

Suhas Sreehari, PhD

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Overview

- 14 years' research, academic, and industry experience in machine learning, statistical analytics, deep learning, optimization, computational imaging, anomaly detection, and predictive analytics
- 20+ peer-reviewed publications, 3 US patents, 15+ invited talks
- Multiple global awards for my research (including the 2020 SIAM Imaging Sciences Prize, 2018 IEEE Young Author Award, 2017 SPIE Best Paper Award, 2016 Presidential Scholar Award)
- IEEE Senior Member
- Technical Skills: Generative AI models, multi-modal models, biology/physics model-based learning, deep learning, machine learning, optimization, computational medical/scientific imaging, probability & statistics
- Computing Skills: Python, PyTorch, Spark, MATLAB

Education

08/2012– 05/2017	Ph.D., Electrical Engineering, Purdue University, West Lafayette, United States (First Rank, PhD Qualifying Exam in Signal Processing) Thesis Title: Advanced Prior Modeling for Nano-scale Imaging Advisor: Prof. Charles A. Bouman
09/2010– 04/2012	Master of Applied Science (M.A.Sc.), Electrical Engineering, University of Windsor, Canada (GPA: 12.5; A = 12) Thesis Title: Fast Modular Reduction for Large-Integer Multiplication Advisors: Prof. Majid Ahmadi and Prof. Huapeng Wu
09/2005– 07/2010	Bachelor of Engineering, Telecommunications Engineering, V.T.U., India (First Class with Distinction)

Professional Experience

[12/2025–] ***Assistant Professor, Data Science Institute and Biomedical Engineering, and MCW-Marquette Department of Biomedical Engineering (by courtesy), Medical College of Wisconsin, Milwaukee, WI***

- Multimodal modeling, computational imaging, biomedical informatics.
- Member, MCW Center for Imaging Research

[06/2025–04/2026] ***Chief Scientist, Pelagia Labs (Stealth Mode)***

- Multimodal analytics, computational imaging, signal processing, differential geometry for explainable AI.

[08/2023–05/2025] ***Assistant Professor, Electrical Engineering and Computer Science, The University of Tennessee, Knoxville, TN***

- Joint Faculty Appointment with Oak Ridge National Laboratory

[06/2021–05/2025] ***Research Staff Scientist, National Security Sciences Directorate, Oak Ridge National Laboratory, TN***

- Designing robust latent space representations in autoencoders for biological data (such as protein structures)
- Lead investigator on federated learning for medical image super-resolution
- Machine learning modeling specialist for US Veterans Affairs-funded research on environmental determinants of health
- Created privacy-preserving face ID algorithms using generative neural networks
- Developing AI/ML solutions for anomaly detection in healthcare (U.S. Medicare-sponsored research)

[10/2019– 04/2021] ***Assistant Vice President, Quantitative Analytics Specialist 3, Wells Fargo, San Francisco, CA***

- Developed AI/ML/statistical anomaly detection models for tracking financial crime/fraud
- Designed explainable ML techniques and surrogate models for neural networks
- Created KPIs and sensitivity analysis tests to monitor model performance
- Automated ML pipeline to build internal platform
- Taught graduate-level course on optimization, estimation theory, and ML

[07/2018–10/2019] ***Quantitative Analytics Specialist 2, Wells Fargo, San Francisco, CA***

- Created AI/ML fraud detection models for financial crime modeling
- Developed explainable NLP models to understand customer emails
- Validated quantitative models based on statistical soundness, data regulations, validity of assumptions
- Developed a code-base for automatic optimization of ML hyper-parameters using Gaussian process priors

- Re-designed validation documentation for efficient model validation and remediation

[06/2017–07/2018] ***Quantitative Analytics Associate, Wells Fargo, San Francisco, CA***

- Built tree-ensemble ML and multinomial regression models for loan loss forecasting (PD/LGD/EAD)
- Created sparse representations for data dimensionality reduction for credit scoring models

[05/2016–08/2016] ***Research Intern, Siemens Healthineers, Princeton, NJ***

- Developed a multi-prior Bayesian image reconstruction algorithm for MRI scanners
- Pushed into production in 2017 – led to two inventions

[01/2013–04/2017] ***Graduate Research Assistant, Integrated Imaging Lab, Purdue University, West Lafayette, IN***

- Developed the “Plug & Play Priors” algorithm to enable flexible Bayesian priors in inverse problems
- Plug & Play used in more than 100 scientific and engineering research labs in the world, and in Samsung Galaxy smartphone fingerprint sensors
- Created reconstruction algorithms for super-resolution, electron tomography, electron microscopy, high-speed laser microscopy, inpainting, sparse image interpolation
- Invented rotationally-invariant non-local means denoising
- Funded by US Air Force Research and Multi-University Research Initiative (MURI)

[08/2012–04/2014] ***Graduate Instructor, School of Mathematics and School of Electrical Engineering, Purdue University, West Lafayette, IN***

- Taught undergraduate algebra (as sole instructor)
- Graduate teaching assistant (TA) for undergraduate calculus, graduate image processing

[09/2010–04/2012] ***Graduate Teaching Assistant, Dept. of Electrical Engineering, University of Windsor, Windsor, Canada***

- Discovered a class of (quasi-Mersenne) prime numbers for fast modular reduction
- Developed an efficient algorithm and implementation scheme for large integer modular exponentiation

Select Honors and Awards

- [1] Selected to participate in the National Academy of Engineering’s China-America Frontiers of Engineering, Hong Kong (2026)
- [2] Distinguished Alumnus, B.M.S. College of Engineering, India (2024)
- [3] Elevated to Senior Member of IEEE (2022)
- [4] Society of Industrial and Applied Mathematics (SIAM) Imaging Sciences Best Paper Prize (2020)([Link to SIAM prize details and announcement](#))
- [5] Wells Fargo Medallion for Most Innovative Patent (2020)

- [6] IEEE Signal Processing Society Young Author Best Paper Award (2018)([Link to the IEEE announcement](#)) ([Link to Purdue University article](#))
- [7] SPIE Best Student Paper Award (2017)
- [8] Microscopy and Microanalysis Presidential Scholar Award for work with U.S. Air Force (2016)
- [9] 1st Rank in the Signal Processing Ph.D. Qualifying Examination, Purdue University (2013)
- [10] International Graduate Student Scholarship, University of Windsor, Canada (2010)

Professional Service and Consulting Activities

2026	Area Chair (Computational Imaging), IEEE ICASSP
2025	Area Chair (Computational Imaging), IEEE ICASSP
01/2025–	Elected member, IEEE Technical Committee on Computational Imaging
06/2022	Senior Member, IEEE
2022–2023	Chairman, IEEE East Tennessee Section
2020–2021	Imaging and AI Consultant, Hypercubes Global, San Francisco
2019–2021	Member of Advisory Board, InnovationsCZ (healthcare non-profit), San Francisco
2018–	Guest Reviewer for IEEE Transactions on Signal Processing, PLOS ONE
2017–	Regular Reviewer, IEEE Transactions on Image Processing, Optics Express, IEEE Signal Processing Letters, IEEE International Conference on Image Processing

Teaching

2020	Instructor for Learning to Teach Machines	Wells Fargo (Corporate Model Development)
2019	Instructor for Python Programming & ML Modeling	Wells Fargo (Decision Science & AI)
2013	Instructor for MA 153, Algebra	Purdue University (Dept. of Mathematics)
2013	TA for ECE 637, Digital Image Processing	Purdue University
2012	TA for MA 165, Calculus	Purdue University
2011	TA for ELEC 8550, Computer Arithmetic	University of Windsor
2011	TA for Various EE laboratories	University of Windsor

Mentoring and Supervision

2022	Haley Duba, PhD student/researcher	Purdue + Oak Ridge National Laboratory
2023	Langa Lunga, Summer Intern	Oak Ridge National Laboratory
2022	Awroni Bhaduri, Summer Intern	Oak Ridge National Laboratory
2021–	Dr. Emma Reid, Research Staff	Oak Ridge National Laboratory
2020	Marcus Paoletti, Pre-med Student	University of California at Berkeley
2020	Dr. Damian Abasto, Director, Market Risk	Wells Fargo
2020	Dr. Biancen Xie, Quantitative Associate	Wells Fargo
2016	Maliha Hossein, PhD Student	Purdue University

Publications

(listed in reverse-chronological order within each category)

Journals and Highly-Selective Conferences

- [1] Gregory T. Buzzard, Stanley H. Chan, Suhas Sreehari, and Charles A. Bouman. “Plug-and-play unplugged: Optimization-free reconstruction using consensus equilibrium.” *SIAM Journal on Imaging Sciences* 11, no. 3 (2018): 2001-2020. (This work **led to a \$1.2 million National Science Foundation research grant (Award #1763896)** for the application entitled “Multi-Agent Consensus Equilibrium: Modular Methods for Integrating Disparate Sources of Expertise.”)
<https://arxiv.org/pdf/1705.08983.pdf>
- [2] Suhas Sreehari, S. V. Venkatakrishnan, Katherine L. Bouman, Jeffrey P. Simmons, Lawrence F. Drummy, and Charles A. Bouman. “Multi-resolution data fusion for super-resolution electron microscopy.” In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, pp. 88-96. 2017.
Available online at <https://openaccess.thecvf.com>
- [3] Suhas Sreehari, S. Venkat Venkatakrishnan, Brendt Wohlberg, Gregory T. Buzzard, Lawrence F. Drummy, Jeffrey P. Simmons, and Charles A. Bouman. “Plug-and-play priors for bright field electron tomography and sparse interpolation.” *IEEE Transactions on Computational Imaging* 2, no. 4 (2016): 408-423.
(**2020 SIAM Imaging Sciences Best Paper Prize**)
(**2018 IEEE Signal Processing Society Young Author Best Paper Award**)
<https://arxiv.org/pdf/1512.07331.pdf>
- [4] Shane Z. Sullivan, Ryan D. Muir, Justin A. Newman, Mark S. Carlsen, Suhas Sreehari, Chris Doerge, Nathan J. Begue, R. Michael Everly, Charles A. Bouman, and Garth J. Simpson. “High frame-rate multichannel beam-scanning microscopy based on Lissajous trajectories.” *Optics express* 22, no. 20 (2014): 24224-24234.
Available online at <https://www.osapublishing.org>
- [5] Suhas Sreehari, Huapeng Wu, and Majid Ahmadi. “Application of new classes of Mersenne

primes for fast modular reduction for large-integer multiplication.” International Journal of Cyber-Security and Digital Forensics (IJCSDf), 1 (1) (2012): 15-19.

Conferences

- [1] Suhas Sreehari, Pradeep Ramuhalli, and Frank Liu. “Differential Geometric View of Information Flow in Neural Nets.” IS&T Electronic Imaging (Computational Imaging), 2025.
- [2] Langalibalele Lunga and Suhas Sreehari. “Can Adversarial Manipulations Undermine Super-Resolution Algorithms?” IS&T Electronic Imaging (Computational Imaging), 2025.
- [3] Suhas Sreehari, and Hector Santos-Villalobos. “Bias-mitigated face ID using secure generative transforms.” In Applications of Machine Learning, SPIE (International Society for Optics and Photonics), 2023.
- [4] Awroni Bhaduri, Hector Santos-Villalobos, and Suhas Sreehari. “Measuring transform invertibility with computational metrics.” In Applications of Machine Learning, SPIE (International Society for Optics and Photonics), 2023.
- [5] Suhas Sreehari. “Visualization transforms of non-spatial data for convolutional neural networks.” In Applications of Machine Learning 2020, vol. 11511, p. 115110K. SPIE (International Society for Optics and Photonics), 2020.
- [6] Andreas Geiger, Justin A. Newman, Suhas Sreehari, Shane Z. Sullivan, Charles A. Bouman, and Garth J. Simpson. “Sparse sampling image reconstruction in Lissajous trajectory beam-scanning multiphoton microscopy.” In High-Speed Biomedical Imaging and Spectroscopy: Toward Big Data Instrumentation and Management II, vol. 10076, p. 1007606. SPIE (International Society for Optics and Photonics), 2017. **(SPIE Best Paper Award)**
- [7] Suhas Sreehari, S. V. Venkatakrishnan, Jeff Simmons, Lawrence Drummy, and Charles A. Bouman. “Library-Based Sparse Interpolation and Super-Resolution of S/TEM Images of Biological and Material Nano-Structures.” Microscopy and Microanalysis 22, no. S3 (2016): 1446-1447.
- [8] Suhas Sreehari, S. V. Venkatakrishnan, Jeff Simmons, Lawrence Drummy, and Charles A. Bouman. “Model-based super-resolution of SEM images of nano-materials.” Microscopy and Microanalysis 22, no. S3 (2016): 532-533.
- [9] Justin Newman, Shane Sullivan, Ryan Muir, Suhas Sreehari, Charles Bouman, and Garth Simpson. “Rapid 2D and 3D imaging by Lissajous beam-scanning microscopy.” In abstracts of papers of the American Chemical Society, vol. 250. 1155 16TH ST, NW, Washington, DC 20036 USA: American Chemical Society, 2015.
- [10] Justin Newman, Shane Z. Sullivan, Ryan D. Muir, Suhas Sreehari, Charles A. Bouman, and Garth J. Simpson. “Multi-channel beam-scanning imaging at kHz frame rates by Lissajous trajectory microscopy.” In Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXII. International Society for Optics and Photonics, 2015.
- [11] Suhas Sreehari, S. V. Venkatakrishnan, Lawrence Drummy, Jeff Simmons, and Charles A. Bouman. “Rotationally-invariant non-local means for image denoising and tomography.” In 2015 IEEE International Conference on Image Processing (ICIP), pp. 542-546. IEEE, 2015.

- [12] Suhas Sreehari, S. V. Venkatakrishnan, Jeffrey P. Simmons, Lawrence F. Drummy, and Charles A. Bouman. “Exploiting Redundancy in Microscope Observations to Produce Sharper Tomographic Reconstructions.” Materials Research Society, Fall Meeting, 2015.
- [13] Suhas Sreehari, S. V. Venkatakrishnan, Jeffrey P. Simmons, Lawrence F. Drummy, and Charles A. Bouman. “Non-local Prior Modeling for Tomographic Reconstruction of Bright Field Transmission Electron Microscopy Images.” Microscopy and Microanalysis 21, no. S3 (2015): 1561-1562.
- [14] Suhas Sreehari, S. V. Venkatakrishnan, Lawrence F. Drummy, Jeffrey P. Simmons, and Charles A. Bouman. “Advanced prior modeling for 3D bright field electron tomography.” In Computational Imaging XIII, vol. 9401, p. 940108. International Society for Optics and Photonics, 2015.
- [15] Suhas Sreehari, Huapeng Wu, and Majid Ahmadi. “Fast modular reduction for large-integer multiplication for cryptosystem application.” In 2012 Second International Conference on Digital Information and Communication Technology and it’s Applications (DICTAP), pp. 226-229. IEEE, 2012.
- [16] Shruthi Kubatur, Suhas Sreehari, and Rajeshwari Hegde. “An Image Processing Approach to Linguistic Translation.” In AIP Conference Proceedings, vol. 1414, no. 1, pp. 172-177. American Institute of Physics, 2011.

Book (manuscript in preparation)

- [1] Suhas Sreehari (Expected 2027). Bayesian Estimation for Computational Imaging, SPIE.

Theses and dissertations

- [1] Suhas Sreehari. “Advanced Prior Modeling for Nano-scale Imaging.” PhD dissertation, Purdue University, 2017. Retrieved from [Purdue e-Pubs](#)
- [2] Suhas Sreehari. “Fast Modular Reduction for Large-Integer Multiplication.” Master of Applied Science dissertation, University of Windsor, Canada, 2012. Retrieved from [Scholarship at UWindsor](#)

Posters

- [1] Bias-Mitigated Face ID using Face-to-Landscape Transformation, International Conference on Computational Photography, Caltech, Pasadena, 2022
- [2] Plug & Play Priors for Bright Field Electron Tomography and Sparse Interpolation, IEEE International Conference on Image Processing, Beijing, China, 2017.
- [3] Plug & Play Super-Resolution Microscopy, International Conference on Computational Imaging, Stanford, CA, 2017.
- [4] Multi-Channel Lissajous Trajectory Beam-Scanning Microscopy for High Frame Rate 2D and 3D Imaging, Pittcon Conference, Pittsburgh, PA, 2015.
- [5] Hyperspectral Stimulated Raman Scattering Imaging of Highly Dynamic Specimens through Compressed Sensing, Conference on Advanced Raman Spectroscopy, West Lafayette, IN, 2015.

- [6] Plug & Play Priors for Inverse Imaging, U.S. Department of Homeland Security, Boston, MA, 2015.
- [7] Generations of Spatial Constraints for Electron Tomographic Reconstruction,” NSRC workshop for Big, Deep, and Smart Data Analytics in Materials Imaging, Oak Ridge National Lab, Oak Ridge, TN, 2015.

Patents

- [1] Co-inventor, High frame-rate multichannel beam-scanning microscopy, 2019 (US patent granted; patent# US10409047B2)
- [2] Lead inventor, Bias-Mitigated Face ID Systems using Mix-and-Matched Generative Networks (2024 US patent pending; 2023 provisional patent)
- [3] Co-inventor, Network Based Features for Financial Crime Detection, 2019 (US provisional patent)

Select Invited Talks

- [1] Are ground-up language models relevant in the age of ChatGPT?, Toronto Machine Learning Summit, 2023.
- [2] Anomaly Detection using a Generative Adversarial Networks-based Visualization Transform, Ai4 Conference, New York, 2021.
Host: Daniel Lackland, Conference Organizer.
- [3] Plug and Play: A General Approach to AI & Sensor Model Fusion, SIAM Imaging Sciences Best Paper Prize Talk, Toronto (given by Prof. Charles Bouman on my behalf), 2020.
Host: Prof. Carola-Bibiane Schoenlieb, Department of Applied Mathematics and Theoretical Physics, University of Cambridge.
- [4] Innovations in Financial Crime Model Validation, Ai4 Conference, New York, (joint talk with by Dr. Wayne Shoumaker), 2019.
- [5] Consensus Equilibrium and Plug & Play Priors for Inverse Imaging Problems, Indian Institute of Science (I.I.Sc.), Bangalore, 2018.
Host: Prof. Kunal Choudhury, Department of Electrical Engineering, I.I.Sc.
- [6] Multi-Agent Consensus Equilibrium, Indian Institute of Technology (I.I.T.), Madras, 2018.
Host: Prof. Kaushik Mitra, Department of Electrical Engineering, I.I.T. Madras.
- [7] Seeing Hidden Connections in Data, DataWise Conference, Charlotte, 2018.
- [8] Advanced Bayesian Prior Models for Computational Imaging, Los Alamos National Lab, Los Alamos, NM, 2018.
Host: Dr. Kari Sentz, Deputy Group Leader, CCS-3 (Information Sciences) Division, Los Alamos National Lab.
- [9] Distributed Optimization Methods for Scientific Imaging, Oak Ridge National Lab, Oak Ridge, TN, 2017.
Host: Dr. Philip Bingham, Section Head - Energy Sensing, Analytics, and Communications, Oak Ridge National Lab.

- [10] Plug & Play Priors for Super-Resolution Imaging, IS&T Electronic Imaging Conference, Burlingame, CA, 2017.
Host: Prof. Charles Bouman, Chair, Computational Imaging Symposium, IS&T Electronic Imaging Conference.
- [11] Model-based Medical Imaging and Reconstruction, Stanford University, Stanford, CA, 2016.
Host: Prof. Christopher Contag, Co-Director, Molecular Imaging Program at Stanford, Stanford University School of Medicine.
- [12] Plug & Play Priors for Nano-scale Imaging, California Institute of Technology, Pasadena, CA, 2016
Host: Prof. Kaushik Bhattacharya, Department of Mechanical Engineering, California Institute of Technology.
- [13] Convergence of ADMM-based Bayesian Optimizers, Siemens Healthineers, Princeton, NJ, 2016.
Host: Dr. Mariappan Nadar, Senior Director, Medical Imaging Technologies, Siemens Healthineers.
- [14] Sparse Representations and Learning for Neuro-imaging, Harvard-MIT Health Sciences and Technology, Charlestown, MA, 2016.
Host: Prof. Emery Brown, Associate Director, Institute for Medical Engineering and Science, Massachusetts Institute of Technology; Co-director, Harvard-MIT Health Sciences & Technology, Massachusetts Institute of Technology.
- [15] Model-based Tomographic Image Reconstruction, Carnegie Mellon University, Pittsburgh, PA, 2015.
Host: Prof. Marc De Graef, Department of Materials Science and Engineering, Carnegie Mellon University.
- [16] An Extension of Mersenne Primes for Fast Encryption, Massachusetts Institute of Technology, Cambridge, MA, 2012.
Host: Dr. Erin Solovey, Computer Science and Artificial Intelligence Lab, EECS, Massachusetts Institute of Technology.

References

- [1] Prof. Thomas M. Talavage, Professor and Head, Biomedical Engineering, University of Cincinnati, Cincinnati, OH
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- [2] Prof. Hector Santos-Villalobos, Assistant Professor, University of Tennessee, Knoxville
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