companies**, *Consultant*.

06/17-08/17 **Naval Research Laboratory**, *Graduate Research Intern in Applied Optics Branch*, Washington, DC.

05/16-07/16 **Ball Aerospace**, *RF Engineering Intern in Mission Systems Group*, Broomfield, CO.

05/15-07/15 **Ball Aerospace**, *RF Engineering Intern in Mission Systems Group*, Broomfield, CO.

05/14-08/14 **ViaSat**, *Software Engineering Intern*, Carlsbad, CA.

05/13-08/13 **National Instruments**, *Hardware Engineering Intern*, Austin, TX.

Publications

42 **Fourier ptychographic microscopy image stack reconstruction using implicit neural representations**, *Zhou, H., Feng, B., Guo, H., Lin, S., Liang, M., Metzler, C., Yang, C.*, Optica, 2023.

41 **SUD2: Supervision by Denoising Diffusion Models for Image Reconstruction**, *Chan, M., Young, S., Metzler, C.*., NeurIPS 2023 Workshop on Deep Learning and Inverse Problems, 2023.

40 **Multimodal Neural Surface Reconstruction: Recovering the Geometry and Appearance of 3D Scenes from Events and Grayscale Images**, *Mahbub, S., Feng, B., Metzler, C.*., NeurIPS 2023 Workshop on Deep Learning and Inverse Problems, 2023.

39 **Multilook compressive sensing in the presence of speckle noise**, *Chen, X., Hou, Z., Metzler, C., Maleki, A., Jalali, S.*, NeurIPS 2023 Workshop on Deep Learning and Inverse Problems, 2023.

38 **TiDy-PSFs: Computational Imaging with Time-Averaged Dynamic Point-Spread-Functions**, *Shah, S., Kulshresha, S., Metzler, C.*, Accepted in International Conference on Computer Vision (ICCV), 2023.

37 **NeuWS: Neural Wavefront Shaping for Guidestar-Free Imaging Through Static and Dynamic Obscurants**, *Feng, B., Gao, H., Xie, M., Boominathan, V., Sharma, M., Veeraraghavan, A., Metzler, C.*, Science Advances, 2023.

36 **Supervision by Denoising**, *Young, S., Dalca, A., Ferrante, E., Golland, P., Metzler, C., Fischl, B., Iglesias, J.*, TPAMI, 2023.

35 **Weakly-Supervised Semantic Segmentation of Ships Using Thermal Imagery**, *Joshi, R., Adams, E., Ziemann, M. Metzler, C.*, Workshop on Naval Applications of Machine Learning, 2023.

34 **TurbuGAN: An Adversarial Learning Approach to Spatially-Varying Multiframe Blind Deconvolution with Applications to Imaging Through Turbulence**, *Feng, B., Xie, M., Metzler, C.*, IEEE Journal on Selected Areas in Information Theory (JSAIT), 2023.

33 **Denoising Generalized Expectation-Consistent Approximation for MR Image Recovery**, *Shastri, S. K., Ahmad, R., Metzler, C., and Schniter, P.*, IEEE Journal on Selected Areas in Information Theory (JSAIT), 2022.

32 **Adversarial Sensing: A Learning-Based Approach to Inverse Problems with Stochastic Forward Models**, *Feng, B., Xie, M., Metzler, C.*, Emerging Topics in Artificial Intelligence (ETAI), 2022.

31 **Imaging Through Turbulence with GANs**, *Feng, B., Xie, M., Metzler, C.*, Asilomar Conference on Signals, Systems, and Computers, 2022.

30 **Transformer Networks for Robust Radar Waveform Classification**, *Ziemann, M., Metzler, C.*, Asilomar Conference on Signals, Systems, and Computers, 2022.

29 **Adversarial Sensing for Sub-Diffraction Imaging**, *Feng, B., Metzler, C.*, Computational Optical Sensing and Imaging (COSI), 2022.

28 **Expectation Consistent Plug-and-Play for MRI**, *Shastri, S. K., Ahmad, R., Metzler, C., and Schniter, P.*, The International Conference on Acoustics, Speech, & Signal Processing (ICASSP), 2022.

27 **Matching Plug-and-Play Algorithms to the Denoiser**, *Shastri, S. K., Ahmad, R., Metzler, C., and Schniter, P.*, Neurips Workshops on Deep Learning and Inverse Problems, 2021.

26 **Solving Inverse Problems using Self-supervised Deep Neural Nets**, *Liu, J., Balaji, M., Metzler, C., Asif, M., Rangarajan, P.*, Computational Optical Sensing and Imaging (COSI), 2021.

25 **Depth from Defocus with Learned Optics for Imaging and Occlusion-aware Depth Estimation**, *Ikoma, H., Nguyen, C., Peng, Y., Metzler, C., and Wetzstein, G.*, IEEE International Conference on Computational Photography (ICCP), 2021.

24 **D-VDAMP: Denoising-based Approximate Message Passing for Compressive MRI**, *Metzler, C., and Wetzstein, G.*, The International Conference on Acoustics, Speech, & Signal Processing (ICASSP), 2021.

23 **SUREmap: Predicting Uncertainty in CNN-based Image Reconstructions using Stein's Unbiased Risk Estimate**, *Kitichotkul, R., Metzler, C., Ong, F., and Wetzstein, G.*, The International Conference on Acoustics, Speech, & Signal Processing (ICASSP), 2021.

22 **Deep S^{3}PR: Simultaneous Source Separation and Phase Retrieval Using Deep Generative Models**, *Metzler, C., and Wetzstein, G.*, The International Conference on Acoustics, Speech, & Signal Processing (ICASSP), 2021.

21 **Deep Optics: Learning Cameras and Optical Computing Systems**, *Wetzstein, G., Ikoma, H., Metzler, C., and Peng, Y.*, IEEE 54th Asilomar Conference on Signals, Systems and Computers, 2020.

20 **Deep Learning Techniques for Inverse Problems in Imaging**, *Ongie, G., Jalal, A., Metzler, C., Baraniuk, R., Dimakis, A., Willett, R.*, IEEE Journal on Selected Areas in Information Theory, 2020.

19 **Real-Time Unknown-View Tomography Using Recurrent Neural Networks with Applications to Keyhole Imaging**, *Metzler, C., and Wetzstein, G.*, Computational Optical Sensing and Imaging (COSI), 2020.

18 **Keyhole Imaging: Non-line-of-sight Imaging and Tracking Along a Single Optical Path**, *Metzler, C., Lindell, D., and Wetzstein, G.*, IEEE Transactions on Computational Imaging, 2020.

17 **Deep Optics for Single-shot High-dynamic-range Imaging**, *Metzler, C., Ikoma, H., Peng, Y., and Wetzstein, G.*, Conference on Computer Vision and Pattern Recognition (CVPR) (Oral), 2020.

16 **Optimizing Monocular Depth Estimation with Global Depth Histogram Matching Using a Single SPAD Transient**, *Nishimura, M., Lindell, D., Metzler, C., and Wetzstein, G.*, European Conference on Computer Vision (ECCV), 2020.

15 **Deep-inverse Correlography: Towards Real-time High-resolution Non-line-of-sight Imaging**, *Metzler, C., Heide, F., Rangarajan, P., Balaji, M., Viswanath, A., Veeraraghavan, A., and Baraniuk, R.*, Optica, 2020.
Optica top 10 most cited paper.

14 **Inverse Scattering via Transmission Matrices: Broadband Illumination and Fast Phase Retrieval Algorithms**, *Metzler*, C., Sharma*, M.K., Nagesh, S., Baraniuk, R., Cossairt, O. and Veeraraghavan, A.*, IEEE Transactions on Computational Imaging, 2019.

13 **Unsupervised Learning with Stein's Unbiased Risk Estimator with Applications to Denoising and Compressed Sensing**, *Metzler, C., Mousavi, A., Heckel, R., and Baraniuk, R.*, International Biomedical and Astronomical Signal Processing Frontiers Workshop (BASP), 2019.
Best paper award.

12 **Imaging Through Macroscopic Scattering Media**, *Kanaev, A., Watnik, A., Gardner, D., Metzler, C., Judd, K., Lebow, P., Novak, K., and Lindle, J.*, Optics and Photonics News, 2018.

11 **Imaging Through Extreme Scattering in Extended Dynamic Media**, *Kanaev, A., Watnik, A., Gardner, D., Metzler, C., Judd, K., Lebow, P., Novak, K., and Lindle, J.*, Optics Letters, 2018.
NRL Alan Berman Research Publication Award

10 **prDeep: Robust Phase Retrieval with a Flexible Deep Network**, *Metzler, C., Schniter, P., Veeraraghavan, A., and Baraniuk, R.*, International Conference on Machine Learning (ICML), 2018.

9 **An Expectation-maximization Approach to Tuning Generalized Vector Approximate Message Passing**, *Metzler, C., Schniter, P., and Baraniuk, R.*, ICA/LVA Special Session on Advances in Phase Retrieval and Applications, 2018.

8 **Learned D-AMP: Principled Neural-network-based Compressive Image Recovery**, *Metzler, C., Mousavi, A., and Baraniuk, R.*, Neural Information Processing Systems (NeurIPS), 2017.

7 **Coherent Inverse Scattering via Transmission Matrices: Efficient Phase Retrieval Algorithms and a Public Dataset**, *Metzler*, C., Sharma*, M.K., Nagesh, S., Baraniuk, R., Cossairt, O. and Veeraraghavan, A.*, IEEE International Conference on Computational Photography (ICCP), 2017.
Best paper honorable mention.

6 **BM3D-prGAMP: Compressive Phase Retrieval Based on BM3D Denoising**, *Metzler, C., Maleki, A., and Baraniuk, R.*, IEEE International Conference on Image Processing (ICIP), 2016.

5 **From Denoising to Compressed Sensing**, *Metzler, C., Maleki, A., and Baraniuk, R.*, IEEE Transactions on Information Theory, 2016.

4 **Iterative Reconstruction from Limited Angle, Limited View Projections for Cryo-electron Tomography**, *Wood, S., Fontenla, E., Metzler, C., Chiu, W., Baraniuk, R.*, IEEE 49th Asilomar Conference on Signals, Systems and Computers, 2015.

3 **Dynamic Model Generation for Application of Compressed Sensing to Cryo-electron Tomography Reconstruction**, *Wood, S., Fontenla, E., Metzler, C., Chiu, W., Baraniuk, R.*, IEEE Signal Processing and Signal Processing Education Workshop (SP/SPE), 2015.

2 **Optimal Recovery from Compressive Measurements via Denoising-based Approximate Message Passing**, *Metzler, C., Maleki, A., and Baraniuk, R.*, IEEE International Conference on Sampling Theory and Applications (SampTA), 2015.

1 **BM3D-AMP: A New Image Recovery Algorithm Based on BM3D Denoising**, *Metzler, C., Maleki, A., and Baraniuk, R.*, IEEE International Conference on Image Processing (ICIP), 2015.
Top 10% paper.

Preprints

5 **Seeing the World through Your Eyes**, *Alzayer, H., Zhang, K., Feng, B., Metzler, C., Huang, J.B.*, Under review.

4 **Snapshot High-Dynamic-Range Imaging with a Polarization Camera**, *Xie, M., Chan, M., Metzler, C.*, Under review.

3 **A Scalable Training Strategy for Blind Multi-Distribution Noise Removal**, *Zhang, K., Kulshresha, S., Metzler, C.*, Under review.

2 **Roadmap on Machine Learning for Microscopy: Plug-and-Play Learning-Based Computational Imaging**, *Metzler, C., Xie, M., Zhang, K.*, Under Review.

1 **MetaDIP: Accelerating Deep Image Prior with Meta Learning**, *Zhang, K., Xie, M., Gor, M., Chen, Y., Zhou, Y., Metzler, C.*, Under revision.

Patent Applications

1 **Neural Wavefront Shaping**, *Metzler, C., Veeraraghavan, A., Feng, B., Gao, H., Xie, M., Boominathan, V., Sharma, M.*, Provisional Patent Application Filed, 2023.

Talks

2024 **Invited Talk**, *Neural Wavefront Shaping*, SPIE Photonics West.

2023 **Invited Talk**, *Neural Wavefront Shaping*, NIH NCI.

2023 **Invited Talk**, *Neural Wavefront Shaping*, Purdue Imaging Seminar Series.

2023 **Invited Talk**, *Imaging Through Scattering with Coherent Light*, Asilomar.

2023 **Invited Talk**, *Neural Wavefront Shaping*, Asilomar.

2023 **Invited Talk**, *Neural Wavefront Shaping*, ARL.

2023 **Talk**, *Neural Wavefront Shaping*, COSI 2023.

2023 **Invited Talk**, *Neural Wavefront Shaping*, JHU APL.

2023 **Invited Talk**, *Neural Wavefront Shaping*, HHMI Janelia.

2023 **Invited Talk**, *Recent Advances in Non-Line-of-Sight Imaging: Tiny Aperture and Off-the-Shelf Cameras*, ICASSP Workshop on Synthetic Apertures.

2023 **Invited Talk**, *A Learning Based Approach to Sensing and Communicating in Adverse Conditions*, Laboratory for Telecommunication Sciences.

2022 **Invited Talk**, *Recent Advances in Non-Line-of-S ight Imaging*, IEEE Signal Processing Society Webinar.

2022 **Talk**, *The Basics of End-to-End Computational Imaging System Design*, Indian Conference on Computer Vision, Graphics and Image Processing.

2022 **Panel Member**, *Academic Job Search Prep Panelist*, UMD.

2022 **Invited Talk**, *TurbuGAN: An Adversarial Learning Approach To Spatially-Varying Multiframe Blind Deconvolution With Applications To Imaging Through Turbulence*, Asilomar Conference on Signals, Systems, and Computers.

2022 **Invited Talk**, *Keyhole Imaging: Non-line-of-sight Imaging Along a Single Optical Path*, IEEE Synthetic Aperture Standards Workshop.

2022 **Invited Talk**, *Adversarial Sensing: A Learning-based Approach to Inverse Problems with Unknown Forward Models*, IPAM Workshop on "Diffractive Imaging with Phase Retrieval".

2022 **Invited Talk**, *My Journey to Professorship*, Statler Graduate Fellowship Workshop. West Virginia University.

2022 **Invited Talk**, *Adversarial Sensing: A Learning-based Approach to Inverse Problems with Stochastic Forward Models*, SPIE Optics + Photonics 2022.

2022 **Invited Talk**, *Computational Imaging and Sensing with Unknown Forward Models*, Rice University Computer Vision Seminar Series.

2021 **Invited Talk**, *Computational Imaging with Approximate Message Passing and Learning*, Asilomar 2021 Special Session on "Deep learning and inverse problems".

2021 **Invited Talk**, *Designing Imaging Systems with End-to-End Learning*, OSA Imaging and Applied Optics Congress.

2021 **Invited Talk**, *Computational Imaging with Physics, Statistics, and Machine Learning*, NIST, Gaithersburg.

2021 **Talk**, *D-VDAMP: Denoising-based Approximate Message Passing for Compressive MRI*, ICASSP 2021.

2021 **Talk**, *Deep S3PR: Simultaneous Source Separation and Phase Retrieval using Deep Generative Models*, ICASSP 2021.

2020 **Invited Talk**, *Approximate Message Passing (AMP) Algorithms for Computational Imaging*, NeurIPS Workshop on Deep Learning and Inverse Problems.

2020 **Invited Talk**, *Computational Imaging with Approximate Message Passing and Learning*, Oxford University.

2020 **Invited Talk**, *Deep S3PR: Simultaneous Source Separation and Phase Retrieval Using Deep Generative Models*, Asilomar Conference on Signals, Systems, and Computers.

2020 **Talk**, *Data-driven Solutions to Challenging Imaging Problems*, Intelligence Community Academic Research Symposium.

2020 **Invited Talk**, *Computational Imaging with Physics, Statistics, and Machine Learning*, UC Berkeley.

2020 **Invited Talk**, *Deep-Inverse Correlography: Imaging Around Corners with Deep Learning Based Phase Retrieval*, SIAM, IS20 Special Session on Phase Retrieval.

2020 **Talk**, *Keyhole Imaging: Non-Line-of-Sight Imaging and Tracking of Moving Objects Along a Single Optical Path*, COSI.

2020 **Talk**, *Deep Optics for Single-shot High-dynamic-range Imaging*, CVPR.

2020 **Talk**, *Keyhole Imaging: Non-Line-of-Sight Imaging and Tracking of Moving Objects Along a Single Optical Path*, CCD Workshop, CVPR.

2020 **Invited Talk**, *Computational Imaging with Physics, Statistics, and Machine Learning*, UMD.

2020 **Invited Talk**, *Computational Imaging with Physics, Statistics, and Machine Learning*, MIT.

2019 **Invited Talk**, *Extreme Imaging with Statistical Signal Processing*, Information Systems Laboratory Colloquium, Stanford.

2018 **Invited Talk**, *Deep Learning for Seeing Around Corners*, Machine Learning Lunch, Rice.

2018 **Talk**, *prDeep: Robust Phase Retreival with a Flexible Deep Network*, ICML.

2018 **Invited Talk**, *Imaging Through Scattering Media Using Phase Retrieval*, ICA/LVA Special Session on Phase Retrieval and Applications.

2018 **Invited Talk**, *Unsupervised Learning with Stein's Unbiased Risk Estimator: A Practical Approach to Universal Compressive Sensing*, SIAM IS-18 Minisymposium on Computational and Compressive Imaging Technologies and Applications.

2018 **Invited Talk**, *Data-driven Computational Imaging: Improved Imaging Through Scattering Media with Visible Light*, Stanford Center for Imaging Systems and Engineering.

2018 **Invited Talk**, *Phase Retrieval: Fast, Robust, and Data-driven Algorithms for Computational Imaging*, SPIE Photonics West Quantitative Phase Imaging Workshop IV.

2017 **Talk**, *Coherent Inverse Scattering via Transmission Matrices*, ONR EO/IR Imaging Systems Annual Review Meeting.

2017 **Invited Talk**, *Unrolling: A Principled Method to Develop Deep Neural Networks*, Rice Geo-Mathematical Imaging Group Project Review.

2017 **Talk**, *Coherent Inverse Scattering via Transmission Matrices: Efficient Phase Retrieval Algorithms and a Public Dataset*, ICCP.

2016 **Talk**, *BM3D-prGAMP: Compressive Phase Retrieval Based on BM3D Denoising*, ICME MM-SPARSE Workshop.

2015 **Invited Talk**, *Connecting Bayesian and Denoising-based Compressed Sensing*, Asilomar.

2015 **Talk**, *BM3D-AMP: A New Image Recovery Algorithm Based on BM3D Denoising*, ICIP.

Students Supervised

PhD **Kevin Zhang**, *UMD*, 2021–.

Mingyang Xie, *UMD*, 2021–.

Matthew Ziemann, *UMD*, 2021–.

Chenyi Ling, *UMD*, 2021–.

Brandon Feng, *UMD*, 2021–2023, *co-adviced with Amitabh Varshney.

Matthew Chan, *UMD*, 2022–.

Haiyun Guo, *Rice*, 2022–, *co-adviced with Ashok Veeraraghavan.

Haoming Cai, *UMD*, 2023–.

Sanjaya Lakmal, *UMD*, 2023–.

Roksana Khanom, *UMD*, 2023–.

Janith Senanayaka, *UMD*, 2023–.

Isabelle Rathbun, *UMD*, 2023–.

MS **Sachin Shah**, *UMD*, 2022–.

Sazan Mahbub, *UMD*, 2022–2023.

Sakshum Kulshrestha, *UMD*, 2021–2023.

Rushil Joshi, *UMD*, 2021–2023.

BS **Arnan Huang**, *UMD*, 2022–2023.

Philip Mathew, *UMD*, 2022–2023.

Caleb Wheeler, *UMD*, 2021–2022.

Priyanka Mehta, *UMD*, 2021–2022.

Kao Kitichotkul, *Stanford University*, 2020–2022, Now PhD student at Boston University.

Mentorship

Summers 2022, 2023 **RISC Internship Program Mentor**, Applied Research Laboratory for Intelligence and Security (ARLIS), College Park.

Summer 2020 **REU Internship Program Mentor**, Stanford University.

Summer 2019 **RISE High School Internship Program Mentor**, Stanford University.

Summer 2019 **STEM to SHTEM High School Internship Program Mentor**, Stanford University.

Teaching

Spring 2024 **Instructor**, *CMSC848B/ENEE739Z Selected Topics in Information Processing; Computational Imaging*, University of Maryland, College Park.

Spring 2023 **Instructor**, *CMSC426: Computer Vision*, University of Maryland, College Park.

Fall 2022 **Instructor**, *CMSC848B/ENEE739Z Selected Topics in Information Processing; Computational Imaging*, University of Maryland, College Park.

Spring 2022 **Instructor**, *CMSC426: Computer Vision*, University of Maryland, College Park.

Fall 2021 **Instructor**, *CMSC848B Selected Topics in Information Processing; Computational Imaging*, University of Maryland, College Park.

Spring 2021 **Instructor**, *CMSC426: Computer Vision*, University of Maryland, College Park.

Spring 2019 **Guest Lecturer**, *EE367/CS448I: Computational Imaging and Display*, Stanford University.

Spring 2015 **Teaching Assistant**, *Fundamentals of Electrical Engineering II*, Rice University.

Fall 2013 **Teaching Assistant**, *Advanced VLSI*, Rice University.

Fall 2014 **Guest Speaker**, 4^{th} *Grade Class in Houston Independent School District*.

Fall 2011 **Course Assistant**, *Signals, Systems, and Learning*, Rice University.

Spring 2011 **Course Assistant**, *Fundamentals of Electrical Engineering II*, Rice University.

Fall 2010 **Course Assistant**, *Fundamentals of Electrical Engineering I*, Rice University.

Professional Service and Outreach

Program Committee, Editor, or Organizer, *IEEE Transactions on Computational Imaging Associate Editor, Asilomar 2023 Special Session on Neural Representations for Imaging Inverse Problems, ICVGIP 2022 Tutorial on Designing and Optimizing Computational Imaging Systems with End-to-End Learning, International Conference on Computational Photography 2022, Computational Optical Sensing and Imaging 2022, Computational Optical Sensing and Imaging 2021, NeurIPS Workshop on Deep Learning and Inverse Problems 2021 and 2023.*

Grant Reviewer, *Natural Sciences and Engineering Research Council of Canada Reviewer 2023, U.S.-Israel Binational Science Foundation Reviewer 2023, NSF Reviewer 2024, NSF Reviewer 2023 ×2, NSF Reviewer 2022, European Research Council Panel Expert 2021.*

Signal Processing Reviewer, *IEEE Signal Processing Magazine; IEEE Transactions on Image Processing; IEEE Transactions on Information Theory; IEEE Transactions on Signal Processing; IEEE Signal Processing Letters; IEEE Journal on Selected Areas in Information Theory; IEEE Journal of Selected Topics in Signal Processing; IEEE Open Journal of Signal Processing; IEEE Wireless Communications Letters; IEEE Sensors Journal; IEEE Transactions on Multimedia; ACM Transactions on Graphics; Nature Scientific Reports; SIAM Journal on Imaging Sciences; Elsevier Digital Signal Processing; Elsevier Signal Processing: Image Communication; Elsevier Journal of Visual Communication and Image Representation; Springer Journal of Circuits, Systems, and Signal Processing; ISIT; SAMPTA; SPAWC; ITW.*

Machine Learning Reviewer, *CVPR, NeurIPS, ICML, ICCV, ECCV, UAI, TMLR, IEEE Journal on Selected Areas in Information Theory Special Issue on Deep Learning.*

Optics/Graphics Reviewer, *Nature, Optica, Physics Letters, Optics Express, Photonics Research, Applied Optics, IEEE Transactions on Computational Imaging, ACM SIGGRAPH, ACM SIGGRAPH Asia, EuroGraphics.*

Other Reviewer, *Robotics Science and Systems.*

Recognitions, *Optica 2022 Outstanding Reviewer.*

08/21-Present **Organizer**, *UMD Computer Vision Seminar Series.*

08/21-Present **Club Advisor**, *UMD Google Developer Student Club.*

11/21, 11/22 **Technica Workshop Organizer**, *DIY Photoshop - An Introduction to Image Processing in Python.*

03/19-07/19 **Organizer**, *Imaging and Microscopy Journal Club.*

08/17-05/18 **Professional Development Chair**, *Rice ECE Graduate Student Association.*

08/16-05/17 **Social Chair**, *Rice ECE Graduate Student Association.*

08/14-05/15 **Community Service Committee Member**, *Rice Graduate Student Association.*

08/12-05/13 **Vice President**, *Rice IEEE.*

08/11-05/12 **Treasurer**, *Rice IEEE.*

08/09-05/13 **Member**, *Rice Society of Automotive Engineers.*

Media Coverage

2023 **Neural Wavefront Shaping**, *Homepage of Science.org.*

2023 **Seeing the World Through Your Eyes**, *>1M video views.*

2021 **Keyhole Imaging: Non-Line-of-Sight Imaging and Tracking of Moving Objects Along a Single Optical Path**, *Featured in Gizmodo, ExtremeTech, PetaPixel, and more. >100K YouTube views.*

2020 **Deep-inverse Correlography: Towards Real-time High-resolution Non-line-of-sight Imaging**, *Featured in Science Magazine, IEEE Spectrum Magazine, The Times of London, The Telegraph, CNET, MSN.com, and more.*