CURRICULUM VITAE

ATUL N INGLE
August 28, 2025

Education

Ph.D.	2015	Electrical and Computer Engineering University of Wisconsin-Madison
M.S.	2011	Electrical and Computer Engineering University of Wisconsin-Madison
B.Tech.	2009	Electronics Engineering Veermata Jijabai Technological Institute

Employment

Assistant Professor, Portland State University (Portland, OR)	2022–
Postdoc (CS/Biostats), University of Wisconsin-Madison (Madison, WI)	2017–2021
Research Scientist, Fitbit Inc. R&D (Boston, MA)	2015–2017
Visiting Researcher, Philips Healthcare (Andover, MA)	Su2013, Fa2014
Research Assistant, University of Wisconsin-Madison (Madison, WI)	2011–2015
Project Assistant, University of Wisconsin-Madison (Madison, WI)	2009–2011

Dissertation

Stochastic Signal Processing Methods for Shear Wave Imaging using Ultrasound, August 2009 (Advisor: Dr. Tomy Varghese).

Refereed Publications or Other Creative Achievements

1. J. Folden, S. Koppal*, **A. Ingle***, "FoveaSPAD: Photon Inhibition for Energy-Efficient Single-Photon Imaging," accepted for publication in IEEE Trans. Computational Imag. (2024) (* equal contribution).
2. L. Koerner, S. Gupta, A. Ingle, M. Gupta, "Photon Inhibition for Energy-Efficient Single-Photon Imaging," Proc. ECCV 2024 pp. 90-107 (2024) (oral presentation, 2.3% acceptance rate).
3. K. Sadekar, D. Maier, **A. Ingle**, "Single-Photon 3D Imaging with Equi-Depth Photon Histograms," Proc. ECCV 2024 pp. 381-398 (2024). (27.9% acceptance

rate)

4. H. Galante, T. Milanese, K. Sadekar, C. Bruschini, E. Charbon, D. Maier, D. Burnett, **A. Ingle**, "Count-Free Single-Photon LiDAR with Equi-Depth Histograms: An FPGA Implementation," 2024 International SPAD Sensor Workshop, Trento, Italy (2024).
5. S. Jungerman, **A. Ingle**, M. Gupta, "Panoramas from Photons," Proc. ICCV 2023.
6. F. Gutierrez-Barragan, F. Mu, A. Ardelean, **A. Ingle**, C. Bruschini, E. Charbon, Y. Li, M. Gupta, A. Velten, "Learned Compressive Representations for Single-Photon 3D Imaging," Proc. ICCV 2023.
7. **A. Ingle**, D. Maier, "Count-Free Single-Photon 3D Imaging with Race Logic," IEEE Trans. Pattern Anal. Mach. Intel. (TPAMI) special issue on selected papers from the 2023 International Conference on Computational Photography (ICCP), Jul. 2023 (Best Paper Award)
8. **A. Ingle**, D. Maier, "Count-Free Histograms with Race Logic for Single-Photon LiDAR," 2023 International Image Sensor Workshop (IISW), Crieff, Scotland (2023)
9. M. Laurenzis, E. Bacher, T. Seets, **A. Ingle**, A. Velten, F. Christnacher, "Single photon flux imaging with sub-pixel resolution by motion compensation," Advanced Photon Counting Techniques XVII. Vol. 12512. SPIE, 2023
10. J. Lee, **A. Ingle**, J. Chacko, K. Eliceiri, M. Gupta, "CASPI: collaborative photon processing for active single-photon imaging," Nature Comm. vol. 14 no. 1, pp. 3158 (2023) (2-yr IF: 16.6 (2022))
11. M. Laurenzis, T. Seets, E. Bacher, **A. Ingle**, A. Velten, "Comparison of super-resolution and noise reduction for passive single-photon imaging." Journal of Electronic Imaging vol. 31, no. 3 (2022).
12. S. Jungerman, **A. Ingle**, Y. Li, M. Gupta, "3D Scene Inference from Transient Histograms," Proc. ECCV 2022.
13. F. Gutierrez-Barragan, **A. Ingle**, T. Seets, M. Gupta, A. Velten, "Compressive single-photon 3D cameras." Proc. CVPR 2022.
14. Y. Liu, F. Gutierrez-Barragan, **A. Ingle**, M. Gupta, A. Velten, "Single-Photon Camera Guided Extreme Dynamic Range Imaging," Proc. WACV 2022.
15. M. Laurenzis, T. Seets, E. Bacher, **A. Ingle**, A Velten, "Passive imaging of single photon flux: strategies for de-noising, motion blur reduction and super-resolution up-scaling," Emerging Imaging and Sensing Technologies for Security and Defense VI. Vol. 11868. SPIE, 2021.
16. **A. Ingle**, T. Seets, M. Buttafava, S. Gupta, A. Tosi, M. Gupta*, A. Velten*, "Passive Inter- Photon Imaging," IEEE Proc. CVPR, 2021 (* equal) (oral presentation, 4.6% acceptance rate)
17. T. Seets, **A. Ingle**, A. Velten, "Motion Adaptive Video Deblurring with Single-Photon Cameras," Proc. WACV 2021.
18. A. Gupta*, **A. Ingle***, M. Gupta, "Asynchronous Single-Photon 3D Imaging," IEEE Proc. ICCV, 2019 (* equal) (Marr Prize Honorable Mention).
19. A. Ingle, A. Velten, M. Gupta, "General-purpose imaging with single-photon cameras (Conference Presentation)," Computational Imaging V. Vol. 11396. SPIE, 2020.

20. **A. Ingle**, A. Velten, M. Gupta, "High Flux Imaging with Single-Photon Sensors," IEEE Proc. CVPR, 2019 (oral presentation, 5.6% acceptance rate)
21. A. Gupta, **A. Ingle**, M. Gupta, A. Velten, "Photon-Flooded Single-Photon 3D Cameras," IEEE Proc. CVPR, 2019 (oral presentation, 5.6% acceptance rate)
22. **A. Ingle**, T. Varghese, "A Kernel Smoothing Algorithm for Ablation Visualization in Ultra- sound Elastography," Ultrasonics, vol. 96, pp. 267–275 (2019).
23. **A. Ingle**, T. Varghese, W. Sethares, "Efficient 3D Reconstruction in Ultrasound Elastography via a Sparse Iteration based on Markov Random Fields," IEEE Trans. Ultrason., Ferroelectr., Freq. Control, vol. 64, no. 3, pp. 491–499 (2017).
24. **A. Ingle**, T. Varghese, "3D Reconstruction of Ablations in Shear Wave Elastography Using the Matérn Kernel," IEEE IUS 2017.
25. W. Yang, T. Ziemlewicz, T. Varghese, M. Alexander, N. Rubert, **A. Ingle**, M. Lubner, J. Hinshaw, F. Lee Jr., J.A. Zagzebski, "Post-Procedure Evaluation of Microwave Ablations of Hepatocellular Carcinomas using Electrode Displacement Elastography," Ultrasound in Med. Biol., vol. 42, no. 12, pp. 2893–2902 (2016).
26. W. Yang, **A. Ingle**, T. Varghese, "Comparison of Three-Dimensional Strain Volume Reconstructions using SOUPR and Wobbler Based Acquisitions: A Phantom Study," Med. Phys., vol. 43, no. 4, pp. 1615 (2016).
27. **A. Ingle**, J. Bucklew, W. Sethares, T. Varghese, "Slope estimation in noisy piecewise linear functions," Elsevier Sig. Proc., vol. 108, pp. 576–588 (2015).
28. **A. Ingle**, C. Ma, T. Varghese, "Ultrasonic Tracking of Shear Waves using a Particle Filter," Med. Phys., vol. 42, no. 11, pp. 6711–6725 (2015).
29. **A. Ingle**, T. Varghese, "C-plane reconstruction of ablations in ultrasound shear wave elastog- raphy using a sheaf of planes," IEEE Trans. Med. Imag., vol. 33, no. 8, pp. 1677–1688 (2014).
30. **A. Ingle**, T. Varghese, "C-plane Reconstructions from Sheaf Acquisition for Ultrasound Elec- trode Vibration Elastography," IEEE Ultrasonics Symposium 2014.
31. **A. Ingle**, T. Varghese, "Three-Dimensional Shear Wave Elastographic Reconstruction of Ablations," IEEE EMBC 2014.
32. **A. Ingle**, T. Varghese, W. Sethares, J. Bucklew, "Stochastic Piecewise Linear Function Fitting with Application to Ultrasound Shear Wave Imaging," IEEE EMBC 2014.
33. **A. Ingle**, William Sethares, Tomy Varghese, James Bucklew, "Piecewise Linear Slope Estimation," Asilomar 2014.
34. William Sethares, **A. Ingle**, Tomas Krc, Sally Wood, "Eigentextures: An SVD Approach to Automated Paper Classification," Asilomar 2014.
35. **A. Ingle**, T. Varghese, "A Huber-penalized Akaike-regularized broken-stick least squares re- gression algorithm for shear wave velocity reconstruction," AIUM Annual Convention 2013, Apr. 2013.
36. **A. Ingle**, T. Varghese, "Stochastic hidden Markov model-based filtering algorithm for track- ing shear waves through disparate media in electrode vibration elastography," AIUM Annual Convention 2013, Apr. 2013.
37. **A. Ingle**, T. Varghese, "A Comparison of Model Based and Direct Optimization Based Filtering Algorithms for Shear Wave Velocity Reconstruction for Electrode Vibration Elastography," in Proc. Int. Symp. Biomed. Imag., Apr. 2013.

38. A. Gutierrez, C. Hohberger, F.D. Nicolalde, **A. Ingle**, W. Hochschild, R. Davis, and R. Veeramani, "High-Frequency RFID Tag Survivability in Harsh Environments," in Proc. IEEE Int RFID Conf, pp. 58–65, May 2013.
39. **A. Ingle**, W. Sethares, "The least-squares invertible constant-Q spectrogram and its application to phase vocoding," J. Acoust. Soc. Am., vol. 132, no. 2, pp. 894–903 (2012).

Non-Refereed Publications or Other Creative Achievements

Articles

40. "How Signal Processing Counts your Steps," IEEE Signal Processing Society Blog (Invited), June 7, 2017.

Patents and Intellectual Property

41. "Methods and Systems for Depth and Memory Foveation of SPAD Cameras" Inventors: J. Folden, **A. Ingle**, S. Koppal (Filed Jul. 2024)
42. "Systems and Methods for Three-dimensional Sensing with Single-photon Cameras for Resource-Constrained Applications" Inventors: K. Sadekar, D. Maier, **A. Ingle** (Filed Jun. 2024)
43. "Systems, Methods, And Media For Single-Photon Imaging With Improved Energy Efficiency" Inventors: Mohit Gupta, Lucas Koerner, Atul Ingle (Filed Apr. 2024)
44. "Systems and Methods for Count-Free Histograms in 3D Imaging" Inventors: D. Maier, **A. Ingle** (Filed Sep. 2023)
45. "Learned Compressive Representations for Single-Photon 3D Imaging" Inventors: F. Gutierrez-Barragan, F. Mu, **A. Ingle**, Y. Li, M. Gupta, A. Velten (Provisional patent application filed July 2023)
46. "Systems, methods, and media for single photon depth imaging with improved efficiency using compressive histograms" Inventors: F. Gutierrez-Barragan, A. Velten, M. Gupta, **A. Ingle**, T. Seets. US Patent Application US20230393241A1 (filed Jun. 2022)
47. "Systems, methods, and media for high dynamic range imaging using single-photon and conventional image sensor data" Inventors: F. Gutierrez-Barragan, Y. Liu, **A. Ingle**, M. Gupta, A. Velten. US Patent Application US20230224599A1 (filed Jan. 2022)
48. "Systems, methods, and media for motion adaptive imaging using single-photon image sensor data" Inventors: T. Seets, **A. Ingle**, A. Velten. US Patent US11539895B1.
49. "Evaluation of cardiac infarction by real time ultrasonic strain imaging" Inventors: A. Patil, **A. Ingle**, K. Thiele. US Patent US11744543B2.
50. "Systems, methods, and media for single photon depth imaging with improved precision in ambient light" Inventors: A. Gupta, **A. Ingle**, A. Velten, M. Gupta. EU Patent EP3935411A1 (filed

Apr. 2020)

51. "Systems, methods, and media for asynchronous single photon depth imaging with improved precision in ambient light"
    Inventors: A. Gupta, **A. Ingle**, M. Gupta. US Patent US11448767B2.
52. "Systems, methods, and media for high dynamic range imaging using dead-time-limited single photon detectors"
    Inventors: **A. Ingle**, M. Gupta, A. Velten. US Patent Application US20200036918A1.
53. "Method and apparatus for rapid acquisition of elasticity data in three dimensions"
    Inventors: **A. Ingle**, T. Varghese. US Patent US9913624B2.

Presentations at Professional Meetings

Note: Papers accepted at peer-reviewed computer vision and computational imaging conferences are often presented as an oral presentation by the first author. I have indicated these as "oral presentation" in the "Refereed Publications or Other Creative Achievements" section above. I list other presentations (e.g., invited talks) below.

1. "Computer Vision at the Single-Photon Limit," Invited Talk at Willamette University CS and Data Science Department, Downtown Portland Campus (June 2025)
2. "Count-free Single-photon 3D Imaging with Race Logic," Invited talk (presented jointly with Prof. David Maier) at the Optica/Optical Society of America Columbia Valley Chapter meeting (October 2024)
3. "Resource Aware Single-Photon Imaging," Invited Speaker, Computational Cameras and Displays Workshop, CVPR 2024, Seattle, WA (June 2024)
4. "Computational Imaging with Single-Photon Cameras," Invited Speaker, Photonics North 2022. Niagara Falls, Canada (May 2022)
5. "Single-Photon 3D Cameras," TechConnect World Innovation Conference and Expo 2021. Washington DC (October 2021)
6. "Single-Photon Computational Imaging," Keynote Talk, CVPR 2020 CCD Workshop, virtual due to COVID-19 pandemic (June 2020)
7. "General-Purpose Passive Imaging with Single-Photon Sensors," Single-Photon Workshop, Milan, Italy (October 2019)

Honors, Grants, and Fellowships

1. Bandwidth-Efficient Single-Photon LiDAR. Portland State University Venture Development Fund, 8/2025-2/2026. PI: Atul Ingle, Total Funding: $9,490.
2. Fast-Neutron Source Localization using a Single-Photon Camera. Department of Energy, 1/2025-12/2026 PI: Erik J. Sánchez, Co-PI: Atul Ingle, Co-I: Odera Dim, Brookhaven National Laboratory, Total Funding: $797,419 (Co-PI Ingle's share 34%).
3. ERI: Resource-Aware Single-Photon Image Sensors. NSF Engineering Research Initiation Award, 2/2022-7/2025, PI: Atul Ingle, Co-PIs: None, Total Funding: $199,244.
4. From One Photon to a Billion: Extreme Dynamic Range Imaging Using Single Photon Sensors. Wisconsin Alumni Research Foundation Technology Innovation Fund, 1/2019-6/2021, PIs: Andreas Velten and Mohit Gupta, Key Personnel: Atul Ingle, Total Funding: $49,754.

Other Community Outreach Achievements

(See II.E.4)

1. Quoted in a news article titled "Expert warns of AI's limits after facial recognition leads to Portland man arrest" in KATU Portland News, and also featured in a live TV interview on KUNP PDX-ARC morning show. July 31, 2025.
2. Quoted in a Scientific American article titled "Holographic Camera Instantly Peeks around Obstacles," February 1, 2022.
3. "How Computers See," High School Summer Coding Camp at Franklin High School (SE Portland) in collaboration with Mr. Joseph Rowe (high school computer science teacher). June 2022
4. "AI and ML Coding Camp," High School Summer Coding Camp at Franklin High School (SE Portland) in collaboration with Mr. Joseph Rowe (high school computer science teacher). July 2023.
5. Blog Maintainer for the "Image Sensors World" blog since 2021 (~100,000 visitors/month in 2024-25)
6. Video interview with JW Insights News "ijiweiTalk Ep 217: Is there an optimal solution for the CFA of the image sensor?" Online: https://jw.ijiwei.com/n/841368
7. Research Presentation and lab tour to ~15 visitors from the US Patent Office (April 27, 2023)
8. Research Presentation to various companies (Teledyne Geospatial, Cyberoptics, Nordson, Nearmap, Pix4D) as part of Intellectual Property licensing discussions organized by the PSU Innovation and Intellectual Property (IIP) office.
9. Invited talk titled "Single Photon Cameras," PreAct Technologies LLC Tech Talk. Portland, OR (April 2022)
10. "Navigating the Academic Job Market," University of Central Florida Postdocs Association https://youtu.be/lUTJmkRSHWs (October 2021)

Governance and Other Professionally Related Service

Governance Activities for the University, College, Department

1. Broadening Participation and Accessibility Committee, Department of Computer Science (Member 2022-2024, Chair 2025)
2. Graduate Admissions Committee, Department of Computer Science (Member 2022-2023)
3. Graduate Committee, Department of Computer Science (Member 2023-)
4. Executive Committee, Department of Computer Science (Member 2023-2024)
5. Undergraduate Committee, Department of Computer Science (Member 2025-)

Professionally Related Service

Reviewer (Journals)

IEEE Trans. Computational Imaging; IEEE Trans. Medical Imaging; IEEE Trans. on

Ultrasonics, Ferroelectrics and Freq. Control; Elsevier Signal Processing; Medical Physics; J. Acoustical Society of America; PLoS ONE; ACM Trans. on Graphics

Reviewer (Conferences)

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), European Conference on Computer Vision (ECCV), IEEE/CVF International Conference on Computer Vision (ICCV), IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), IEEE International Conference on Computational Photography (ICCP), ACM SIGGRAPH

Outstanding Reviewer award at CVPR 2021

Conference organization

Computer Vision with Single-Photon Cameras Workshop ICCV2025 (Honolulu, HI)
Program Committee: SPIE DCS Computational Imaging VIII 2025 (Orlando, FL)
Local Arrangements Chair: ICCP 2023 (Madison, WI)
Local Arrangements Committee: MobiSys 2022 (Portland, OR)
Program committee: ICCP 2019 (virtual), ICCP 2022 (Haifa, Israel)
Session chair: Photonics North 2022 (Niagara Falls, Canada), ICCP 2022 (Pasadena, CA)

Ad-hoc Reviewer for NSF (ENG) Panel Reviews (2023) and NSF Trailblazer program (2024)

Memberships in Professional Societies

Member, IEEE
Member, SPIE