Prashant Athavale

List of Publications

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Publications (Citations 290+, h-index: 9, i10 index: 9)

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(*Color scheme: undergraduate students, graduate students*)

Journal Articles Under Review

1. Emmanuel Atindama, Conor Miller-Lynch, Huston Wilhite, Cody Mattice, Günay Doğan, Prashant Athavale, *Hybrid algorithm for filling in missing data in electron backscatter diffraction maps*, (**passed the Government's internal review** by the National Institute of Standards and Technology), submitted to Integrating Materials and Manufacturing Innovation, January 2025.

Peer-Reviewed Journal Articles

15. Emmanuel Atindama, Michael Ramsdell, David Wick, Sumona Mondal, Prashant Athavale, *Impact of targeted interventions on success of high-risk minority and female engineering students*, Frontiers in Education, January 2025. `https://doi.org/10.3389/feduc.2025.1435279`

14. Emmanuel Atindama, Peter Lef, Günay Doğan, Prashant Athavale, *Restoration of noisy orientation maps from electron backscatter diffraction imaging*, Integrating Materials and Manufacturing Innovation, 12, 251–266, 2023. `https://doi.org/10.1007/s40192-023-00304-8`

13. David Wick, Emmanuel Atindama, Prashant Athavale, Sumona Mondal, Michael Ramsdell, Robert Jaspersohn, John Moosbrugger, *Measuring the impact of student success retention initiatives for engineering students at a private research university*, Frontiers in Education, Sec. STEM Education Volume 7, 2022. `https://doi.org/10.3389/feduc.2022.1087064`

12. Chaya Chaipitakporn, Prashant Athavale, Prashant Athavale, Vijay Kumar, Thevasha Sathiyakumar, Marko Budišić, Shantanu Sur, *COVID-19 In the united states during pre-vaccination period: shifting impact of sociodemographic factors and air pollution*, Frontiers in Epidemiology. Sec. Infectious Disease Epidemiology, 2022. `https://doi.org/10.3389/fepid.2022.927189`

11. Prashant Athavale, Vijay Kumar, Jeremy Clark, Sumona Mondal, Shantanu Sur, *Differential impact of COVID-19 risk factors on ethnicities in the United States*, Frontiers in Public Health, 9:743003, 2021. `https://doi.org/10.3389/fpubh.2021.743003`

10. Prashant Athavale, Sumona Mondal, Seema Rivera, *Factors influencing success in advanced engineering mathematics courses: a case study*, Frontiers in Education, Sec. STEM Education, 2021. `https://doi.org/10.3389/feduc.2021.662380`

9. Prashant Athavale, Soumyabrata Dey, Sheetal Dharmatti, Aiswarya Sara Mathew, *A novel entropy-based texture inpainting algorithm*, Signal Image Video Processing 15, 1075–1080, 2021. `https://doi.org/10.1007/s11760-020-01833-x`

8. Prashant Athavale, Robert Jerrard, Matteo Novaga, Giandomenico Orlandi, *Weighted TV minimization and applications to vortex density models*, Journal of Convex Analysis, 24(2), 1051–1084, 2017. `https://www.heldermann.de/JCA/JCA24/JCA244/jca24063.htm`

7. Zhang Li, Prashant Athavale, Mihaela Pop, Graham Wright, *Multicontrast reconstruction using compressed sensing with low rank and spatially varying edge preserving constraints for high resolution MR characterization of myocardial infarction.*, Magnetic Resonance in Medicine. 78: 598-610, August 2017. `https://doi.org/10.1002/mrm.26402`

6. Yves Gennip, Prashant Athavale, Jérôme Gilles, Rustum Choksi, *A regularization approach to blind deblurring and denoising of QR barcodes*, in IEEE Transactions on Image Processing, vol. 24, no. 9, pp. 2864-2873, Sept. 2015. `https://doi.org/10.1109/TIP.2015.2432675`

5. Prashant Athavale, Robert Xu, Perry Radau, Adrian Nachman, Graham Wright, *Multiscale properties of weighted total variation flow with applications to denoising and registration*, Medical Image Analysis, 23(1), 28–42, April 2015. `https://doi.org/10.1016/j.media.2015.04.013`

4. Robert Xu, Prashant Athavale, Philippa Krahn, Kevan Anderson, et al., *Feasibility study of respiratory motion modeling based correction for MRI-guided intracardiac interventional procedures,* in IEEE Transactions on Biomedical Engineering, vol. 62, no. 12, pp. 2899-2910, Dec. 2015. `http://doi.org/10.1109/TBME.2015.2451517`

3. Robert Xu, Prashant Athavale, Adrian Nachman, and Graham Wright, *Multiscale registration of realtime and prior MRI data for image guided cardiac interventions*, IEEE Transactions for Biomedical Engineering, vol 61, issue 10, pp. 2621–2632, October 2014. `https://doi.org/10.1109/TBME.2014.2324998`

2. Prashant Athavale, and Eitan Tadmor, *Integro-differential equations based on (BV, L^1) minimization*, SIAM Journal on Imaging Science, 4 (1), 300-312, 2011. `https://doi.org/10.1137/100795504`

1. Eitan Tadmor, and Prashant Athavale, *Multiscale image representation using novel integro-differential Equations*, Inverse Problems & Imaging, vol. 3, no. 4, pp. 693–710, 2009. `https://doi.org/10.3934/ipi.2009.3.693`

Full Peer-Reviewed Papers in International Conferences

9. Austin Jantzi, William Jemison, Prashant Athavale, Mahesh Banavar, Erik Bollt, *Underwater time of flight camera range finding with backscatter phasor subtraction*, OCEANS Conference & Exposition, ISSN: 0197-7385, October, 2022. `https://doi.org/10.1109/OCEANS47191.2022.9977327`

8. Kevin Mack, Prashant Athavale, William Jemison, David Illig, Luke Rumbaugh, Mahesh Banavar, Erik Bollt, *Restoration of time-of-flight (ToF) underwater images using TV regularization*, Proc. SPIE 11752, Ocean Sensing and Monitoring XIII, 117520N, 2021. `https://doi.org/10.1117/12.2588047`

7. Li Zhang, Prashant Athavale, Venkat Ramanan, Jennifer Barry, Garry Liu, Nilesh Ghugre, Mihaela Pop, Graham Wright, *Improved characterization of infarct heterogeneity from high resolution T1* maps using compressed sensing and temporal PCA with weighted total variation*, Journal of Cardiovascular Magnetic Resonance, 17 (Suppl 1), W33, 2015. `https://doi.org/10.1186/1532-429X-17-S1-W33`

6. Robert Xu, Prashant Athavale, Philippa Krahn, Kevan Anderson, Jennifer Barry, Labonny Biswas, Venkat Ramanan, Nicolas Yak, Mihaela Pop, Graham Wright, *Respiratory motion model based correction for improving the targeting accuracy of MRI-guided intracardiac electrophysiology procedures*, Journal of Cardiovascular Magnetic Resonance, 17 (Suppl 1), O24, 2015. `https://doi.org/10.1186/1532-429X-17-S1-O24`

5. Robert Xu, Prashant Athavale, Yingli Lu, Perry Radau, Graham Wright., *Myocardial segmentation in late-enhancement MR images via registration and propagation of cine contours*, 2013 IEEE 10th International Symposium on Biomedical Imaging, San Francisco, CA, USA, 2013, pp. 856-859. `https://doi.org/10.1109/ISBI.2013.6556610`

4. Prashant Athavale, Robert Xu, Perry Radau, Adrian Nachman, and Graham Wright, *Multiscale TV flow with applications to fast denoising and registration*, Proc. SPIE 8669, Medical Imaging 2013: Image Processing, 86692K, 2013. `https://doi.org/10.1117/12.2007190`

3. Prashant Athavale, and Luminita Vese, *Placental fetal stem segmentation in a sequence of histology images*, Proc. SPIE 8314, Medical Imaging 2012: Image Processing, 83143A, 2012. `https://doi.org/10.1117/12.911763`

2. Prashant Athavale and Eitan Tadmor, *Novel integro-differential equations in image processing and its applications*, Proc. SPIE 7533, Computational Imaging VIII, 75330S 2010. `https://doi.org/10.1117/12.850779`

1. Ezzatollah Salari and Prashant Athavale, *Acceleration in iterative image restoration by manipulation of the gain parameter*, Proc. SPIE 5014, Image Processing: Algorithms and Systems II, pp. 213–220, 2003. `https://doi.org/10.1117/12.473069`

Journal Articles in Preparation/Near Submission

○ Dale Fournier, Prashant Athavale, *A new continuous score for diffuse idiopathic skeletal hyperostosis* , expected 2025

○ Minh-Ngoc Huynh, Prashant Athavale, *Postpandemic predictors of academic success*, expected 2024

○ Pijush Sutradhar, Prashant Athavale, Kenneth Wallace, *Characterization of growth rate and intestinal development during post-embryogenesis*, expected 2024

Peer-Reviewed Abstracts Presented in International Conferences

13. Emmanuel Atindama and Conor Miller-Lynch, Cody Mattice, Huston Wilhite, Tarun Sharma, Günay Doğan, Prashant Athavale, *A hybrid algorithm for restoring grain orientations of material microstructures*, SIAM Conference on Imaging Science, 2024. `https://meetings.siam.org/sess/dsp_talk.cfm?p=136097`

12. Emmanuel Atindama, Günay Doğan, *Reconstruction of grain orientation data using U-Nets*, SIAM Conference on Materials Science, 2024. `https://meetings.siam.org/sess/dsp_talk.cfm?p=137059`

11. Prashant Athavale, Emmanuel Atindama, Peter Lef, Günay Doğan, *Application of weighted TV flow to material science problems*, International Congress on Industrial and Applied Mathematics, Tokyo, 2023. `https://iciam2023.org/registered_data?id=01136#01712`

10. Emmanuel Atindama, Prashant Athavale, Günay Doğan, *Reconstructing electron backscatter diffraction data using vectorized total variation flow*, International Congress on Industrial and Applied Mathematics, Tokyo, 2023. `https://iciam2023.org/registered_data?id=CT051#02641`

9. Emmanuel Atindama, Günay Doğan, Prashant Athavale, *Restoration of the electron backscatter diffraction data using vectorized total variation flow*, Joint Mathematics Meetings, Boston, 2023. `https://meetings.ams.org/math/jmm2023/meetingapp.cgi/Paper/22744`

8. Huston Wilhite, Cody Mattice, Emmanuel Atindama, Prashant Athavale, *Electron backscatter diffraction data inpainting using a hybrid approach of machine learning and exemplar-based algorithms*, Joint Mathematics Meetings, Boston, 2023. `https://meetings.ams.org/math/jmm2023/meetingapp.cgi/Paper/22611`

7. Emmanuel Atindama, Günay Doğan, Prashant Athavale, *Weighted total variation flow for crystallographic data reconstruction*, SIAM Conference on Imaging Science, Virtual, 2022. `https://meetings.siam.org/sess/dsp_talk.cfm?p=119385`

6. Emmanuel Atindama, Peter Lef, Prashant Athavale and Günay Doğan, *Weighted total variation based algorithms for reconstruction of grain orientation data: a comparative study*, SIAM Conference on Material Science, (virtual) Bilbao, Spain, 2021, `easychair.org/smart-program/SIAM-MS21/2021-05-18.html#talk:165420`

5. Prashant Athavale, Emmanuel Atindama, Günay Doğan and Peter Lef, *Partial differential equation based methods for reconstruction of grain orientation data*, SIAM Conference on Material Science, Bilbao, Spain, 2021, `easychair.org/smart-program/SIAM-MS21/2021-05-18.html#talk:165424`

4. Prashant Athavale, Sheetal Dharmatti, and Aiswarya Sara Matthew, *An entropy-based algorithm for texture image inpainting*, AMS Special Session on Statistical, Variational, and Learning Techniques in Image Analysis and their Applications to Biomedical, Hyperspectral, and Other Imaging, Baltimore, 2019. `jointmathematicsmeetings.org/amsmtgs/2217_abstracts/1145-65-2172.pdf`

3. Prashant Athavale, Luminita Vese, Carolyn Salafia, *Automated tracking of fetal stems from inaccurate initial guess*, Meeting of the International-Federation-of-Placenta-Associations, vol. 32, no. 9, pp. A22–A22, 2011. `https://www.researchgate.net/publication/294394276`

2. Prashant Athavale, Carolyn Salafia, Luminita Vese, *Villous structural study based on multilevel registration*, Meeting of the International Federation of Placenta Associations, vol 31, no. 9, A101–A102, 2010. `https://www.researchgate.net/publication/298284870`

1. Prashant Athavale, Pascal Getreuer, Carolyn Salafia, *Analysis of inflammation in regards to distance of neutrophil migration in histopathology images: a marker of infection severity/duration?*, International Federation of Placenta Associations Meeting, vol 31, no. 9, P3.11, 2010. `https://www.researchgate.net/publication/298295076`

Peer-Reviewed Posters in International Conferences

3. Conor Miller-Lynch, Emmanuel Atindama, Tarun Sharma, Huston Wilhite, Cody Mattice, Prashant Athavale, Günay Doğan, *Demonstration of a hybrid restoration algorithm for grain orientation data of materials*, SIAM Conference on Imaging Science, 2024. `https://meetings.siam.org/sess/dsp_talk.cfm?p=137341`

2. Emmanuel Atindama, Günay Doğan, Prashant Athavale, *Advances toward parameter-free reconstruction of grain orientation data*, SIAM Conference on Materials Science, 2024. `https://meetings.siam.org/sess/dsp_talk.cfm?p=137061`

1. Emmanuel Atindama, Günay Doğan, Prashant Athavale, *Improving denoising performance in crystallographic orientation data*, SIAM Conference on Imaging Science, 2022. `https://meetings.siam.org/sess/dsp_talk.cfm?p=119462`

Recent Presentations

○ Prashant Athavale, *Mathematical methods for restoration of orientation data*, Mechanical and Aerospace Engineering Seminars, Clarkson University, Potsdam, NY, US, scheduled October 2024

○ Prashant Athavale, *Mathematical image restoration techniques from PDEs to AI and beyond*, CAMP meeting, Clayton, NY, US, 2024

○ Prashant Athavale, *A Hybrid algorithm for restoring grain orientations of material microstructures*, Society for Industrial and Applied Mathematics Conference on Imaging Science, Atlanta, GA, US, 2024

○ Prashant Athavale, *Toward parameter-free restoration of noisy orientation maps*, National Institute of Standards & Technology, Gaithersburg, MD, US, 2024

○ Prashant Athavale, *Reconstructing electronbackscatter diffraction data using vectorized total variation flow*, International Congress of Industrial and Applied Mathematics, Tokyo, Japan, 2023

○ Prashant Athavale, *Partial differential equation based methods for reconstruction of grain orientation data*, National Institute of Standards & Technology, Gaithersburg, MD, US, 2021

○ Prashant Athavale, *An entropy-based algorithm for texture image inpainting*, AMS Special Session on Statistical, Variational, and Learning Techniques in Image Analysis and their Applications to Biomedical, Hyperspectral, and Other Imaging, Baltimore, MD, US, 2019

○ Prashant Athavale, *Tale of two hierarchical ways of processing image data*, Department of Mathematics, Clarkson University, Potsdam, NY, US, 2018

Presentations by Students at International Conferences

○ Conor-Miller Lynch, *Demonstration of a hybrid restoration algorithm for grain orientation data of materials*, Atlanta, GA, US

○ Emmanuel Atindama, *Crystallographic data restoration using weighted total variation flow and a hybrid deep learning method*, Colloquium, Department of Mathematics, Clarkson University, Potsdam, NY, US, 2024

○ Emmanuel Atindama, *Reconstruction of grain orientation data using U-Nets*, Society for Industrial and Applied Mathematics Conference on Materials Science, Atlanta, GA, US, 2024

- Emmanuel Atindama, *Reconstructing electron backscatter diffraction data using vectorized total variation flow*, International Congress on Industrial and Applied Mathematics, Tokyo, Japan, 2023

- Emmanuel Atindama, *Restoration of the electron backscatter diffraction data using vectorized total variation flow*, Boston, MA, US, 2023

- Huston Wilhite, *Electron backscatter diffraction data inpainting using a hybrid approach of machine learning and exemplar-based algorithms*, Joint Mathematics Meetings, Boston, MA, US, 2023.

- Emmanuel Atindama, *Weighted total variation flow for crystallographic data reconstruction*, Society for Industrial and Applied Mathematics Conference on Imaging Science, Virtual, 2022

- Peter Lef, *Weighted total variation based algorithms for reconstruction of grain orientation data: a comparative study*, Society for Industrial and Applied Mathematics Conference on Material Science, (virtual) Bilbao, Spain, 2021

- Kevin Mack, *Restoration of time-of-flight (ToF) underwater images using TV regularization*, SPIE Defense + Commercial Sensing, virtual, 2021

Presentations by Students at Local Conferences

- Minh-Ngoc Huynh, *Looking into student performance with statistics*, Research and Project Showcase (RAPS) conference, Clarkson University, Potsdam, NY, US, 2024

- Emmanuel Atindama, *Measuring the impact of student success retention initiatives for engineering students at a private research university*, Research and Project Showcase (RAPS) conference, Clarkson University, Potsdam, NY, US, 2023

- Emmanuel Atindama, *Weighted TV flow for crystallographic data reconstruction*, Mathematics Conference and Competition of Northern New York, 2022

- MacGregor Winegard, *Image inpainting of EBSD images with large areas removed*, Research and Project Showcase (RAPS) conference, Clarkson University, Potsdam, NY, US, 2021

  Taylor Jade Collins, *Matching shoeprints of a suspect with shoeprints obtained from a crime scene through rigid registration*, Research and Project Showcase (RAPS) conference, Clarkson University, Potsdam, NY, US, 2019