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Education

- 2011-2015 **École Polytechnique Fédérale de Lausanne (EPFL)**, Lausanne, Switzerland
PhD in Electrical Engineering
- 2005-2010 **EPFL**, Lausanne, Switzerland
Bachelor of Science (BS) and Master of Science (MS) in Communication Systems

Postgraduate academic and research appointments

- 2023-present **Washington University in St. Louis (WashU)**, St. Louis, MO, USA
Director of Computational Imaging Group (CIG)
Associate Professor of Electrical and Systems Engineering (ESE)
Associate Professor of Computer Science and Engineering (CSE)
- 2024 **École Normale Supérieure (ENS)**, Paris, France
Visiting Professor at Data Science Center and Kastler-Brossel Laboratory
- 2023-2024 **Google Research**, Mountain View, CA, USA
Visiting Faculty Researcher
- 2017-2023 **WashU**, St. Louis, MO, USA
Assistant Professor of ESE and CSE. Director of CIG.
- 2015-2017 **Mitsubishi Electric Research Laboratories (MERL)**, Cambridge, MA, USA
Research Scientist

Other professional and academic experience

- 2013 **Stanford University**, Stanford, CA, USA
Visiting Student Researcher in the Information Systems Lab (ISL)
- 2010-2011 **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA
Visiting Student in the Research Lab of Electronics (RLE)
- 2009 **Microsoft**, Zurich, Switzerland
Intern
- 2007-2008 **Carnegie Mellon University (CMU)**, Pittsburgh, PA, USA
Exchange Student in Electrical and Computer Engineering (ECE)

Honors and awards

- 2023 Outstanding Teaching Award from the ESE department of WashU
- 2021 NSF CAREER Award
- 2021 Fellow of the Scialog Initiative on “Advancing Biomaging”
- 2017 IEEE Signal Processing Society Best Paper Award
- 2017 IEEE ICASSP Student Paper Award finalist
- 2016 EPFL Doctorate Award finalist
- 2013 Education Award from the EPFL Department of Life Sciences
- 2011 IEEE CAMSAP Student Paper Award finalist

Research interests and expertise

My research focuses on the development of new algorithms and mathematical insights for computational imaging. Current topics of interest include deep learning, generative models, large-scale optimization, biomedical imaging, computer vision, signal processing, and imaging inverse problems. Research effort is taking place at two complementary levels: (a) fundamental and mathematical aspects of imaging; (b) application-oriented projects in collaboration with researchers in specific areas.

Publications

Journal

1. Y. Hu, W. Gan, C. Ying, T. Wang, C. Eldeniz, J. Liu, Y. Chen, H. An, and U. S. Kamilov, "SPICER: Self-Supervised Learning for MRI with Automatic Coil Sensitivity Estimation and Reconstruction," *Magn. Reson. Med.*, vol. 92, no. 3, pp. 1048-1063, September 2024
2. W. Gan, Q. Zhai, M. T. McCann, C. G. Cardona, U. S. Kamilov, and B. Wohlberg, "PtychoDV: Vision Transformer-Based Deep Unrolling Network for Ptychographic Image Reconstruction," *IEEE Open J. Signal Process.*, vol. 5, pp. 539-547, 2024
3. N. Yismaw, U. S. Kamilov, and M. S. Asif, "Domain Expansion via Network Adaptation for Solving Inverse Problems," *IEEE Trans. Comput. Imag.*, vol. 10, pp. 549-559, 2024
4. P. Cascarano, A. Benfenati, U. S. Kamilov, and X. Xu, "Constrained Regularization by Denoising With Automatic Parameter Selection," *IEEE Signal Process. Lett.*, vol. 31, pp. 556-560, 2024
5. S. Chen, C. Eldeniz, T. J. Fraum, D. R. Ludwig, W. Gan, J. Liu, U. S. Kamilov, D. Yang, H. M. Gach, and H. An, "Respiratory motion management using a single rapid MRI scan for a 0.35 T MRI-Linac system," *Med. Phys.*, vol. 50, no. 10, pp. 6163-6176, October 2023
6. Z. Zou, J. Liu, B. Wohlberg, and U. S. Kamilov, "Deep Equilibrium Learning of Explicit Regularizers for Imaging Inverse Problems," *IEEE Open J. Signal Process.*, vol. 4, pp. 390-398, 2023
7. W. Gan, C. Ying, P. Eshraghi, T. Wang, C. Eldeniz, Y. Hu, J. Liu, Y. Chen, H. An, and U. S. Kamilov, "Self-Supervised Deep Equilibrium Models for Inverse Problems with Theoretical Guarantees," *IEEE Trans. Comput. Imag.*, vol. 9, pp. 796-807, 2023
8. S. Kahali, S. V. V. N. Kothapalli, X. Xu, U. S. Kamilov, and D. Yablonskiy, "Deep-Learning-Based Accelerated and Noise-Suppressed Estimation (DANSE) of quantitative Gradient Recalled Echo (qGRE) MRI metrics associated with Human Brain Neuronal Structure and Hemodynamic Properties," *NMR Biomed.*, vol. 36, no. 5, p. e4883, May 2023
9. Z. Zhang, J. Liu, D. Yang, U. S. Kamilov, and G. Hugo, "Deep learning-based motion compensation for four-dimensional cone-beam computed tomography (4D-CBCT) reconstruction," *Med. Phys.*, vol. 50, no. 2, pp. 808-820, February 2023
10. U. S. Kamilov, C. A. Bouman, G. T. Buzzard, and B. Wohlberg, "Plug-and-Play Methods for Integrating Physical and Learned Models in Computational Imaging," *IEEE Signal Process. Mag.*, vol. 40, no. 1, pp. 85-97, January 2023
11. S. Shoushtari, J. Liu, Y. Hu, and U. S. Kamilov, "Deep Model-Based Architectures for Inverse Problems under Mismatched Priors," *IEEE J. Sel. Areas Inf. Theory*, vol. 3, no. 3, pp. 468-480, September 2022
12. R. Liu, Y. Sun, J. Zhu, L. Tian, and U. S. Kamilov, "Recovery of Continuous 3D Refractive Index Maps from Discrete Intensity-Only Measurements using Neural Fields," *Nat. Mach. Intell.*, vol. 4, pp. 781-791, September 2022
13. W. Gan, Y. Sun, C. Eldeniz, J. Liu, H. An, and U. S. Kamilov, "Deformation-Compensated Learning for Image Reconstruction without Ground Truth," *IEEE Trans. Med. Imag.*, vol. 41, no. 9, pp. 2371-2384, September 2022

14. S. Chen, T. J. Fraum, C. Eldeniz, J. Mhlanga, W. Gan, T. Vahle, U. B. Krishnamurthy, D. Faul, H. M. Gach, M. M. Binkley, U. S. Kamilov, R. Laforest, and H. An, "MR-Assisted PET Respiratory Motion Correction Using Deep-Learning Based Short-Scan Motion Fields," *Magn. Reson. Med.*, vol. 88, no. 2, pp. 676-690, 2022
15. X. Xu, S. V. V. N. Kothapalli, J. Liu, S. Kahali, W. Gan, D. Yablonskiy, and U. S. Kamilov, "Learning-based Motion Artifact Removal Networks for Quantitative R2* Mapping," *Magn. Reson. Med.*, vol. 88, no. 1, pp. 106-119, July 2022
16. Z. Hou, C. A. Guertler, R. J. Okamoto, H. Chen, J. R. Garbow, U. S. Kamilov, and P. V. Bayly, "Estimation of the mechanical properties of a transversely isotropic material from shear wave fields via artificial neural networks," *J. Mech. Behav. Biomed. Mater.*, vol. 126, p. 105046, February 2022
17. Y. Sun, J. Liu, M. Xie, B. Wohlberg, and U. S. Kamilov, "CoIL: Coordinate-based Internal Learning for Tomographic Imaging," *IEEE Trans. Comput. Imag.*, vol. 7, pp. 1400-1412, November 2021
18. E. Cihat, W. Gan, S. Chen, T. J. Fraum, D. R. Ludwig, Y. Yan, J. Liu, T. Vahle, U. B. Krishnamurthy, U. S. Kamilov, and H. An, "Phase2Phase: Respiratory Motion-Resolved Reconstruction of Free-Breathing Magnetic Resonance Imaging Using Deep Learning Without a Ground Truth for Improved Liver Imaging," *Invest. Radiol.*, vol. 56, no. 12, pp. 809-819, December 2021
19. Y. Sun, Z. Wu, X. Xu, B. Wohlberg, and U. S. Kamilov, "Scalable Plug-and-Play ADMM with Convergence Guarantees," *IEEE Trans. Comput. Imag.*, vol. 7, pp. 849-863, July 2021
20. J. Liu, Y. Sun, W. Gan, X. Xu, B. Wohlberg, and U. S. Kamilov, "SGD-Net: Efficient Model-Based Deep Learning with Theoretical Guarantees," *IEEE Trans. Comput. Imag.*, vol. 7, pp. 598-610, June 2021
21. J. Liu, Y. Sun, C. Eldeniz, W. Gan, H. An, and U. S. Kamilov, "RARE: Image Reconstruction using Deep Priors Learned without Ground Truth," *IEEE J. Sel. Topics Signal Process.*, vol. 14, no. 6, pp. 1088-1099, October 2020
22. Z. Wu, Y. Sun, A. Matlock, J. Liu, L. Tian, and U. S. Kamilov, "SIMBA: Scalable Inversion in Optical Tomography using Deep Denoising Priors," *IEEE J. Sel. Topics Signal Process.*, vol. 14, no. 6, pp. 1163-1175, October 2020
23. X. Xu, Y. Sun, J. Liu, and U. S. Kamilov, "Provable Convergence of Plug-and-Play Priors with MMSE denoisers," *IEEE Signal Process. Lett.*, vol. 27, pp. 1280-1284, 2020
24. M. Torop, S. Kothapalli, Y. Sun, J. Liu, S. Kahali, D. A. Yablonskiy, and U. S. Kamilov, "Deep learning using a biophysical model for Robust and Accelerated Reconstruction (RoAR) of quantitative and artifact-free R2* images," *Magn. Reson. Med.*, vol. 84, pp. 2932-2942, 2020
25. Y. Sun, J. Liu, and U. S. Kamilov, "Block Coordinate Regularization by Denoising," *IEEE Trans. Comput. Imag.*, vol. 6, pp. 908-921, 2020
26. G. Song, Y. Sun, J. Liu, Z. Wang, and U. S. Kamilov, "A New Recurrent Plug-and-Play Prior Based on the Multiple Self-Similarity Network," *IEEE Signal Process. Lett.*, vol. 27, pp. 451-455, December 2020
27. Y. Sun, B. Wohlberg, and U. S. Kamilov, "An Online Plug-and-Play Algorithm for Regularized Image Reconstruction," *IEEE Trans. Comput. Imaging*, vol. 5, no. 3, pp. 395-408, September 2019
28. W. Tahir, U. S. Kamilov, and L. Tian, "Holographic Particle Localization under Multiple Scattering," *SPIE Adv. Photon.*, vol. 1, no. 3, p. 036003, May/June 2019
29. H. Mansour, D. Liu, U. S. Kamilov, and P. T. Boufounos, "Sparse Blind Deconvolution for Distributed Radar Autofocus Imaging," *IEEE Trans. Comput. Imaging*, vol. 4, no. 4, pp. 537-551, December 2018
30. E. Bostan, U. S. Kamilov, and L. Waller, "Learning-based Image Reconstruction via Parallel Proximal Algorithm," *IEEE Signal Process. Lett.*, vol. 25, no. 7, pp. 989-993, July 2018
31. Y. Sun, Z. Xia, and U. S. Kamilov, "Efficient and accurate inversion of multiple scattering with deep learning," *Opt. Express*, vol. 26, no. 11, pp. 14678-14688, May 2018

32. H.-Y. Liu, D. Liu, H. Mansour, P. T. Boufounos, L. Waller, and U. S. Kamilov, "SEAGLE: Sparsity-Driven Image Reconstruction under Multiple Scattering," *IEEE Trans. Comput. Imag.*, vol. 4, no. 1, pp. 73-86, March 2018
33. U. S. Kamilov, H. Mansour, and B. Wohlberg, "A Plug-and-Play Priors Approach for Solving Nonlinear Imaging Inverse Problems," *IEEE Signal Process. Lett.*, vol. 24, no. 12, pp. 1872-1876, December 2017
34. U. S. Kamilov and P. T. Boufounos, "Motion-Adaptive Depth Superresolution," *IEEE Trans. Image Process.*, vol. 26, no. 4, pp. 1723-1731, April 2017
35. U. S. Kamilov, "A Parallel Proximal Algorithm for Anisotropic Total Variation Minimization," *IEEE Trans. Image Process.*, vol. 26, no. 2, pp. 539-548, February 2017
36. S. Rangan, A. K. Fletcher, P. Schniter, and U. S. Kamilov, "Inference for Generalized Linear Models via Alternating Directions and Bethe Free Energy Minimization," *IEEE Trans. Inf. Theory*, vol. 63, no. 1, pp. 676-697, January 2017
37. U. S. Kamilov, D. Liu, H. Mansour, and P. T. Boufounos, "A Recursive Born Approach to Nonlinear Inverse Scattering," *IEEE Signal Process. Lett.*, vol. 23, no. 8, pp. 1052-1056, August 2016
38. U. S. Kamilov and H. Mansour, "Learning optimal nonlinearities for iterative thresholding algorithms," *IEEE Signal Process. Lett.*, vol. 23, no. 5, pp. 747-751, May 2016
39. U. S. Kamilov, I. N. Papadopoulos, M. H. Shoreh, A. Goy, C. Vonesch, M. Unser, and D. Psaltis, "Optical tomographic image reconstruction based on beam propagation and sparse regularization," *IEEE Trans. Comput. Imag.*, vol. 2, no. 1, pp. 59-70, March 2016
40. U. S. Kamilov, I. N. Papadopoulos, M. H. Shoreh, A. Goy, C. Vonesch, M. Unser, and D. Psaltis, "Learning Approach to Optical Tomography," *Optica*, vol. 2, no. 6, pp. 517-522, June 2015
 ★ Covered in Nature "News & Views" article "Computational imaging: Machine learning for 3D microscopy" in July 2015 (Nature, Vol. 523, Iss. 7561, p. 416, 2015)
41. U. S. Kamilov, I. N. Papadopoulos, M. H. Shoreh, D. Psaltis, and M. Unser, "Isotropic inverse-problem approach for two-dimensional phase unwrapping," *J. Opt. Soc. Am. A*, vol. 32, no. 6, pp. 1092-1100, June 2015
42. U. S. Kamilov, E. Bostan, and M. Unser, "Variational Justification of Cycle Spinning for Wavelet-Based Solutions of Inverse Problems," *IEEE Signal Process. Lett.*, vol. 21, no. 11, pp. 1326-1330, November 2014
43. U. S. Kamilov, S. Rangan, A. K. Fletcher, and M. Unser, "Approximate Message Passing with Consistent Parameter Estimation and Application to Sparse Learning," *IEEE Trans. Inf. Theory*, vol. 60, no. 5, pp. 2969-2985, May 2014
44. E. Bostan, U. S. Kamilov, M. Nilchian, and M. Unser, "Sparse Stochastic Processes and Discretization of Linear Inverse Problems," *IEEE Trans. Image Process.*, vol. 22, no. 7, pp. 2699-2710, July 2013
45. A. Kazerouni, U. S. Kamilov, E. Bostan, and M. Unser, "Bayesian Denoising: From MAP to MMSE Using Consistent Cycle Spinning," *IEEE Signal Process. Lett.*, vol. 20, no. 3, pp. 249-252, March 2013
46. A. Amini, U. S. Kamilov, E. Bostan, and M. Unser, "Bayesian Estimation for Continuous-Time Sparse Stochastic Processes," *IEEE Trans. Signal Process.*, vol. 61, no. 4, pp. 907-920, February 2013
47. U. S. Kamilov, P. Pad, A. Amini, and M. Unser, "MMSE Estimation of Sparse Lévy Processes," *IEEE Trans. Signal Process.*, vol. 61, no. 10, pp. 137-147, January 2013
48. U. S. Kamilov, V. K. Goyal, and S. Rangan, "Message-Passing De-Quantization with Applications to Compressed Sensing," *IEEE Trans. Signal Process.*, vol. 60, no. 12, pp. 6270-6281, December 2012.
 ★ IEEE Signal Processing Society Best Paper Award 2017
49. U. S. Kamilov, A. Bourquard, A. Amini, and M. Unser, "One-Bit Measurements with Adaptive Thresholds," *IEEE Signal Process. Lett.*, vol. 19, no. 10, pp. 607-610, October 2012

50. U. S. Kamilov, E. Bostan, and M. Unser, "Wavelet Shrinkage with Consistent Cycle Spinning Generalizes Total Variation Denoising," *IEEE Signal Process. Lett.*, vol. 19, no. 4, pp. 187–190, April 2012

Conference, symposium, and workshop papers

1. S. Shoushtari, J. Liu, E. P. Chandler, M. S. Asif, and U. S. Kamilov, "Prior Mismatch and Adaptation in PnP-ADMM with a Nonconvex Convergence Analysis," Proc. Int. Conf. Mach. Learn. (ICML 2024) (Vienna, Austria, July 21-27), in press
★ [Selective Machine Learning conference](#)
2. Y. Hu, S. V. V. N. Kothapalli, W. Gan, A. L. Sukstanskii, G. F. Wu, M. Goyal, D. A. Yablonskiy, U. S. Kamilov, "DiffGEPCI: 3D MRI Synthesis from mGRE Signals using 2.5D Diffusion Model," Proc. Int. Symp. Biomedical Imaging 2024 (ISBI 2024) (Athens, Greece, May 27-30), in press
3. Y. Hu, M. Delbracio, P. Milanfar, and U. S. Kamilov, "A Restoration Network as an Implicit Prior," Proc. Int. Conf. Learn. Represent. (ICLR 2024) (Vienna, Austria, May 7-11)
★ [Selective Machine Learning conference](#)
4. J. Hu, W. Gan, Z. Sun, H. An, and U. S. Kamilov, "A Plug-and-Play Image Registration Network," Proc. Int. Conf. Learn. Represent. (ICLR 2024) (Vienna, Austria, May 7-11)
★ [Selective Machine Learning conference](#)
5. M. Renaud, J. Liu, V. de Bortoli, A. Almansa, and U. S. Kamilov, "Plug-and-Play Posterior Sampling under Mismatched Measurement and Prior Models," Proc. Int. Conf. Learn. Represent. (ICLR 2024) (Vienna, Austria, May 7-11)
★ [Selective Machine Learning conference](#)
6. W. Gan, S. Shoushtari, Y. Hu, J. Liu, H. An, and U. S. Kamilov, "Block Coordinate Plug-and-Play Methods for Blind Inverse Problems," Proc. Ann. Conf. Neural Information Processing Systems (NeurIPS 2023) (New Orleans, LA, December 10-December 16), pp. 78607-78620
★ [Selective Machine Learning conference](#)
7. S. Hurault, U. S. Kamilov, A. Leclaire, and N. Papadakis, "Convergent Bregman Plug-and-Play Image Restoration for Poisson Inverse Problems," Proc. Ann. Conf. Neural Information Processing Systems (NeurIPS 2023) (New Orleans, LA, December 10-December 16), 27251-27280
★ [Selective Machine Learning conference](#)
8. C. Park, S. Shoustari, W. Gan, and U. S. Kamilov, "Convergence of Nonconvex PnP-ADMM With MMSE Denoisers," Proc. Int. Workshop on Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP 2023) (Los Suenos, Costa Rica, December 10-13), pp. 511-515
★ [Student Paper Award finalist](#)
9. E. P. Chandler, S. Shoustari, J. Liu, M. S. Asif, and U. S. Kamilov, "Overcoming Distribution Shifts in Plug-And-Play Methods With Test-Time Training," Proc. Int. Workshop on Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP 2023) (Los Suenos, Costa Rica, December 10-13), pp. 186-190
10. J. Liu, R. Anirudh, J. J. Thiagarajan, S. He, K. A. Mohan, H. Kim, and U. S. Kamilov, "DOLCE: A Model-Based Probabilistic Diffusion Framework for Limited-Angle CT Reconstruction," Proc. IEEE Int. Conf. Comp. Vis. (ICCV 2023) (Paris, France, October 2–6), pp. 10498-10508
★ [Selective Computer Vision conference](#)
11. S. Shoushtari, J. Liu, and U. S. Kamilov, "Diffusion Models for Phase Retrieval in Computational Imaging," Proc. 57th Asilomar Conf. Signals, Systems, & Computers 2023, (Pacific Grove, CA, October 29-November 1), pp. 779-783
12. T. Kerepecky, J. Liu, X. W. Ng, D. W. Piston, U. S. Kamilov, "Dual-Cycle: Self-Supervised Dual-View Fluorescence Microscopy Image Reconstruction using CycleGAN," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2023) (Rhodes Island, Greece, June 4–10), pp. 1-5

13. W. Gan, H. Gao, Z. Sun, and U. S. Kamilov, "SINCO: A Novel structural regularizer for image compression using implicit neural representations," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2023) (Rhodes Island, Greece, June 4–10), pp. 1-5
14. J. Hu, S. Shoushtari, Z. Zou, J. Liu, Z. Sun, and U. S. Kamilov, "Robustness of Deep Equilibrium Architectures to Changes in the Measurement Model," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2023) (Rhodes Island, Greece, June 4–10), pp. 1-5
15. P. E. Boroojeni, W. Gan, J. Liu, Y. Hu, Y. Chen, P. Commean, C. Eldeniz, T. Wang, G. Skolnick, C. Merrill, K. Patel, Hongyu An, and U. S. Kamilov, "Deep Unfolding MR reconstruction - weighting the k-space sampling Density in training Loss (wkDeLo)," Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2023) (Toronto, Canada, 3-8 June)
16. J. Liu, X. Xu, W. Gan, S. Shoushtari, and U. S. Kamilov, "Online Deep Equilibrium Learning for Regularization by Denoising," Proc. Ann. Conf. Neural Information Processing Systems (NeurIPS 2022) (New Orleans, LA, November 28-December 9), pp. 25363-25376
★ [Selective Machine Learning conference](#)
17. W. Shangguan, Y. Sun, W. Gan, and U. S. Kamilov, "Learning Cross-Video Neural Representations for High-Quality Frame Interpolation," Proc. European Conference on Computer Vision (ECCV 2022) (Tel-Aviv, Israel, October 23-27), pp. 511-528
★ [Selective Computer Vision conference](#)
18. Y. Hu, J. Liu, X. Xu, and U. S. Kamilov, "Monotonically Convergent Regularization by Denoising," Proc. IEEE Int. Conf. Image Proc. (ICIP 2022) (Bordeaux, France, October 16-19), pp. 426-430
19. A. H. Al-Shabli, X. Xu, I. Selesnick, and U. S. Kamilov, "Bregman Plug-and-Play Priors," Proc. IEEE Int. Conf. Image Proc. (ICIP 2022) (Bordeaux, France, October 16-19), pp. 241-245
20. S. Chen, W. Gan, C. Eldeniz, U. S. Kamilov, T. J. Fraum, and H. An, "DL-MOTIF: Deep Learning Based Motion Transformation Integrated Forward-Fourier Reconstruction for Free-Breathing Liver DCE-MRI," Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2022) (London, UK, 7-12 May), p. 3469
21. S. Chen, T. J. Fraum, C. Eldeniz, J. Mhlanga, W. Gan, T. Vahle, U. B. Krishnamurthy, D. Faul, H. M. Gach, M. M. Bankley, U. S. Kamilov, R. Laforest, and H. An, "MR-Assisted PET Respiratory Motion Correction Using Deep-Learning Based Short-Scan Motion Fields," Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2022) (London, UK, 7-12 May), p. 128
22. J. Liu, S. Asif, B. Wohlberg, and U. S. Kamilov, "Recovery Analysis for Plug-and-Play Priors using the Restricted Eigenvalue Condition," Proc. Advances in Neural Information Processing Systems 35 (NeurIPS 2021), pp. 5921-5933
★ [Selective Machine Learning conference](#)
23. M. Xie, J. Liu, Y. Sun, B. Wohlberg, and U. S. Kamilov, "Joint Reconstruction and Calibration using Regularization by Denoising," Proc. IEEE Int. Conf. Comp. Vis. Workshops (ICCVW 2021) (Oct 11-17), pp. 4028-4037
24. W. Gan, Y. Hu, C. Eldeniz, J. Liu, Y. Chen, H. An, and U. S. Kamilov, "Self-Supervised Joint Image Reconstruction and Coil Sensitivity Calibration in Parallel MRI without Ground Truth," Proc. IEEE Int. Conf. Comp. Vis. Workshops (ICCVW 2021) (Oct 11-17), pp. 4048-4056
25. J. Liu, Y. Sun, W. Gan, X. Xu, B. Wohlberg, and U. S. Kamilov, "Stochastic Deep Unfolding for Imaging Inverse Problems," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2021) (Toronto, Canada, June 6-11), pp. 1395-1399
26. W. Gan, Y. Sun, C. Eldeniz, J. Liu, H. An, and U. S. Kamilov, "Deep image reconstruction for MRI using unregistered measurement pairs without ground truth," Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2021) (May 15-20), p. 1959
27. S. Chen, C. Eldeniz, W. Gan, U. S. Kamilov, T. Fraum, and H. An, "Forward-Fourier Motion-Corrected Reconstruction for Free-Breathing Liver DCE-MRI," Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2021) (May 15-20), p. 128

28. S. Chen, C. Eldeniz, W. Gan, U. S. Kamilov, D. Yang, M. Gach, and H. An, “Respiratory Motion Detection and Reconstruction Using CAPTURE and Deep Learning for a 0.35T MRI-LINAC System: An Initial Study,” Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2021) (May 15-20), p. 4254
29. Y. Sun, J. Liu, Y. Sun, B. Wohlberg, and U. S. Kamilov, “Async-RED: A Provably Convergent Asynchronous Block Parallel Stochastic Method using Deep Denoising Priors,” Proc. Int. Conf. Learn. Represent. (ICLR 2021) (Vienna, Austria, May 4-8)
★ [Spotlight paper in a selective Machine Learning conference \(a top 4% paper\)](#)
30. W. Gan, Y. Sun, C. Eldeniz, H. An and U. S. Kamilov, “Deep Image Reconstruction using Unregistered Measurements without Groundtruth,” Proc. Int. Symp. Biomedical Imaging 2021 (ISBI 2021) (Nice, France, April 13-16), pp. 1531-1534
31. X. Xu, J. Liu, Y. Sun, B. Wohlberg, and U. S. Kamilov, “Boosting the Performance of Plug-and-Play Priors via Denoiser Scaling,” Proc. 54th Asilomar Conf. Signals, Systems, & Computers 2020, (Pacific Grove, CA, November 1-5), pp. 1305-1312
32. W. Gan, C. Eldeniz, J. Liu, H. An, and U. S. Kamilov, “Image reconstruction for MRI using deep CNN priors trained without ground truth,” Proc. 54th Asilomar Conf. Signals, Systems, & Computers 2020, (Pacific Grove, CA, November 1-5), pp. 475-479
33. C. Eldeniz, W. Gan, S. Chen, J. Liu, U. S. Kamilov, and H. An, “Phase2Phase: Reconstruction of free-breathing MRI into multiple respiratory phases using deep learning without a ground truth,” Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2020) (August 8-14), p. 807
34. J. Liu, C. Eldeniz, Y. Sun, W. Gan, S. Chen, H. An, and U. S. Kamilov, “RED-N2N: Image reconstruction for MRI using deep CNN priors trained without ground truth,” Proc. Int. Soc. of Magnetic Resonance in Medicine (ISMRM 2020) (August 8-14), p. 993
35. T. Ge, U. Villa, U. S. Kamilov, and J. O’Sullivan, “Proximal Newton Methods for x-ray imaging with non-smooth regularization,” Proc. IS&T Electronic Imaging 2020 (Burlingame, CA, USA, January 26-30), p. 007
36. J. Liu, Y. Sun, and U. S. Kamilov, “Infusing Learned Priors into Model-Based Multispectral Imaging,” Proc. 8th Int. Workshop on Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP 2019) (Guadeloupe, France, December 15-18)
37. Y. Sun, J. Liu, and U. S. Kamilov, “Block Coordinate Regularization by Denoising,” Proc. Advances in Neural Information Processing Systems 33 (NeurIPS 2019) (Vancouver, Canada, December 8-14), pp. 382–392
★ [Selective Machine Learning conference](#)
38. Z. Wu, Y. Sun, J. Liu, and U. S. Kamilov, “Online Regularization by Denoising with Applications to Phase Retrieval,” Proc. IEEE Int. Conf. Comp. Vis. Workshops (ICCVW 2019) (Seoul, South Korea, Oct 27-Nov 2), pp. 1–9
39. J. Xing, U. S. Kamilov, W. Wu, Y. Wang, and M. Zhang, “Plug-and-Play Priors for Reconstruction-based Placental Image Registration,” Proc. Medical Image Computing and Computer-Assisted Intervention Workshops (MICCAIW 2019) (Shenzhen, China, Oct 13-17), pp. 133–142
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61. D. Liu, U. S. Kamilov, and P. T. Boufounos, "Compressive Tomographic Radar Imaging with Total Variation Regularization," Proc. IEEE 4th International Workshop on Compressed Sensing Theory and its Applications to Radar, Sonar, and Remote Sensing (CoSeRa 2016) (Aachen, Germany, September 19-22), pp. 120-123
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★ [Student Paper Award finalist](#)
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1. Z. Zhang, J. Liu, D. Yang, U. S. Kamilov, and G. Hugo, "Deep Learning-Based Motion Compensation for 4D-CBCT Reconstruction," Ann. Meeting American Association of Physicists in Medicine (AAPM 2022) (Washington, DC, 10-14 July), #65461
★ [Best-in-Physics Award \(Imaging\)](#)

2. S. Chen, C. Eldeniz, T. J. Fraum, D. Ludwig, W. Gan, U. S. Kamilov, D. Yang, and H. An, "Respiratory Motion Detection and Reconstruction Using CAPTURE and Deep Learning Phase2Phase Network for a 0.35 T MRI-LINAC System," Ann. Meeting American Association of Physicists in Medicine (AAPM 2022) (Washington, DC, 10-14 July), #66527
★ Best-in-Physics Award (Imaging)

Thesis

1. U. S. Kamilov, "Sparsity-Driven Statistical Inference for Inverse Problems," Swiss Federal Institute of Technology Lausanne, EPFL Thesis no. 6545 (2015), 198 p., March 27, 2015
★ EPFL Doctorate Award finalist 2016
2. U. S. Kamilov, "Optimal Quantization for Compressive Sensing with Relaxed Belief Propagation," Master's Thesis EPFL/MIT, April 2011

Book chapters

1. J. Liu, R. Hyder, S. Asif, and U. S. Kamilov, "Optimization Algorithms for MR Reconstruction," in Magnetic Resonance Image Reconstruction, M. Akcakaya, M. Doneva, C. Prieto, Eds. Elsevier, 2022, ch. 3, pp. 59–72

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1. Y. Ma, H. Mansour, D. Liu, P. T. Boufounos, and U. S. Kamilov, "Accelerated Image Reconstruction for Nonlinear Diffractive Imaging," arXiv:1708.01663, 2017
2. Z. Zou, J. Liu, S. Shoushtari, Y. Wang, W. Gan, and U. S. Kamilov, "FLAIR: A Conditional Diffusion Framework with Applications to Face Video Restoration," arXiv:2311.15445
3. S. Shoushtari, E. P. Chandler, J. Zhang, M. Senanayake, S. V. Pingali, M. Foston, and U. S. Kamilov, "PnP Restoration with Domain Adaptation for SANS," arXiv:2403.10495
4. C. Park, W. Gan, Z. Zou, Y. Hu, Z. Sun, U. S. Kamilov, "A Structured Pruning Algorithm for Model-based Deep Learning," arXiv:2311.02003
5. H. Xie, W. Gan, B. Zhou, X. Chen, Q. Liu, X. Guo, L. Guo, H. An, U. S. Kamilov, G. Wang, C. Liu, "DDPET-3D: Dose-aware Diffusion Model for 3D Ultra Low-dose PET Imaging," arXiv:2311.04248
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Patents

1. "Self-supervised deep learning image reconstruction with weighted training loss" with H. An, W. Gan, P. E. Boroojeni, W. Gan, J. Liu, and Y. Hu (US Patent Application 20240135604)
2. "Self-supervised joint image reconstruction and coil sensitivity calibration in parallel MRI without ground truth" with H. An, Y. Hu, J. Liu, C. Eldeniz, W. Gan, and Y. Chen (US Patent Application 20230122658)
3. "Systems and methods of reconstructing magnetic resonance images using deep learning" with H. An, W. Gan, C. Eldeniz, and J. Liu, 04/2023 (US Patent 12,000,918)
4. "System and Method for Robust Sensor Localization Based on Euclidean Distance Matrix," with D. Liu, H. Mansour, and P. T. Boufounos, 11/2020 (US Patent 10,823,845)
5. "System and Method for Fused Radar Imaging Under Position Ambiguity of Antennas," with H. Mansour, D. Liu, and P. T. Boufounos, 06/2020 (US Patent 10,677,915)
6. "Sparsity Enforcing Neural Network," with H. Mansour and D. Liu, 05/2020 (US Patent 10,657,446)

7. "System and Method for Fusing Outputs of Sensors Having Different Resolutions," with J. Castorena and P. T. Boufounos, 03/2020 (US Patent 10,582,121)
8. "System and Method for Determining Structure of Material," with D. Liu and H. Mansour, 02/2020 (US Patent 10,571,408)
9. "System and Method for Radar Imaging Using Distributed Moving Platforms Under Unknown Position Perturbations," with D. Liu and P. T. Boufounos (US Patent 10,545,232)
10. "Systems and Methods for Multi-Spectral Image Super-Resolution," with D. Liu, B. Wen, H. Mansour, and P. T. Boufounos, 11/2019 (US Patent 10,482,576)
11. "Online convolutional dictionary learning," with K. Degraux, P. T. Boufounos, and D. Liu, 09/2019 (US Patent 10,409,888)
12. "Systems and Methods of Fusing Multi-angle View HD Images Based on Epipolar Geometry and Matrix Completion," with D. Liu, Y. Ma, H. Mansour, Y. Taguchi, P. T. Boufounos, and A. Vetro, 02/2019 (US Patent 10,212,410)
13. "Method and System for Motion Adaptive Fusion of Optical Images and Depth Maps Acquired by Cameras and Depth Sensors," with P. T. Boufounos, 12/2018 (US Patent 10,148,873)
14. "System and Method for Radar Imaging Using Distributed Arrays and Compressive Sensing," with D. Liu and P. T. Boufounos, 08/2018 (US Patent 10,042,046)
15. "System and Method for Through-the-Wall-Radar-Imaging using Total-Variation Denoising," with H. Handa, H. Mansour, and D. Liu, 05/2018 (US Patent 9,971,019)
16. "Method and System for Through-the-Wall Radar Imaging," with H. Mansour, 03/2018 (US Patent 9,915,730)

Invited talks

1. University of Lille, France, SigMA seminar, 06/2024
2. University of Rennes, France, IETR Seminar, 06/2024
3. University of Cote d'Azur, Sophia Antipolis, France, i3S Seminar, 06/2024
4. Inria Saclay, Paris, France, DATAIA Seminar, 06/2024
5. Gordon Research Conference on Image Science, Sunday River, ME, 06/2024
6. University of Bologna, Italy, Summer School on Mathematics ML for Image Analysis, 06/2024
7. UCLouvain, Louvain-la-Neuve, Departement of Mathematical Engineering, 05/2024
8. International Centre for Mathematical Sciences, Edinburgh, Scotland, 04/2024
9. Heriot-Watt University, Edinburgh, Scotland, School of Engineering and Physical Sciences, 04/2024
10. Inria Saclay, Paris, France, Le Séminaire Palaisien, 04/2024
11. ENS Ulm, Paris, France, Data Science Center Seminar, 03/2024
12. University of Wisconsin–Madison, WI, USA, ECE Machine Learning in Medical Imaging, 03/2024
13. Langevin Institute, Paris, France, 02/2024
14. Saint Louis University, St. Louis, MO, USA, AI for Medicine Workshop, 10/2023

15. University of Michigan, Ann Arbor, MI, USA, Generative AI Symposium, 09/2023
16. International Congress on Industrial and Applied Mathematics, Tokyo, Japan, 08/2023
17. AFOSR Workshop on Materials Science and Machine Learning, Dayton, OH, USA, 07/2023
18. International Symposium on Computational Sensing, Luxembourg, 06/2023 (plenary)
19. University College London, The United Kingdom, High-Beams Seminar, 05/2023
20. Bilkent University, Ankara, Turkey, 05/2023
21. BASP, Villars-sur-Ollon, Switzerland, 02/2023
22. Mathematics and Image Analysis (MIA), Berlin, Germany, 01/2023
23. EPFL, Lausanne, Switzerland, Seminar Series in Imaging, 12/2022
24. Université de Bordeaux, Bordeaux, France, Institut de Mathématiques de Bordeaux, 12/2022
25. ENS de Lyon, Lyon, France, Machine Learning and Signal Processing Seminars, 12/2022
26. Workshop on Mathematical Models for Plug-and-play Image Restoration, Paris, France, 12/2022
27. Machine Learning Photonics Workshop, Como, Italy, 08/2022
28. Google, Mountain View, CA, USA, Computational Imaging Workshop, 07/2022
29. CVPR 2022, New Orleans, LA, USA, UG2+ workshop, 06/2022
30. Koc University, Istanbul, Turkey, KUIS AI Meetings, 05/2022
31. IPMS 2022, Malta, “Inverse Problems with Deep Learning” Symposium, 05/2022
32. Boston University, MA, USA, ECE Seminar, 03/2022
33. University of Wisconsin, Madison, WI, USA, SILO Seminar Series, 03/2022
34. WashU, St. Louis, MO, USA, EECE Seminar, 03/2022
35. University of Liverpool, UK, “Mathematical Imaging Techniques” Seminar, 02/2022
36. National Science Foundation, Alexandria, VA, USA, CIF Town-hall, 01/2022
37. Purdue University, Lafayette, IN, USA, Computational Imaging Seminar, 12/2021
38. WashU, St. Louis, MO, USA, Imaging Science Seminar, 11/2021
39. CNRS GDR, Toulouse, France, “Neural Networks for Inverse Problems”, 09/2021
40. IST, Lisbon, Portugal, “Mathematics, Physics, and Machine Learning” Seminar Series, 06/2021
41. SLAC National Accelerator Laboratory, Menlo Park, CA, AI-at-SLAC, 07/2021
42. KLA Corporation, Seminar of Transfer Learning and Domain Adaptation, 07/2021
43. University of California Riverside, CA, USA, ECE Seminar, 03/2021
44. SIAM Conference on Computational Science and Engineering, 03/2021

45. Stanford University, CA, USA, Seminar Series on “Image Systems Engineering,” 02/2021
46. Rutgers University, New Brunswick, NJ, USA, “Information Processing” Seminar Series, 02/2021
47. CVPR 2020, Seattle, WA, Workshop on Computational Cameras and Displays, 06/2020
48. Rice University, Houston, TX, ECE Seminar, 04/2020
49. University of Minnesota, Minneapolis, MN, ECE Colloquium, 02/2020
50. Google, Mountain View, CA, USA, Computational Imaging Workshop, 01/2020
51. IPAM UCLA, Los Angeles, CA, USA, Workshop on Deep Learning and Medical Applications, 01/2020
52. Washington University, St. Louis, MO, USA, Imaging Science Seminar, 11/2019
53. Argonne National Laboratory, Lemont, IL, USA, 11/2019
54. WashU, St. Louis, MO, USA, Applications of AI in Radiology, 11/2019
55. ICCV 2019, Seoul, South Korea, Learning for Computational Imaging Workshop, 10/2019
56. Korea University, Seoul, South Korea, 10/2019
57. Institut d'Etudes Scientifiques, Cargèse, France, School on Imaging in Wave Physics, 09/2019
58. Los Alamos National Laboratory, Los Alamos, NM, USA, 08/2019
59. Oak Ridge National Laboratory, Oak Ridge, TN, USA, AI Summer Institute Seminar, 08/2019
60. Brown University, Providence, RI, USA, ICERM Workshop on Computational Imaging, 03/2019
61. University of Iowa, Iowa City, IA, USA, ECE seminar, 11/2018
62. iTWIST 2018, Marseille, France, 11/2018 (plenary)
63. University of Liverpool, UK, “Mathematical Imaging Techniques” Seminar, 02/2022
64. National Science Foundation, Alexandria, VA, USA, CIF Town-hall, 01/2022
65. Purdue University, Lafayette, IN, USA, Computational Imaging Seminar, 12/2021
66. WashU, St. Louis, MO, USA, Imaging Science Seminar, 11/2021
67. CNRS GDR, Toulouse, France, “Neural Networks for Inverse Problems”, 09/2021
68. IST, Lisbon, Portugal, “Mathematics, Physics, and Machine Learning” Seminar Series, 06/2021
69. SLAC National Accelerator Laboratory, Menlo Park, CA, AI-at-SLAC, 07/2021
70. KLA Corporation, Seminar of Transfer Learning and Domain Adaptation, 07/2021
71. University of California Riverside, CA, USA, ECE Seminar, 03/2021
72. SIAM Conference on Computational Science and Engineering, 03/2021
73. Stanford University, CA, USA, Seminar Series on “Image Systems Engineering,” 02/2021
74. Rutgers University, New Brunswick, NJ, USA, “Information Processing” Seminar Series, 02/2021

75. CVPR 2020, Seattle, WA, Workshop on Computational Cameras and Displays, 06/2020
76. Rice University, Houston, TX, ECE Seminar, 04/2020
77. University of Minnesota, Minneapolis, MN, ECE Colloquium, 02/2020
78. Google, Mountain View, CA, USA, Computational Imaging Workshop, 01/2020
79. IPAM UCLA, Los Angeles, CA, USA, Workshop on Deep Learning and Medical Applications, 01/2020
80. Washington University, St. Louis, MO, USA, Imaging Science Seminar, 11/2019
81. Argonne National Laboratory, Lemont, IL, USA, 11/2019
82. WashU, St. Louis, MO, USA, Applications of AI in Radiology, 11/2019
83. ICCV 2019, Seoul, South Korea, Learning for Computational Imaging Workshop, 10/2019
84. Korea University, Seoul, South Korea, 10/2019
85. Institut d'Etudes Scientifiques, Cargèse, France, School on Imaging in Wave Physics, 09/2019
86. Los Alamos National Laboratory, Los Alamos, NM, USA, 08/2019
87. Oak Ridge National Laboratory, Oak Ridge, TN, USA, AI Summer Institute Seminar, 08/2019
88. Brown University, Providence, RI, USA, ICERM Workshop on Computational Imaging, 03/2019
89. University of Iowa, Iowa City, IA, USA, ECE seminar, 11/2018
90. iTWIST 2018, Marseille, France, 11/2018 (plenary)
91. WashU, St. Louis, MO, USA, Imaging Science Seminar, 09/2018
92. SIAM Imaging Sciences Workshop 2018, Bologna, Italy, 06/2018
93. NC State University, Raleigh, NC, USA, Distinguished Seminar Series, 03/2018
94. WashU, St. Louis, MO, USA, Imaging Science Seminar, 10/2017
95. WIPS-LEARN workshop, Louvain-la-Neuve, Belgium, 08/2017 (plenary)
96. OSA Imaging and Applied Optics Congress 2017, St. Francisco, CA, USA, 06/2017
97. Boston University, Boston, MA, CSE Colloquia, 04/2017
98. WashU, St. Louis, MO, CSE Colloquia, 04/2017
99. Harvard University, Cambridge, MA, SEAS ISS Seminar, 04/2017
100. Imperial College, London, UK, Seminar, 04/2017
101. BASP 2017, Villars-sur-Ollon, Switzerland, 01/2017
102. NYU Tandon School of Engineering, Brooklyn, NY, Seminar, 06/2016
103. Tufts University, Medford, MA, ECE Colloquia, 04/2016
104. Jiao Tong University, Shanghai, China, Institute of Natural Sciences, 03/2016

105. Harvard University, Cambridge, MA, ISS Seminar, 04/2015

106. NYU-Polytechnic Institute, Brooklyn, NY, 04/2012

Teaching

Teaching at WashU (2017-present)

FL2024	CSE 534A/ESE 513 Large-Scale Optimization for Data Science
FL2023	CSE 534A/ESE 513 Large-Scale Optimization for Data Science
SP2023	ESE 415 Optimization
FL2022	CSE 534A/ESE 513 Large-Scale Optimization for Data Science
SP2022	ESE 415 Optimization
FL2021	CSE 534A/ESE 513 Large-Scale Optimization for Data Science
SP2021	ESE 415 Optimization
FL2020	CSE 534A/ESE 513 Large-Scale Optimization for Data Science
SP2020	ESE 415 Optimization
SP2019	ESE 415 Optimization
FL2018	CSE 585T Sparse Modeling for Imaging and Vision
SP2018	ESE 415 Optimization
FL2017	CSE 585T Sparse Modeling for Imaging and Vision

Teaching Assistant at EPFL (2007-2013)

- Signals and Systems I: Autumn 2011, Autumn 2012, Autumn 2013
★ Education Award 2013 from Life Sciences Department of EPFL (with M. Unser)
- Signals and Systems II: Spring 2012, Spring 2013, Spring 2014
- Introduction to Object Oriented Programming: Autumn 2008
- Introduction to Communication Systems: Autumn 2007

Student supervision

Current and Former PhD students

- Chicago Park (CSE, 2024-present)
- Edward Chandler (CSE, 2023-present)
- Yuyang Hu (ESE, 2022-present)
- Flora Sun (Imaging Science, 2022-present)
- Shirin Shoushtari (ESE, 2022-present)
- Weijie Gan (CSE, 2020-present)
- Jiaming Liu (ESE, 2019-2024)
 - Currently: Postdoctoral Fellow at Stanford University with Akshay Chaudhari
 - PhD Thesis: "Learning-based Artifacts Removing Priors for Computational Imaging"
- Xiaojian Xu (CSE, 2017-2022)
 - Currently: AI Research Scientist at GE HealthCare, Bellevue, WA, USA
 - PhD Thesis: "Model-based Deep Learning for Computational Imaging"
- Yu Sun (CSE, 2018-2022)
 - Currently: Assistant Professor of ECE at Johns Hopkins University, MA, USA
 - PhD Thesis: "Integrating Physical Models and Learning Priors for Computational Imaging"
 - ★ 2023 Turner Dissertation Award for the Best PhD Thesis in WashU CSE

Postdoctoral researchers

1. Yuanhao Wang (PhD from KAUST, Saudi Arabia, 2023-present)

Visiting PhD students supervised at WashU

1. Paul Goyes (Universidad Industrial de Santander, Santander, Colombia, 2023)
2. Olivier Leblanc (UC Louvain, Belgium, 2023)
3. Tomas Kerepecky (Czech Technical University, Czech Republic, 2021-2022)
4. Guangxiao Song (Donghua University, China, 2018-2020)

BS/MS students supervised at WashU

1. Harry Gao (2022-2024)
2. Vincent Siu (2023)
3. Gabi Wurgaft (2023)
4. Haoyu Quan (2023)
5. Albert Peng (2023)
6. Yubo Wang (2023)
7. Emma McMillian (2023)
8. Emily Sheehan (2023)
9. Chang (Jason) Ti (2023)
10. Henry Li (2023)
11. Rose Lev (2023)
12. Eddy Sul (2023)
13. Nan Huang (2023)
14. Chaoye Jin (2022-2023)
15. Chicago Park (2022-2023)
16. Eddie Choi (2022-2023)
17. Eddie Chandler (2020-22)
18. H. Tillman James (2022)
19. Xiangping Ouyang (2022)
20. Dian Jin (2022)
21. Ian Hudson (2022)
22. Julia Zeng (2022)
23. Flora Sun (2021-22)
24. Wentao Shangguan (2021-22)
25. Yuyang Hu (2021-22)
26. Junhao Hu (2022)
27. Yixuan Luo (2022)
28. Zihao Zou (2022)
29. Renhao Liu (2020-21)
30. Ann Zhou (2021)
31. Yanpeng Yuan (2021)
32. Ziwen Wang (2021)
33. Guangyu Meng (2020)
34. Rob Schurz (2020)
35. Abdalla Bani (2020)
36. Yongcheng Song (2020)
37. Yukun Li (2020)
38. Peter Ming (2020)
39. Mingyang Xie (2019-20)
40. Weijie Gan (2018-19)
41. Jiaming Liu (2018-19)
42. Shu Pan (2019)
43. Julia Dai (2019)

44. Yiran Sun (2019)
45. Ryogo Suzuki (2019)
46. Max Torop (2019)
47. Shiqi Xu (2018-19)
48. Melena Abijaoude (2018)

Visiting BS/MS students and interns supervised at WashU

1. Yu-Chieh Yu (National Taiwan University, Taiwan, 2023)
2. Anthony Wang (MIT, MA, USA, 2023)
3. Marien Renaud (Ecole Polytechnique, Paris, France, 2023)
4. Anis Chihoub (Rutgers University, USA, 2022)
5. Hee Yun Suh (John Hopkins University, USA 2022)
6. Yukun Huang (Tsinghua University, China, 2019)
7. Moran Xu (Southeast University, China, 2019)
8. Ishika Jain (Cornell University, 2019)
9. Tram-Anh Nguyen (George Mason University, USA, 2019)
10. Jhoan Hernandez (Benedict College, USA, 2018)
11. Sergio Goodwin (Morehouse College, USA, 2018)

PhD committees

1. Xingyi Du, "Injective Mapping under Constraints," PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 04/2023
2. Dan Zeng, "Computationally Uncovering Root System Architecture," PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 05/2022
3. Uri Goldstzejn, "Estimating uterine activity from electrohysterogram measurements via statistical tensor decomposition," PhD, Biomedical Engineering, WashU, St. Louis, MO, USA, 04/2022
4. Sihao Chen, "Motion Field Integrated Reconstruction Using Deep Learning for MR and PET/MR Respiratory Motion Correction," PhD, Biomedical Engineering, WashU, St. Louis, MO, USA, 04/2022
5. Suranjana Samanta, "Enhancing PET Functionalities with Novel Geometries and Multimodal Imaging Techniques," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 03/2022
6. Wei Miao, "Control and Learning of Ensemble Systems," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 08/2021
7. Zhenqi Lu, "Containing an Epidemic in a Local Cluster via Antidote Distribution and Partial Quarantine," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 06/2021
8. Huayi Zeng, "Data Driven Architectural Geometric and Photometric Modeling," PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 04/2021
9. Zhihao Xia, "Reasoning about Scene and Image Structure for Computer Vision," PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 05/2021
10. Eric Cawi, "Machine Learning Workflows, Separability, and Covariance Bounds," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 12/2020
11. Jonathan Dong, "A computational tour on random matrices: imaging through complex media and optical computing," PhD, École Normale Supérieure, Paris, France, 11/2020
12. Weimin Zhou, "Deep Learning for Task-Based Image Quality Assessment in Medical Imaging," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 10/2020
13. Tianben Ding, "Multi-Dimensional Super-Resolution Imaging of Protein Aggregates Using Transient Binding of Single Fluorescent Molecules," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 07/2020
14. K M Shihab Udding, "Ultrasound guided Diffuse Optical Tomography for breast cancer diagnosis: Algorithm Development," PhD, Biomedical Engineering, WashU, St. Louis, MO, May 2020
15. Yijian Xiang, "Cognitive Radar Detection in Nonstationary Environments and Target Tracking," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 05/2020
16. Xiangyi Xu, "Embedded Sensing System for Whispering-Gallery-Mode Optical Resonators," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 08/2019

17. Darko Ivanovich, "Polarization Division Multiplexing for Optical Data Communications," DSc, Computer Science and Engineering, WashU, St. Louis, MO, USA, 08/2019
18. Liu Chen, "Structured Indoor Modeling," PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 08/2019
19. Jingwei Lu, "Multi-dimensional extension of the alternating minimization algorithm in x-ray computed tomography," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 08/2019
20. Zhiyang Huang, "Toward Controllable and Robust Algorithms for Surface Reconstruction from Spatial Curves," PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 08/2019
21. Diego Carrera, "Learning and adaptation to detect changes and anomalies in high-dimensional data," PhD, Doctoral Program in Information Technology, Politecnico di Milano, Milan, Italy, 11/2018
22. He Huang, "Novel Sensing Mechanisms for Chemical and Bio-sensing Using Whispering Gallery Mode Microresonators," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 01/2018
23. Homayoon Ranjbar, "Reconstruction Algorithms for Novel Joint Imaging Techniques in PET," PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 12/2017
24. Kevin Degraux, "Methods for Solving Regularized Inverse Problems: From Non-Euclidean Fidelities to Computational imaging Applications," PhD, Engineering Sciences, Université catholique de Louvain (UCL), Louvain-la-Neuve, Belgium, 09/2017

Interns supervised at MERL

1. Yanting Ma (North Carolina State University, 2017)
2. Bihan Wen (with Dehong Liu, UIUC, 2017)
3. Kevin Degraux (Université Catholique de Louvain, 2016)
4. Hsiou-Yuan Liu (UC Berkeley, 2016)
5. Juan Castorena (New Mexico State University, 2015)

Students supervised at EPFL (co-supervised with Prof. Michael Unser)

1. Sander Kromwijk (student at EPFL, 2014)
2. Mamoun Benkirane (student at EPFL, 2014)
3. Julien Schwab (student at EPFL, 2013)
4. Abbas Kazerouni (intern from Sharif University, 2012)
5. Ipek Baz (student at EPFL, 2012)
6. Bugra Tekin (student at EPFL, 2012)
7. Pedram Pad (intern from Sharif University, 2011)

Research awards by students

1. Chicago Park, Best Student Paper Award finalist, IEEE CAMSAP 2023
2. Yu Sun, Turner Dissertation Award for the Best PhD Dissertation in Computer Science, 2023
3. Yuyang Hu, Outstanding Master's Research Award from WashU ESE, 2023
4. Edward Chandler, Research Excellence Award in Computer Science from WashU CSE, 2023

Research funding

(All costs are direct)

1. "Innovative algorithms for computing solutions to imaging inverse problems using pretrained (generative) models," Unrestricted Gift from Google Research, 2024, \$20,000 (PI)
2. "Deep-Learning-Augmented Quantitative Gradient Recalled Echo (DLA-qGRE) MRI for in vivo Clinical Evaluation of Brain Microstructural Neurodegeneration in Alzheimer Disease," NIH R01, 04/2023-03/2028, \$1,279,472 (Co-I)
3. "Robust and Rapid 3D High-Resolution Cranial bone imaging for pediatric patients using MRI," NIH R01, 12/2021-11/2026, \$1,604,319 (Co-I)
4. "Polymer Threading and Confinement into Nanoscale Porous Upcycling Catalyst," DOE BES, 08/2022-07/2026, \$369,518, (Co-PI)
5. "CAREER: Reconciling Model-Based and Learning-Based Imaging: Theory, Algorithms, and Applications," NSF, 07/2021-06/2026, \$306,206 (PI)

6. “Optimizing Multiscale Light Sheet Imaging,” Beckman Center for Light-Sheet Microscopy and Data Science, 06/2021-05/2026, \$1,200,000 (Co-PI)
7. “Digital Biomarkers for Fetal Growth Restriction based on Multi-Scale, Multiphysics Modeling and Machine Learning,” Wellcome Leap, 10/2022-09/2025, \$1,024,239 (Co-PI)
8. “Beyond breast density: Novel clinically relevant risk measures for breast cancer in black women,” Department of Defense, 09/2023-08/2025, \$446,755 (Co-I)
9. “MR measured regional hypoxia as an early biomarker in cerebral small vessel disease,” NIH Ro1, 04/2022-03/2025, \$2,198,877 (Co-I)
10. “Machine Learning Toolkit for Atomic Force Microscopy,” WashU EECE/CSE Seed Grant, 12/2022-12/2024, \$25,000 (PI)
11. “Developing a Toolkit for Advancing Lignin Disassembly Technology,” Moore Foundation, 11/2022-10/2024, \$901,639 (Co-PI)
12. “URoL: Epigenetics 2-Collaborative Research: Revealing how epigenetic inheritance governs the environmental challenge response with transformative 3D genomics and machine learning,” NSF, 08/2019-07/2024, \$317,722 (Co-PI)
13. “Advancing Breast Cancer Risk Assessment Among White and Black Women Using Artificial Intelligence,” Siteman Investment Program, 07/2022-06/2024, \$100,000 (Co-PI)
14. “Enabling Non-Invasive Lipid Profiling with Intermodal Deep Learning (ENLiPID),” Chan Zuckerberg Initiative (CZI) Scialog Award, 08/2021-01/2023, \$50,000 (PI)
15. “CIF: Small: Collaborative Research: Signal Processing for Nonlinear Diffractive Imaging: Acquisition, Reconstruction, and Applications,” NSF, 07/2018-06/2022, \$151,944 (PI)
16. “Online Plug-and-Play Algorithms for Sequential Image Reconstruction,” Los Alamos National Laboratory, 05/2020-12/2021, \$71,502 (PI)
17. “Data-Adaptive Imaging for Motion-Robust High-Resolution Dynamic MRI,” WashU Seed Grant, 06/2018-05/2019, \$25,000 (PI)
18. “Deep Learning for Motion-Robust 4D MRI,” Siemens Medical Solutions USA, 09/2018-05/2019, \$112,500 (Co-PI)
19. Unrestricted Gift for Research, Mitsubishi Electric Research Laboratory, 2022, \$5,000 (PI)

Professional activities and service

Professional societies

- Institute of Electrical and Electronics Engineers (IEEE)
Senior Member (2020-present)
Member (2015–2020)
Student Member (2011–2015)

Technical committees

- IEEE Technical Committee on Computational Imaging
Advisory Member (2022-present)
Member (2016–2019, 2019-2021)
- IEEE Technical Committee on Bio Imaging and Signal Processing
Member (2023-present)
Associate Member (2021-2022)

Editorial service

- Senior Editor of IEEE Signal Processing Magazine (2022-2024)
- Associate Editor of IEEE Transactions on Computational Imaging (2019-2022)
- Associate Editor of Biological Imaging from Cambridge University Press (2020-2022)
- Guest Editor of Special issue on “Computational Microscopy” at Elsevier Optics Communication (2021)
- Associate Editor of SPIE Journal of Electronic Imaging (2017-2019)

Conference area chair

- IEEE CVPR 2024, Seattle, WA, USA

- IEEE ICASSP 2024, Seoul, South Korea
- IEEE ISBI 2021, Nice France
- IEEE ICASSP 2019, Brighton, UK
- IEEE ICASSP 2017, New Orleans, LA, USA

Conference technical or program chair:

- Biomedical and Astronomical Signal Processing (BASP), 5-10 February 2023, Villars, Switzerland
- OSA Mathematics in Imaging, 24-27 June 2019, Munich, Germany

Workshop organization:

- IMSI Computational Imaging, 4-9 October 2024, Chicago, IL, USA
- Computational Cameras and Displays (CCD) workshop at CVPR 2023, June 2023
- Computational Cameras and Displays (CCD) workshop at CVPR 2022, June 2022
- Learning for Computational Imaging (LCI) workshop at ICCV 2021, October 2021
- IMA Computational Imaging, 14-18 October 2019, Minneapolis, MN, USA

Conference session organization:

- “Robust Reconstruction Methods in Computational Imaging,” IEEE ICASSP 2024
- “Computational Biomedical Imaging: From Micro to Macro,” IEEE CAMSAP 2023
- “AI-driven Imaging Instruments,” Electronic Imaging 2021
- “Recent Progress in Computational Microscopy,” Electronic Imaging 2020
- “Recent Advances in Signal Processing for Large-Scale Computational Imaging,” IEEE ICASSP 2019
- “Computational Biomedical Imaging,” BASP 2019
- “Large-Scale Computational Imaging with Wave Models,” IEEE ICASSP 2017

University service at WashU

Department of Electrical and Systems Engineering (ESE)

- ESE Doctoral Admissions Committee (2020-present)
- ESE Signals and Imaging Area Committee (2020-present)
- ESE Faculty Search Committee (2021-2023)
- ESE Seminar Committee (2019-2021)

Department of Computer Science and Engineering (CSE)

- CSE Seminar Committee (2018-2020)

McKelvey School of Engineering

- Program Faculty for Imaging Sciences PhD Program (2021-present)
- Imaging Science Curriculum Committee (2019-present)
- Strategic Planning Committee (2022-2024)
- Imaging Science Pathway Retreat Planning Committee (2020-2023)
- Co-Organizer (with Joseph O’Sullivan) of the Imaging Sciences Seminar Series (2021-2022)

Other service

- Advisory board member for the “St. Louis International Mentoring Program” (2019-present)
- Expert advisory panel member for the non-profit “Buyuk Kelajak” (2018-2019)
- Student representative for Communication Systems Department at EPFL (2008–2011)
- Founded an educational consultancy company “G.e.P. Solutions” (2010–2013)
- Committee member of Erasmus Student Network chapter of EPFL (2009)
- Member of the coaching team for new undergraduate students at EPFL (2009)

Language skills

- Uzbek, Russian, English, French, German, and Spanish

Biography

Ulugbek S. Kamilov is the Director of Computational Imaging Group and an Associate Professor of Electrical & Systems Engineering and Computer Science & Engineering at Washington University in St. Louis (WashU). He obtained the BSc/MSc degree in Communication Systems in 2011 and the PhD degree in Electrical Engineering in 2015 from EPFL, Switzerland. He was a Visiting Professor at the Data Science Center and Kastler-Brossel Laboratory at École Normale Supérieure in Paris, France, in 2023. He was a Visiting Faculty Researcher at Google Research from 2023 to 2024. He was a Research Scientist at Mitsubishi Electric Research Laboratories (MERL), Cambridge, MA, USA, from 2015 to 2017. He was an Exchange Student at CMU in 2008, Visiting Student Researcher at MIT in 2011, and Visiting Scholar at Stanford University in 2013.

He is a recipient of the NSF CAREER Award and the IEEE Signal Processing Society's 2017 Best Paper Award. He was among 55 early-career researchers in the USA selected as a Fellow for the Scialog initiative on "Advancing Bioimaging" in 2021. His PhD thesis was selected as a finalist for the EPFL Doctorate Award in 2016. He was awarded Outstanding Teaching Award from the Department of Electrical & Systems Engineering at WashU in 2023. He is serving as on IEEE Signal Processing Society's Bioimaging and Signal Processing Technical Committee. He has previously served as a Senior Member of the Editorial Board of IEEE Signal Processing Magazine, an Associate Editor of IEEE Transactions on Computational Imaging and on IEEE Signal Processing Society's Computational Imaging Technical Committee.