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Education

2011-2015	**École polytechnique fédérale de Lausanne (EPFL)**, Lausanne, Switzerland PhD in Electrical Engineering
2008-2011	**EPFL**, Lausanne, Switzerland MS in Communication Systems
2005-2008	**EPFL**, Lausanne, Switzerland BS in Communication Systems

Postgraduate academic and research appointments

2023-present	**Google Research**, Mountain View, CA, USA Visiting Faculty Researcher
2017-present	**Washington University in St. Louis (WashU),** St. Louis, MO, USA Director of Computational Imaging Group (CIG) Assistant Professor of Electrical and Systems Engineering (ESE) Assistant Professor of Computer Science and Engineering (CSE)
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**, Pittsburgh, PA, USA Exchange Student in Electrical and Computer Engineering (ECE)

Honors and awards

2022	Two AAPM Imaging Best-in-Physics Awards
2021	NSF CAREER Award
2021	Fellow of the Scialog Initiative on “Advancing Biomaging”
2018	Plenary Speaker at the iTWIST workshop (Marseille, France)
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, large-scale optimization, biomedical and scientific imaging, image and signal processing, computational photography, image analysis, and computer vision. 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

Under review

1. J. Liu, R. Anirudh, J. J. Thiagarajan, S. He, K. A. Mohan, U. S. Kamilov, and H. Kim, "DOLCE: A Model-Based Probabilistic Diffusion Framework for Limited-Angle CT Reconstruction," arXiv:2211.12340

2. S. Shoushtari, J. Liu, and U. S. Kamilov, "DOLPH: Diffusion Models for Phase Retrieval," arXiv:2211.00529

3. 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," arXiv:2211.00531

4. W. Gan, H. Gao, Z. Sun, and U. S. Kamilov, "SINCO: A Novel structural regularizer for image compression using implicit neural representations," arXiv:2210.14974

5. X. Xu, W. Gan, S. V.V.N. Kothapalli, D. A. Yablonskiy, and U. S. Kamilov, "CoRRECT: A Deep Unfolding Framework for Motion-Corrected Quantitative R2* Mapping," arXiv:2210.06330

6. 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," arXiv:2210.03837

7. Y. Hu, W. Gan, C. Ying, T. Wang, C. Eldeniz, J. Liu, Y. Chen, H. An, and U. S. Kamilov, "SPICE: Self-Supervised Learning for MRI with Automatic Coil Sensitivity Estimation," arXiv:2210.02584

Journal

1. 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.*, in press

2. 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*, in press

3. 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.*, in press

4. 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.*, in press

5. 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

6. 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

7. 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

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8. 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

9. 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

10. 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

11. 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

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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

18. Y. Sun, J. Liu, and U. S. Kamilov, "Block Coordinate Regularization by Denoising," *IEEE Trans. Comput. Imag.*, vol. 6, pp. 908-921, 2020

19. 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

20. 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

21. 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

22. 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

23. 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

24. 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

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25. 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

26. 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

27. U. S. Kamilov and P. T. Boufounos, "Motion-Adaptive Depth Superresolution," *IEEE Trans. Image Process.*, vol. 26, no. 4, pp. 1723-1731, April 2017

28. 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

29. 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

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32. 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

33. 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 by Nature "News & Views" article "Computational imaging: Machine learning for 3D microscopy" in July 2015 (Nature, Vol. 523, Iss. 7561, p. 416, 2015)

34. 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

35. 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

36. 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

37. 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

38. 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

39. 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

40. 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

41. 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

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42. 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

43. 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. 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), in press.
   ★ Selective Machine Learning conference

2. 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

3. 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

4. A. H. Al-Shabili, 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

5. 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), p. 65461.
   ★ Best-in-Physics Award in Imaging

6. 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), p. 66527
   ★ Best-in-Physics Award in Imaging

7. 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

8. 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

9. 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

10. 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

11. 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

Publications (cont)

12. 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

13. 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

14. 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

15. 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

16. 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 in a selective Machine Learning conference (a top 4% paper)

17. 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

18. 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

19. 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

20. 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

21. 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

22. 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

23. 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)

24. 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

25. 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

Publications (cont)

26. 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

27. J. Liu, Y. Sun, X. Xu, and U. S. Kamilov, "Image Restoration using Total Variation Regularized Deep Image Prior," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2019) (Brighton, UK, May 12-17), pp. 7715–7719

28. Y. Sun, S. Xu, Y. Li, L. Tian, B. Wohlberg, and U. S. Kamilov, "Regularized Fourier Ptychography using an Online Plug-and-Play Algorithm," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2019) (Brighton, UK, May 12-17), pp. 7665–7669

29. X. Xu and U. S. Kamilov, "signProx: One-Bit Proximal Algorithm for Nonconvex Stochastic Optimization," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2019) (Brighton, UK, May 12-17), pp. 7800–7804

30. Y. Sun, B. Wohlberg, and U. S. Kamilov, "Plug-In Stochastic Gradient Method," Proc. International Biomedical and Astronomical Signal Processing Frontiers Workshop (BASP 2019) (Villars-sur-Ollon, Switzerland, February 3-8), p. 75

31. Y. Sun and U. S. Kamilov, "Stability of Scattering Decoder For Nonlinear Diffractive Imaging," Proc. 4th International Traveling Workshop on Interactions between Sparse models and Technology (iTWIST 2018) (Marseille, France, November 21-23), p. 31

32. D. Liu, H. Mansour, P. T. Boufounos, and U. S. Kamilov "Robust sensor localization based on Euclidean distance matrix," Proc. Int. Geosci. Remote Sensing Symp. (IGARSS 2018) (Valencia, Spain, July 23-27), pp. 7998-8001

33. Y. Ma, H. Mansour, D. Liu, P. T. Boufounos, and U. S. Kamilov "Nonconvex optimization for diffractive imaging," Proc. OSA Mathematics in Imaging (MATH 2018) (Orlando, FL, USA, June 25-28), MW5D.3

34. W. Tahir, U. S. Kamilov, and L. Tian "Sampling and processing for multiple scattering in inline compressive holography," Proc. OSA Mathematics in Imaging (MATH 2018) (Orlando, FL, USA, June 25-28), JTh3B.1

35. H. Mansour, U. S. Kamilov, D. Liu, and P. T. Boufounos, "Radar Autofocus using Sparse Blind Deconvolution," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2018) (Calgary, Canada, March 15-20), pp. 1623-1627

36. B. Wen, U. S. Kamilov, D. Liu, H. Mansour, and P. T. Boufounos, "DeepCASD: An End-to-End Approach for Multi-spectral Image Super-Resolution," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2018) (Calgary, Canada, March 15-20), pp. 6503-6507

37. Y. Ma, H. Mansour, D. Liu, P. T. Boufounos, U. S. Kamilov, "Accelerated Image Reconstruction for Nonlinear Diffractive Imaging," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2018) (Calgary, Canada, March 15-20), pp. 6473-6477

38. K. Kojima, B. Wang, U. S. Kamilov, T. Koike-akino, and K. Parsons, "Acceleration of FDTD-based Inverse Design Using a Neural Network Approach," Proc. OSA Advanced Photonics Congress 2017 (New Orleans, LA, USA, September 24-27), ITu1A.4

39. K. Degraux, U. S. Kamilov, P. T. Boufounos, and D. Liu, "Online Convolutional Dictionary Learning for Multimodal Imaging," Proc. IEEE Int. Conf. Image Proc. (ICIP 2017) (Beijing, China, September 17-20), pp. 1617-1621

40. Y. Ma, D. Liu, H. Mansour, U. S. Kamilov, Y. Taguchi, P. T. Boufounos, and A. Vetro, "Fusion of multi-angular aerial Images based on epipolar geometry and matrix completion," Proc. IEEE Int. Conf. Image Proc. (ICIP 2017) (Beijing, China, September 17-20), pp. 1197-1201

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41. M. H. Shoreh, A. Goy, J. Lim, U. S. Kamilov, M. Unser, and D. Psaltis, “Imaging cell clusters and tissue using learning tomography,” Proc. SPIE Optical Methods for Inspection, Characterization, and Imaging of Biomaterials III, 1033306, 26 June 2017

42. H.-Y. Liu, D. Liu, H. Mansour, P. T. Boufounos, L. Waller, and U. S. Kamilov, “SEAGLE: Robust Computational Imaging under Multiple Scattering,” Proc. OSA Mathematics in Imaging (MATH 2017) (St. Francisco, CA, USA, June 26-29), MM4C.1

43. U. S. Kamilov, H. Mansour, and D. Liu, “Learning Convolutional Proximal Filters,” Proc. 7th Workshop on Signal Process. with Adaptive Sparse Structured Representations (SPARS 2017) (Lisbon, Portugal, June 5-8), p. 101

44. H. Mansour, U. S. Kamilov, and O. Yilmaz, “A Kaczmarz Method for Low Rank Matrix Recovery,” Proc. 7th Workshop on Signal Process. with Adaptive Sparse Structured Representations (SPARS 2017) (Lisbon, Portugal, June 5-8), p. 60

45. H.-Y. Liu, U. S. Kamilov, D. Liu, H. Mansour, and P. T. Boufounos, "Compressive Imaging with Iterative Forward Models," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2017) (New Orleans, USA, March 5-9), pp. 6025-6029
    ★ Student Paper Award finalist

46. M. H. Shoreh, A. Goy, J. Lim, U. S. Kamilov, M. Unser, and D. Psaltis, "Optical Tomography based on a Nonlinear Model that Handles Multiple Scattering," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2017) (New Orleans, USA, March 5-9), pp. 6220-6224

47. U. S. Kamilov and H. Mansour, "Learning Bayesian Optimal FISTA with Error Backpropagation," Proc. International Biomedical and Astronomical Signal Processing Frontiers Workshop (BASP 2017) (Villars-sur-Ollon, Switzerland, January 29-February 3), p. 66

48. 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

49. D. Liu, U. S. Kamilov, and P. T. Boufounos, "Coherent Distributed Array Imaging under Unknown Position Perturbations," 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. 105-109

50. H. Mansour, U. S. Kamilov, D. Liu, P. Orlik, P. T. Boufounos, K. Parsons, and A. Vetro, "Online Blind Deconvolution for Sequential Through-the-Wall-Radar-Imaging," 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. 61-65

51. U. S. Kamilov and H. Mansour, "Learning MMSE Optimal Thresholds for FISTA," Proc. 3rd International Traveling Workshop on Interactions between Sparse models and Technology (iTWIST 2016) (Aalborg, Denmark, August 24-26), p. 42

52. U. S. Kamilov, "Minimizing Isotropic Total Variation without Subiterations," Proc. 3rd International Traveling Workshop on Interactions between Sparse models and Technology (iTWIST 2016) (Aalborg, Denmark, August 24-26), p. 39

53. U. S. Kamilov, I. Papadopoulos, M. Hashemi, A. Goy, M. Unser, and D. Psaltis, "Learning From Examples in Optical Imaging," Proc. OSA Computational Optical Sensing and Imaging Conference (COSI 2016) (Heidelberg, Germany, July 25-28), CT1D.1

54. U. S. Kamilov and P. T. Boufounos, "Depth Superresolution using Motion Adaptive Regularization," Proc. 2015 IEEE Int. Conf. Multimedia & Expo Workshops (ICMEW 2016) (Seattle, WA, USA, July 11-15), pp. 1-6

Publications (cont)

55. U. S. Kamilov, "Parallel proximal methods for total variation minimization," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2016) (Shanghai, China, March 20-25), pp. 4697—4701

56. J. Castorena, U. S. Kamilov, and P. T. Boufounos, "Autocalibration of Lidar and Optical Cameras via Edge Alignment," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2016) (Shanghai, China, March 20-25), pp. 2862–2866

57. H. Mansour and U. S. Kamilov, "Multipath Removal by Online Blind Deconvolution in Through-the-Wall-Imaging," Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2016) (Shanghai, China, March 20-25), pp. 3106–3110

58. H. Handa, H. Mansour, D. Liu, and U. S. Kamilov, "Extended Target Localization with Total-Variation Denoising in Through-the-Wall-Imaging," Proc. 6th Int. Workshop on Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP 2015) (Cancun, Mexico, December 13-16), pp. 445-448

59. D. Liu, U. S. Kamilov, and P. T. Boufounos, "Sparsity-Driven Distributed Array Imaging," Proc. 6th Int. Workshop on Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP 2015) (Cancun, Mexico, December 13-16), pp. 441–444

60. S. Rangan, A. K. Fletcher, P. Schniter, and U. S. Kamilov, "Inference for Generalized Linear Models via Alternating Directions and Bethe Free Energy Minimization," Proc. 2015 IEEE Int. Symp. Inform. Theory (ISIT 2015) (Hong Kong, June 14-19), pp. 1640–1644

61. U. S. Kamilov, A. Bourquard, and M. Unser, "Sparse Image Deconvolution with Message Passing," Proc. 5th Workshop on Signal Process. with Adaptive Sparse Structured Representations (SPARS 2013) (Lausanne, Switzerland, July 8-11)

62. E. Bostan, U. S. Kamilov, M. Nilchian, and M. Unser, "Consistent Discretization of Linear Inverse Problems using Sparse Stochastic Processes," Proc. 5th Workshop on Signal Process. with Adaptive Sparse Structured Representations (SPARS 2013) (Lausanne, Switzerland, July 8-11)

63. E. Bostan, J. Fageot, U. S. Kamilov, and M. Unser, "MAP Estimators for Self-Similar Sparse Stochastic Models," Proc. 10th International Conference on Sampling Theory and Applications (SAMPTA 2013) (Bremen, Germany, July 1-5), pp. 197–199

64. U. S. Kamilov, A. Bourquard, E. Bostan, and M. Unser, “Autocalibrated Signal Reconstruction from Linear Measurements using Adaptive GAMP,” Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2013) (Vancouver, Canada, May 26-31), pp. 5925–5928

65. B. Tekin, U. S. Kamilov, E. Bostan, and M. Unser, “Benefits of Consistency in Image Denoising with Steerable Wavelets,” Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2013) (Vancouver, Canada, May 26-31), pp. 1355–1358

66. U. S. Kamilov, S. Rangan, A. K. Fletcher, and M. Unser, “Approximate Message Passing with Consistent Parameter Estimation and Applications to Sparse Learning,” Proc. Advances in Neural Information Processing Systems 25 (NIPS 2012) (Lake Tahoe, Nevada, December 3-6), pp. 2447–2455
    ★ Selective Machine Learning conference

67. A. Amini, U. S. Kamilov, and M. Unser, “The Analog Formulation of Sparsity Implies Infinite Divisibility and Rules Out Bernoulli-Gaussian Priors,” Proc. IEEE Information Theory Workshop (ITW 2012) (Lausanne, Switzerland, September 3–7), pp. 687–691

68. E. Bostan, U. S. Kamilov, and M. Unser, “Reconstruction of Biomedical Images and Sparse Stochastic Modelling,” Proc. Int. Symp. Biomedical Imaging (ISBI 2012) (Barcelona, Spain, May 2-5), pp. 880–883

69. U. S. Kamilov, A. Amini, and M. Unser, “MMSE Denoising of Sparse Lévy Processes via Message Passing,” Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2012) (Kyoto, Japan, March 25-30), pp. 3637–3640

70. U. S. Kamilov, E. Bostan, and M. Unser, “Generalized Total Variation Denoising via Augmented Lagrangian Cycle Spinning with Haar Wavelets,” Proc. IEEE Int. Conf. Acoustics, Speech and Signal

Publications (cont)

71. U. S. Kamilov, E. Bostan, and M. Unser, “Generalized Total Variation Denoising via Augmented Lagrangian Cycle Spinning with Haar Wavelets,” Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2012) (Kyoto, Japan, March 25-30), pp. 909–912

72. A. Amini, U. S. Kamilov, and M. Unser, “Bayesian Denoising of Stochastic Processes with Finite Rate of Innovation,” Proc. IEEE Int. Conf. Acoustics, Speech and Signal Process. (ICASSP 2012) (Kyoto, Japan, March 25-30), pp. 3629–3632

73. U. S. Kamilov, V. K. Goyal, and S. Rangan, “Generalized Approximate Message Passing Estimation from Quantized Samples," Proc. 4th Int. Workshop on Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP 2011) (San Juan, Puerto Rico, December 13–16), pp. 401–404
    ★ Student Paper Award finalist

74. U. S. Kamilov, V. K. Goyal, and S. Rangan, “Message-Passing Estimation from Quantized Samples,” Proc. 4th Workshop on Signal Process. with Adaptive Sparse Structured Representations (SPARS 2011) (Edinburgh, United Kingdom, June 27-June 30), p. 58

75. U. S. Kamilov, V. K. Goyal, and S. Rangan, “Optimal Quantization for Compressive Sensing under Message Passing Reconstruction," Proc. 2011 IEEE Int. Symp. Inform. Theory (ISIT 2011) (Saint-Petersburg, Russia, July 31–August 5), pp. 390–394

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

E-prints (excluding those substantially identical to papers above)

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

Invited lectures

1. EPFL, Lausanne, Switzerland, Seminar Series in Imaging, 12/2022

2. Université de Bordeaux, Bordeaux, France, Institut de Mathématiques de Bordeaux, 12/2022

3. ENS de Lyon, Lyon, France, Machine Learning and Signal Processing Seminars, 12/2022

4. Workshop on Mathematical Models for Plug-and-play Image Restoration, Paris, France, 12/2022

5. Machine Learning Photonics Workshop, Como, Italy, 08/2022

6. Google, Mountain View, CA, USA, Computational Imaging Workshop, 07/2022

7. CVPR 2022, New Orleans, LA, USA, UG2+ workshop, 06/2022

8. Koc University, Istanbul, Turkey, KUIS AI Meetings, 05/2022

9. IPMS 2022, Malta, “Inverse Problems with Deep Learning” Symposium, 05/2022

10. Boston University, MA, USA, ECE Seminar, 03/2022

11. University of Wisconsin, Madison, WI, USA, SILO Seminar Series, 03/2022

12. WashU, St. Louis, MO, USA, EECE Seminar, 03/2022

Invited lectures (cont)

13. University of Liverpool, UK, “Mathematical Imaging Techniques” Seminar, 02/2022
14. National Science Foundation, Alexandria, VA, USA, CIF Town-hall, 01/2022
15. Purdue University, Lafayette, IN, USA, Computational Imaging Seminar, 12/2021
16. WashU, St. Louis, MO, USA, Imaging Science Seminar, 11/2021
17. CNRS GDR, Toulouse, France, “Neural Networks for Inverse Problems”, 09/2021
18. IST, Lisbon, Portugal, “Mathematics, Physics, and Machine Learning” Seminar Series, 06/2021
19. SLAC National Accelerator Laboratory, Menlo Park, CA, AI-at-SLAC, 07/2021
20. KLA Corporation, Seminar of Transfer Learning and Domain Adaptation, 07/2021
21. University of California Riverside, CA, USA, ECE Seminar, 03/2021
22. SIAM Conference on Computational Science and Engineering, 03/2021
23. Stanford University, CA, USA, Seminar Series on “Image Systems Engineering,” 02/2021
24. Rutgers University, New Brunswick, NJ, USA, “Information Processing” Seminar Series, 02/2021
25. CVPR 2020, Seattle, WA, Workshop on Computational Cameras and Displays, 06/2020
26. Rice University, Houston, TX, ECE Seminar, 04/2020
27. University of Minnesota, Minneapolis, MN, ECE Colloquium, 02/2020
28. Google, Mountain View, CA, USA, Computational Imaging Workshop, 01/2020
29. IPAM UCLA, Los Angeles, CA, USA, Workshop on Deep Learning and Medical Applications, 01/2020
30. Washington University, St. Louis, MO, USA, Imaging Science Seminar, 11/2019
31. Argonne National Laboratory, Lemont, IL, USA, 11/2019
32. WashU, St. Louis, MO, USA, Applications of AI in Radiology, 11/2019
33. ICCV 2019, Seoul, South Korea, Learning for Computational Imaging Workshop, 10/2019
34. Korea University, Seoul, South Korea, 10/2019
35. Institut d'Etudes Scientifiques, Cargèse, France, School on Imaging in Wave Physics, 09/2019
36. Los Alamos National Laboratory, Los Alamos, NM, USA, 08/2019
37. Oak Ridge National Laboratory, Oak Ridge, TN, USA, AI Summer Institute Seminar, 08/2019
38. Brown University, Providence, RI, USA, ICERM Workshop on Computational Imaging, 03/2019
39. University of Iowa, Iowa City, IA, USA, ECE seminar, 11/2018
40. iTWIST 2018, Marseille, France, 11/2018 (plenary)

Invited lectures (cont)

41. WashU, St. Louis, MO, USA, Imaging Science Seminar, 09/2018
42. SIAM Imaging Sciences Workshop 2018, Bologna, Italy, 06/2018
43. NC State University, Raleigh, NC, USA, Distinguished Seminar Series, 03/2018
44. WashU, St. Louis, MO, USA, Imaging Science Seminar, 10/2017
45. WIPS-LEARN workshop, Louvain-la-Neuve, Belgium, 08/2017 (plenary)
46. OSA Imaging and Applied Optics Congress 2017, St. Francisco, CA, USA, 06/2017
47. Boston University, Boston, MA, CSE Colloquia, 04/2017
48. WashU, St. Louis, MO, CSE Colloquia, 04/2017
49. Harvard University, Cambridge, MA, SEAS ISS Seminar, 04/2017
50. Imperial College, London, UK, Seminar, 04/2017
51. BASP 2017, Villars-sur-Ollon, Switzerland, 01/2017
52. NYU Tandon School of Engineering, Brooklyn, NY, Seminar, 06/2016
53. Tufts University, Medford, MA, ECE Colloquia, 04/2016
54. Jiao Tong University, Shanghai, China, Institute of Natural Sciences, 03/2016
55. Harvard University, Cambridge, MA, ISS Seminar, 04/2015
56. NYU-Polytechnic Institute, Brooklyn, NY, 04/2012

Patents

1. "Systems and methods of reconstructing magnetic resonance images using deep learning" with H. An, W. Gan, C. Eldeniz, and J. Liu (pending)
2. "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)
3. "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)
4. "Sparsity Enforcing Neural Network," with H. Mansour and D. Liu, 05/2020 (US Patent 10,657,446)
5. "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)
6. "System and Method for Determining Structure of Material," with D. Liu and H. Mansour, 02/2020 (US Patent 10,571,408)
7. "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)
8. "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)
9. "Online convolutional dictionary learning," with K. Degraux, P. T. Boufounos, and D. Liu, 09/2019 (US Patent 10,409,888)

Patents (cont)

10. "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)

11. "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)

12. "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)

13. "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)

14. "Method and System for Through-the-Wall Radar Imaging," with H. Mansour, 03/2018 (US Patent 9,915,730)

Teaching at WashU

Semester	Course name	Role	# Students
FL2022	CSE 534A/ESE 513 Large-Scale Optimization for Data Science	Creator/Instructor	81
SP2022	ESE 415 Optimization	Instructor	69
FL2021	CSE 534A/ESE 513 Large-Scale Optimization for Data Science	Creator/Instructor	73
SP2021	ESE 415 Optimization	Instructor	66
FL2020	CSE 534A/ESE 513 Large-Scale Optimization for Data Science	Creator/Instructor	35
SP2020	ESE 415 Optimization	Instructor	92
SP2019	ESE 415 Optimization	Instructor	70
FL2018	CSE 585T Sparse Modeling for Imaging and Vision	Creator/Instructor	39
SP2018	ESE 415 Optimization	Instructor	69
FL2017	CSE 585T Sparse Modeling for Imaging and Vision	Creator/Instructor	12

Other teaching contributions

Teaching assistant at EPFL (2007-2013)

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

Student supervision

Current PhD students

1. Jiaming Liu (ESE, 2019-present)
2. Weijie Gan (CSE, 2020-present)
3. Shirin Shoushtari (ESE, 2022-present)
4. Yuyang Hu (ESE, 2022-present)
5. Flora Sun (Imaging Science, 2022-present)

Former PhD students supervised at WashU

1. Yu Sun, "Integrating Physical Models and Learning Priors for Computational Imaging," 05/2022
   - From 07/2022: Postdoctoral Fellow at Caltech supervised by Prof. Katie Bouman
2. Xiaojian Xu, "Model-based Deep Learning for Computational Imaging," 07/2022
   - From 08/2022: Postdoctoral Fellow at University Michigan supervised by Prof. Jeff Fessler

Visiting PhD students supervised at WashU

1. Tomas Kerepecky (Czech Technical University, Czech Republic, 2021-2022)
2. Guangxiao Song (Donghua University, China, 2018-2020)

MS students supervised at WashU

1. H. Tillman James (2022)
2. Xiangping Ouyangg (2022)
3. Dian Jin (2022)
4. Ian Hudson (2022)
5. Flora Sun (2021-22)
6. Wentao Shangguan (2021-22)
7. Yuyang Hu (2021-22)
8. Junhao Hu (2022)
9. Yixuan Luo (2022)
10. Zihao Zou (2022)
11. Renhao Liu (2020-21)
12. Guangyu Meng (2020)
13. Rob Schurz (2020)
14. Abdalla Bani (2020)
15. Yongcheng Song (2020)
16. Yukun Li (2020)
17. Weijie Gan (2018-19)
18. Jiaming Liu (2018-19)
19. Shu Pan (2019)
20. Yiran Sun (2019)
21. Ryogo Suzuki (2019)
22. Max Torop (2019)
23. Shiqi Xu (2018-19)
24. Melena Abijaoude (2018)

Visiting MS students supervised at WashU

1. Yukun Huang (Tsinghua University, China, 2019)
2. Moran Xu (Southeast University, China, 2019)

BS students supervised at WashU

1. Eddie Chandler (2020-22)
2. Julia Zeng (2022)
3. Harry Gao (2022)
4. Ann Zhou (2021)
5. Yanpeng Yuan (2021)
6. Ziwen Wang (2021)
7. Peter Ming (2020)
8. Mingyang Xie (2019-20)

REU students supervised at WashU

1. Anis Chihoub (2022)
2. Hee Yun Suh (2022)
3. Julia Dai (2019)
4. Ishika Jain (2019)
5. Tram-Anh Nguyen (2019)
6. Jhoan Hernandez (2018)

Student supervision (cont)

PhD committees

1. Dan Zeng, “Computationally Uncovering Root System Architecture,” PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 05/2022
2. Uri Goldstzejn, “Estimating uterine activity from electrohysterogram measurements via statistical tensor decomposition,” PhD, Biomedical Engineering, WashU, St. Louis, MO, USA, 04/2022
3. 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
4. Suranjana Samanta, “Enhancing PET Functionalities with Novel Geometries and Multimodal Imaging Techniques,” PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 03/2022
5. Wei Miao, “Control and Learning of Ensemble Systems,” PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 08/2021
6. 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
7. Huayi Zeng, “Data Driven Architectural Geometric and Photometric Modeling,” PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 04/2021
8. Zhihao Xia, “Reasoning about Scene and Image Structure for Computer Vision,” PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 05/2021
9. Eric Cawi, “Machine Learning Workflows, Separability, and Covariance Bounds,” PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 12/2020
10. Jonathan Dong, “A computational tour on random matrices: imaging through complex media and optical computing,” PhD, École Normale Supérieure, Paris, France, 11/2020
11. 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
12. 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
13. K M Shihab Udding, “Ultrasound guided Diffuse Optical Tomography for breast cancer diagnosis: Algorithm Development,” PhD, Biomedical Engineering, WashU, St. Louis, MO, May 2020
14. Yijian Xiang, “Cognitive Radar Detection in Nonstationary Environments and Target Tracking,” PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 05/2020
15. Xiangyi Xu, “Embedded Sensing System for Whispering-Gallery-Mode Optical Resonators,” PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 08/2019
16. Darko Ivanovich, “Polarization Division Multiplexing for Optical Data Communications,” DSc, Computer Science and Engineering, WashU, St. Louis, MO, USA, 08/2019
17. Liu Chen, “Structured Indoor Modeling,” PhD, Computer Science and Engineering, WashU, St. Louis, MO, USA, 08/2019
18. 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
19. 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
20. 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
21. 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
22. Homayoon Ranjbar, “Reconstruction Algorithms for Novel Joint Imaging Techniques in PET,” PhD, Electrical and Systems Engineering, WashU, St. Louis, MO, USA, 12/2017
23. 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

Student supervision (cont)

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 Univ., 2011)

Research funding

Current (All costs are direct)

1. NSF CAREER 07/2021-06/2026

   CAREER:Reconciling Model-Based and Learning-Based Imaging: Theory, Algorithms, and Applications

   Role: PI (8% effort) $306,206 total

3. Chan Zuckerberg Initiative (CZI) Scialog Award 08/2021-01/2023

   Enabling Non-Invasive Lipid Profiling with Intermodal Deep Learning (ENLiPID)

   Role: PI (1% effort) $50,000 total

3. Welcome Leap 09/2022-09/2025

   Digital Biomarkers for Fetal Growth Restriction based on Multi-Scale, Multiphysics Modeling and Machine Learning

   Role: Co-PI (8% effort) $1,024,239 total

4. NIH NIBIB R01 12/2021-11/2026

   Robust and Rapid 3D High-Resolution Cranial bone imaging for pediatric patients using MRI

   Role: Co-PI (15% effort) $1,604,319 total

5. DOE Basic Energy Sciences (BES) Open Solicitation 08/2022-07/2026

   Polymer Threading and Confinement into Nanoscale Porous Upcycling Catalyst

   Role: Co-PI (4% effort) $369,518 total

6. Beckman Center for Light-Sheet Microscopy and Data Science 06/2021-05/2026

   Optimizing Multiscale Light Sheet Imaging

   Role: Co-PI (3% effort) $1,200,000 total

Research funding (cont)

7. Siteman Investment Program 07/2022-06/2024
   Advancing Breast Cancer Risk Assessment Among White and Black Women Using Artificial Intelligence
   Role: Co-PI (6% effort) $200,000 total

8. NSF Emerging Frontiers 08/2019-07/2023
   URoL: Revealing How Epigenetic Inheritance Governs the Environmental Challenge Response with
   Role: Co-PI (4% effort) $317,722 total

9. Moore Foundation 11/2022-10/2025
   Developing a Toolkit for Advancing Lignin Disassembly Technology
   Role: Co-PI (8% effort) $901,639 total

9. WashU EECE/CSE Seed Grant 12/2022-12/2024
   Machine Learning Toolkit for Atomic Force Microscopy
   Role: PI (1% effort) $25,000 total

Previous

1. NSF CISE CIF Core Program 07/2018-06/2022
   CIF: Small: Signal processing for nonlinear diffractive imaging: acquisition, reconstruction and
   Role: PI $151,944 total

2. Los Alamos National Laboratory (LANL) 05/2020-12/2021
   Online Plug-and-Play Algorithms for Sequential Image Reconstruction
   Role: PI $71,502 total

3. WashU McKelvey Collaboration Initiation Grant (CIG) 06/2018-05/2019
   Data-Adaptive Imaging for Motion-Robust High-Resolution Dynamic MRI
   Role: PI $25,000 total

4. Siemens Medical Solutions USA 09/2018-08/2021
   Deep Learning for Motion-Robust 4D MRI
   Role: Co-PI $112,500.90 total

5. Mitsubishi Electric Research Laboratory 2022
   Unrestricted Gift for Research
   Role: PI $5,000 total

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-present)
- 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 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:

- 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:

- "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

Department of Electrical and Systems Engineering (ESE)

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

Department of Computer Science and Engineering (CSE)

- CSE Seminar Committee (2018-2020)

University service (cont)

McKelvey School of Engineering

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

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 (CIG) and an Assistant Professor of Electrical & Systems Engineering and Computer Science & Engineering at Washington University in St. Louis. He obtained the BS/MS degree in Communication Systems and the PhD degree in Electrical Engineering from EPFL, Switzerland, in 2011 and 2015, respectively. From 2015 to 2017, he was a Research Scientist at Mitsubishi Electric Research Laboratories, Cambridge, MA, USA. 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 has served as an Associate Editor of IEEE Transactions on Computational Imaging and Biological Imaging, and as a Senior Member of the Editorial Board of IEEE Signal Processing Magazine. He has served on IEEE Signal Processing Society's Computational Imaging Technical Committee (CI TC) and Bio Imaging and Signal Processing Technical Committee (BISP TC). He was a plenary speaker at the international Traveling Workshop on Interactions between low-complexity data models and Sensing Techniques (iTWIST) in 2018. He served a program co-chair for the International Biomedical and Astronomical Signal Processing (BASP) Frontiers conference for 2023. He has organized several large workshops such as the IEEE International Workshop on Computational Cameras and Displays (CCD) at CVPR 2022 and CVPR 2023, Learning for Computational Imaging (LCI) Workshop at ICCV 2021, and IMA Computational Imaging 2019. He is a Senior Member of IEEE.