

# Suyash P. Awate

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## Research Areas

Image processing and analysis, [Medical image computing](#), Machine learning, Computer vision, Statistical modeling and inference

## Positions Held

- 2021 – present *Indian Institute of Technology (IIT) Bombay, Department of Computer Science and Engineering*  
Professor
- 2015 – 2021 *Indian Institute of Technology (IIT) Bombay, Department of Computer Science and Engineering*  
Associate Professor
- 2013 – 2015 *Indian Institute of Technology (IIT) Bombay, Department of Computer Science and Engineering*  
Assistant Professor
- 2013 – 2017 *University of Utah, School of Computing*  
Adjunct Faculty
- 2010 – 2013 *University of Utah, School of Computing*  
Research Assistant Professor
- University of Utah, Scientific Computing and Imaging (SCI) Institute*  
Research Faculty
- 2009 – 2010 *Siemens Corporate Research, Medical Imaging Technologies*  
Research Scientist
- 2006 – 2009 *University of Pennsylvania, Department of Radiology*  
Postdoctoral Fellow at Penn Image Computing and Science Laboratory (PICSL)

## Honors, Awards

- 2020 “Magna Cum Laude Award” at ISMRM international conference
- 2019 “Best Paper Award” finalist at IEEE Int. Symp. Biomedical Imaging (ISBI) conference
- 2019 First podium presentation at IPMI international conference
- 2018 “Young Scientist Award” runner-up at MICCAI international conference
- 2017 “Best Paper Award” finalist at IEEE Int. Conf. on Image Processing (ICIP)
- 2017 International Travel Support Grant, Department of Science and Technology, Govt. of India
- 2015 First podium presentation at IPMI international conference
- 2014 Microsoft Research India Young Faculty Award, Indian Institute of Technology Bombay
- 2013 “Best Paper Award” at MBIA workshop at MICCAI international conference
- 2012 “Best Paper Award” at MBIA workshop at MICCAI international conference
- 2009 “Young Scientist Award” runner-up at MICCAI international conference
- 2001 1<sup>st</sup> rank in college (about 120 students), 8<sup>th</sup> rank in university (about 2000 students),  
Distinction in each semester; University of Mumbai
- 1997–2001 Dhirubhai Ambani Undergraduate Merit Scholarship
- 1997–8 IIT Joint Entrance Exam ranks in top 2150 and 1150 from 150,000+ examinees in India
- 1997 National Merit Scholarship Scheme Certificate from the Government of India  
(Top 0.1% in All India Senior Secondary School Examination; Rank 4 in Maharashtra state)

## Refereed Journal Publications

*IEEE TMI, Elsevier MedIA are the top journals for medical image analysis*

*IEEE TIP, IEEE TPAMI are among the top journals for image analysis*

*NeuroImage is among the top journals for image-analysis-oriented brain research*

1. Sudarshan VP, Upadhyay U, Egan G, Chen Z, [Awate SP](#)  
Towards lower-dose PET using physics-based uncertainty-aware multimodal learning with robustness to out-of-distribution data  
*Medical Image Analysis (MedIA)* 2021, 102187, Elsevier
2. Kulkarni P, Merchant SN, [Awate SP](#)  
Dictionary+wavelet model with nested-minorized VB-EM for SMS-CAIPI R-fMRI reconstruction  
*IEEE Open J. Signal Processing (OJSP)* 2021, 2644-1322
3. Wadhvani K, [Awate SP](#)  
Controllable image generation with semi-supervised deep learning and deformable-mean-template based geometry-appearance disentanglement  
*Pattern Recognition* 2021, 118:108001, Elsevier
4. Sudarshan VP, Li S, Jamadar S, Egan G, [Awate SP](#), Chen Z  
Incorporation of anatomical MRI knowledge for enhanced mapping of brain metabolism using functional PET  
*NeuroImage* 2021, 233:117928, Elsevier
5. Kulkarni P, Merchant SN, [Awate SP](#)  
R-fMRI reconstruction from k-t undersampled data using a subject-invariant dictionary model and VB-EM with nested minorization  
*Medical Image Analysis (MedIA)* 2020, 65:101752, Elsevier
6. Sudarshan VP, Egan G, Chen Z, [Awate SP](#)  
Joint PET-MRI image reconstruction using a patch-based joint-dictionary prior  
*Medical Image Analysis (MedIA)* 2020, 62:101669, Elsevier
7. Kumar N, [Awate SP](#)  
Semi-supervised robust mixture models in RKHS for abnormality detection in medical images  
*IEEE Trans. Image Processing (TIP)* 2020, 29: 4772-87
8. [Awate SP](#), Garg S, Jena R  
Estimating uncertainty in MRF-based image segmentation: A Perfect-MCMC approach  
*Medical Image Analysis (MedIA)* 2019, 55:181-196, Elsevier
9. Wu J, [Awate SP](#), Licht DJ, Clouchoux C, du Plessis AJ, Avants BB, Vossough A, Gee JC, Limperpolous C  
Assessment of MRI-based automated fetal cerebral cortical folding measures in prediction of gestational age in the third trimester  
*American Journal of Neuroradiology (AJNR)* 2015, 36(7):1379-74
10. [Awate SP](#), Whitaker RT  
Multiatlas segmentation as nonparametric regression  
*IEEE Trans. Medical Imaging (TMI)* 2014, 33(9):1803-1817
11. Liu W, [Awate SP](#), Anderson JS, Fletcher PT  
A functional networks estimation method of resting-state fMRI using a hierarchical Markov random field  
*NeuroImage* 2014, 100:520-534, Elsevier
12. Tustison N, [Awate SP](#), Song G, Cook T, Gee JC  
Point-set registration using Havrda-Charvat-Tsallis entropy measures  
*IEEE Trans. Medical Imaging (TMI)* 2011, 30(2):451-460

13. [Awate SP](#), Yushkevich P, Song Z, Licht DJ, Gee JC  
[Cerebral cortical folding analysis with multivariate modeling and testing : studies on gender differences and neonatal development](#)  
*NeuroImage* 2010, 53(2):450-459, Elsevier
14. Zhang H, [Awate SP](#), Das S, Woo J, Melhem E, Gee JC, Yushkevich P  
 A tract-specific framework for white matter morphometry combining macroscopic and microscopic tract features  
*Medical Image Analysis (MedIA)* 2010, 14(5):666-673, Elsevier
15. Tustison N, [Awate SP](#), Altes T, Gee JC  
 Pulmonary kinematics from tagged hyperpolarized Helium-3 MRI  
*J. Magnetic Resonance Imaging (JMRI)* 2010, 31(5):1236-1241, Wiley
16. Pluta J, Avants B, Glynn S, [Awate SP](#), Gee JC, Detre J  
 Appearance and incomplete label matching for diffeomorphic template based hippocampus segmentation  
*Hippocampus* 2009; 19(6):565-571, Wiley
17. [Awate SP](#), Zhang H, Gee JC  
[A fuzzy, nonparametric segmentation framework for DTI and MRI analysis: with applications to DTI-tract extraction](#)  
*IEEE Trans. Medical Imaging (TMI)* 2007; 26(11):1525-1536
18. [Awate SP](#), Whitaker RT  
[Feature-preserving MRI denoising: a nonparametric empirical-Bayesian approach](#)  
*IEEE Trans. Medical Imaging (TMI)* 2007; 26(9):1242-1255
19. Adluru G, [Awate SP](#), Tasdizen T, Whitaker R, DiBella EVR  
 Temporally constrained reconstruction of dynamic cardiac perfusion MRI  
*Magnetic Resonance in Medicine (MRM)* 2007; 57:1027-1036, Wiley
20. [Awate SP](#), Tasdizen T, Foster N, Whitaker RT  
[Adaptive Markov modeling for mutual-information-based unsupervised MRI brain-tissue classification](#)  
*Medical Image Analysis (MedIA)* 2006; 10(5):726-739, Elsevier  
*(in top 8 most-cited papers in MedIA between 2006-2009)*
21. [Awate SP](#), Whitaker RT  
[Unsupervised, information-theoretic, adaptive image filtering for image restoration](#)  
*IEEE Trans. Pattern Analysis and Machine Intelligence (TPAMI)* 2006; 28(3):364-376

## Refereed Full-Length Conference Publications

*MICCAI, IPMI, ISBI are the premier international conferences for medical image analysis*  
*ICML, ECML PKDD are among the top international conferences for machine learning*  
*CVPR, ECCV are among the top international conferences for computer vision*

22. Gaikwad AV, [Awate SP](#)  
 Deep MCEM for weakly-supervised learning to jointly segment and recognize objects using very few expert segmentations  
*Information Processing in Medical Imaging (IPMI)* 2021, 624-36, Springer LNCS 12729
23. Yenamandra S, Khurana A, Jena R, [Awate SP](#)  
 Learning image inpainting from incomplete images using self-supervision  
*IEEE Int. Conf. Pattern Recognition (ICPR)* 2020, 10390-7
24. Taneja K, Kulkarni P, Merchant SN, [Awate SP](#)  
 A Bayesian deep CNN framework for reconstructing k-t-undersampled resting-fMRI  
*IEEE Int. Conf. Pattern Recognition (ICPR)* 2020, 8492-9

25. Pande N, [Awate SP](#)  
Generative deep-neural-network mixture modeling with semi-supervised MinMax+EM learning  
*IEEE Int. Conf. Pattern Recognition (ICPR) 2020*, 5666-73
26. Shigwan S, Gaikwad AV, [Awate SP](#)  
Object segmentation with deep neural nets coupled with a shape prior, when learning from a training set of limited quality and small size  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2020*, 1149-53
27. Kulkarni PH, Gupta K, Merchant SN, [Awate SP](#)  
R-fMRI reconstruction from k-t undersampled simultaneous-multislice MRI with controlled aliasing: towards higher spatial resolution  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2020*, 1060-4
28. Upadhyay U, [Awate SP](#)  
A mixed-supervision multilevel GAN framework for image quality enhancement  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2019*; (5) 556-64  
Springer LNCS 11768  
**(MICCAI Undergraduate Student Travel Award)**
29. Sudarshan VP, Gupta K, Egan G, Chen Z, [Awate SP](#)  
Joint reconstruction of PET + parallel-MRI in a Bayesian coupled-dictionary MRF framework  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2019*; (3) 39-47  
Springer LNCS 11766  
**(MICCAI Graduate Student Travel Award)**
30. Jena R, [Awate SP](#)  
A Bayesian neural net to segment images with uncertainty estimates and good calibration  
*Information Processing in Medical Imaging (IPMI) 2019*, 3-15, Springer LNCS 11492  
**(first podium presentation of the conference; podium presentation, acceptance rate 11%)**
31. Radhakrishnan T, [Awate SP](#)  
A unified Bayesian approach to quantitative colocalization analysis with MRF-based Poissonian deconvolution and segmentation in dual-color fluorescence microscopy  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2019*, 543-7
32. Upadhyay U, [Awate SP](#)  
Robust super-resolution GAN, with manifold-based and perception loss  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2019*, 1372-6  
**(Best Paper Award finalist: in top 10 of eligible papers, podium presentation)**
33. Gupta K, [Awate SP](#)  
Bayesian reconstruction of undersampled multicoil HARDI  
*IEEE Int. Conf. Image Processing (ICIP) 2019*, 1247-51  
**(podium presentation)**
34. Gupta K, [Awate SP](#)  
Random forests for simultaneous-multislice (SMS) undersampled HARDI reconstruction and uncertainty estimation  
*IEEE Int. Conf. Image Processing (ICIP) 2019*, 2626-30
35. Kumar N, Chandran S, Rajwade A, [Awate SP](#)  
Semi-supervised robust one-class classification for abnormality detection in medical images  
*IEEE Int. Conf. Image Processing (ICIP) 2019*, 544-8
36. Shah M, Merchant SN, [Awate SP](#)  
MS-Net: Mixed-supervision fully-convolutional networks for full-resolution segmentation  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2018*; 21(4):379-87

**(Young Scientist Award runner-up: in top 10 of eligible papers, podium presentation, acceptance rate 5%, student travel award)**

37. Garg S, [Awate SP](#)  
Uncertainty estimation in segmentation with perfect MCMC sampling in Bayesian MRFs  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2018*; 21(1):673-81  
(acceptance rate 34%)
38. Sudarshan VP, Chen Z, [Awate SP](#)  
Joint PET+MRI patch-based dictionary for Bayesian random field PET reconstruction  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2018*; 21(1):338-46  
(acceptance rate 34%)
39. Shah M, Merchant SN, [Awate SP](#)  
Abnormality detection using deep neural networks with robust autoencoding and semi-supervision  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2018*, 568-72  
**(podium presentation, acceptance rate 17%)**
40. Kulkarni PH, Merchant SN, [Awate SP](#)  
Bayesian reconstruction of R-fMRI from k-t undersampled data using a robust subject-invariant spatially-regularized dictionary prior  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2018*, 302-6
41. Radhakrishnan T, Reddy K, [Awate SP](#)  
Accurate colocalization estimation in multichannel fluorescence microscopy using a novel Bayesian graphical model and perfect Monte Carlo EM algorithm  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2018*, 1583-7  
**(podium presentation, acceptance rate 17%)**
42. Das R, Golatkar A, [Awate SP](#)  
Sparse kernel PCA for outlier detection  
*IEEE Int. Conf. Mach. Learning and Applications (ICMLA) 2018*, 152-7  
**(podium presentation, acceptance rate 15%)**
43. Kumar N, Rajwade A, Chandran S, [Awate SP](#)  
Kernel generalized-Gaussian mixture model for robust abnormality detection  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2017*; 20(1):21-29  
Springer LNCS 10435  
(acceptance rate 32%, **student travel award**)
44. [Awate SP](#), Leahy RM, Joshi AA  
Kernel methods for Riemannian statistical analysis of robust descriptors of cerebral cortical geometry  
*Information Processing in Medical Imaging (IPMI) 2017*, 28-40, Springer LNCS 10265  
**(podium presentation, acceptance rate 16%)**
45. Gupta K, [Awate SP](#)  
Novel Bayesian modeling for dictionary learning and undersampled reconstruction in multishell HARDI  
*Information Processing in Medical Imaging (IPMI) 2017*, 453-465, Springer LNCS 10265  
(acceptance rate 36%)
46. Baid A, Kotwal A, Bhalodia R, Merchant SN, [Awate SP](#)  
Joint desmoking, specular removal, and denoising of laparoscopy images  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2017*, 732-736  
**(podium presentation, acceptance rate ~19%)**
47. Shah M, Singha S, [Awate SP](#)  
Leaf classification using marginalized shape context and shape+texture dual-path deep convolutional neural network

*IEEE Int. Conf. Image Processing (ICIP) 2017, 860-4*  
**(podium presentation)**

48. Kumar N, Rajwade A, Chandran S, Awate SP  
 Kernel generalized Gaussian and robust statistical learning for abnormality detection in medical images  
*IEEE Int. Conf. Image Processing (ICIP) 2017, 4157-61*  
**(in top-10 finalists for Best Paper / Best Student Paper Award from 3000+ submissions, student travel award)**
49. Awate SP, Dhar M, Kulkarni N  
 Robust kernel principal nested spheres  
*IEEE Int. Conf. Pattern Recognition (ICPR) 2016, 402-407*
50. Awate SP, Koushik NN  
 Robust dictionary learning on the Hilbert sphere in kernel feature space  
*Euro. Conf. on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD) 2016 (1):731-748, Springer LNAI 9851*  
**(podium presentation, acceptance rate 28%)**
51. Shigwan SJ, Awate SP  
 Hierarchical generative modeling and Monte-Carlo EM in Riemannian shape space for hypothesis testing  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2016; 19(3):191-200*  
 Springer LNCS 9902  
**(acceptance rate 30%)**
52. Awate SP, Leahy RM, Joshi AA  
 Riemannian statistical analysis of cortical geometry with robustness to partial homology and misalignment  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2016; 19(1):237-246*  
 Springer LNCS 9902  
**(podium presentation, acceptance rate 5%)**
53. Kotwal A, Bhalodia R, Awate SP  
 Joint desmoking and denoising of laparoscopy images  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2016, 10:1050-1054*  
**(podium presentation, acceptance rate 19%)**
54. Gaikwad AV, Shigwan SJ, Awate SP  
 A statistical model for smooth shapes in Kendall shape space  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2015; 18(3):628-635*  
 Springer LNCS 9351  
**(acceptance rate 32.5%, student travel award)**
55. Awate SP, Radhakrishnan T  
 Colocalization estimation using graphical modeling and variational Bayesian expectation maximization: Towards a parameter-free approach  
*Information Processing in Medical Imaging (IPMI) 2015; 24:3-16, Springer LNCS 9123*  
**(first podium presentation of the conference; podium presentation, acceptance rate 10%)**
56. Awate SP, Yu Y-Y, Whitaker RT  
 Kernel principal geodesic analysis  
*Euro. Conf. on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD) 2014 (1):82-98, Springer LNAI 8724*  
**(podium presentation, acceptance rate 23.8%)**
57. Yu Y-Y, Fletcher PT, Awate SP  
 Hierarchical Bayesian modeling, estimation, and sampling for multigroup shape analysis  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2014; 17(3):9-16*

Springer LNCS 8675

**(podium presentation, acceptance rate 4.2%)**

58. Awate SP, DiBella EVR  
Compressed sensing HARDI via rotation-invariant concise dictionaries, flexible k-space undersampling, and multiscale spatial regularity  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2013*, 10:9-12  
**(podium presentation, acceptance rate 18%)**
59. Veni G, Fu Z, Awate SP, Whitaker RT  
Proper-ordered meshing of complex shapes and optimal graph cuts applied to atrial-wall segmentation from DE-MRI  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2013*, 10:1284-1287
60. Veni G, Fu Z, Awate SP, Whitaker RT  
Globally optimal, Bayesian segmentation of atrium wall using graph cuts on 3D meshes  
*Information Processing in Medical Imaging (IPMI) 2013*; 23:656-67, Springer LNCS  
(acceptance rate 32%)
61. Wang E, Awate SP, Fletcher PT  
Adaptive sparsity in Gaussian graphical models  
*Int. Conf. on Machine Learning (ICML) 2013*, pp.1-9, Omnipress  
(acceptance rate 25%)
62. Liu W, Awate SP, Fletcher  
Group study of resting-state fMRI by hierarchical Markov random field  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2012*; 15(3):189-196  
Springer LNCS 7512  
(acceptance rate 32%)
63. Awate SP, DiBella EVR  
Spatiotemporal dictionary learning for undersampled dynamic-MRI reconstruction via joint frame-based and dictionary-based sparsity  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2012*, 9:318-321  
**(podium presentation, acceptance rate 15%)**
64. Wang B, Prastawa M, Awate SP, Irimia A, Chambers M, Vespa P, Horn J, Gerig G  
Segmentation of serial MRI of TBI patients using personalized atlas construction and topological change estimation  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2012*, 9:1152-1155
65. Zhu P, Awate SP, Gerber S, Whitaker RT  
Fast shape-based nearest-neighbor search for brain MRIs using hierarchical feature matching  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2011*; 14(2):484-491  
Springer LNCS 6892  
(acceptance rate 30%)
66. Awate SP, Yushkevich P, Licht DJ, Gee JC  
Gender differences in cerebral cortical folding: multivariate complexity-shape analysis with insights into handling brain-volume differences  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2009*; 12(1):200-207  
Springer LNCS 5762  
(acceptance rate 32%)

67. Zhang H, [Awate SP](#), Das S, Woo J, Melhem E, Gee JC, Yushkevich P  
A tract-specific framework for white matter morphometry combining macroscopic and microscopic tract features  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2009*; 12(1):141-149  
Springer LNCS 5762  
**(Young Scientist Award runner-up; in top 8% of 186 eligible papers; in top 3 in category)**
68. Zheng Y, Grossman M, [Awate SP](#), Gee JC  
Automatic correction of intensity nonuniformity from sparseness of gradient distribution in medical images  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2009*; 12(1):852-859  
Springer LNCS 5762  
(acceptance rate 32%)
69. [Awate SP](#), Yushkevich P, Song Z, Licht D, Gee JC  
Multivariate high-dimensional cortical folding analysis, combining complexity and shape, in neonates with congenital heart disease  
*Information Processing in Medical Imaging (IPMI) 2009*; 21:552-563, Springer LNCS 5636  
(acceptance rate 39%)
70. Tustison N, [Awate SP](#), Song G, Cook T, Gee JC  
A new information-theoretic measure to control the robustness-sensitivity trade-off for DMFFD point-set registration  
*Information Processing in Medical Imaging (IPMI) 2009*; 21:215-226, Springer LNCS 5636  
(acceptance rate 39%)
71. [Awate SP](#), Win L, Yushkevich P, Schultz RT, Gee JC  
3D cerebral cortical morphometry in autism: increased folding in children and adolescents in frontal, parietal, and temporal lobes  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2008*; 11(1):559-567  
Springer LNCS 5241  
(acceptance rate 35%)
72. [Awate SP](#), Zhang H, Gee JC  
Multivariate segmentation of brain tissues by fusion of MRI and DTI data  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2008*; 5:213-216  
**(podium presentation, acceptance rate 17%)**
73. Tustison N, [Awate SP](#), Cai J, Altes T, Miller G, Lange E, Mugler J, Gee JC  
Point-set registration of tagged He-3 images using a structurally-based Jensen-Shannon divergence measure within a deterministic-annealing framework  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2008*; 5:772-775  
**(podium presentation, acceptance rate 17%)**
74. Cook PA, Zhang H, [Awate SP](#), Gee JC  
Atlas-guided probabilistic diffusion-tensor fiber tractography  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2008*; 5:951-954
75. Song Z, [Awate SP](#), Gee JC  
Nonparametric Markov priors for tissue segmentation  
*IEEE Int. Symposium on Biomedical Imaging (ISBI) 2008*; 5:73-76
76. Song Z, [Awate SP](#), Licht DJ, Gee JC  
Clinical neonatal brain-MRI segmentation using adaptive nonparametric data models and intensity-based Markov priors  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2007*; 10(1):883-890  
Springer LNCS 4791  
(acceptance rate 37%)



77. Awate SP, Zhang H, Gee JC  
Fuzzy nonparametric DTI segmentation for robust cingulum-tract extraction  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2007*; 10(1):294-301  
Springer LNCS 4791  
(acceptance rate 37%)
78. Awate SP, Gee JC  
A fuzzy, nonparametric segmentation framework for DTI and MRI analysis  
*Information Processing in Medical Imaging (IPMI) 2007*; 20:296-307, Springer LNCS 4584  
(acceptance rate 30%)
79. Awate SP, DiBella EVR, Tasdizen T, Whitaker RT  
Model-based image reconstruction for dynamic cardiac perfusion MRI from sparse data  
*IEEE Conf. Engineering in Medicine and Biology Society 2006*; (1):936-941  
**(podium presentation, acceptance rate 17%)**
80. Awate SP, Tasdizen T, Whitaker RT  
Unsupervised texture segmentation with nonparametric neighborhood statistics  
*Euro. Conf. on Computer Vision (ECCV) 2006*; 9:494-507, Springer LNCS 3952  
(acceptance rate 21%)
81. Tasdizen T, Awate SP, Whitaker RT, Foster N  
MRI tissue classification with neighborhood statistics: a nonparametric, entropy-minimizing approach  
*Medical Image Computing and Computer Assisted Intervention (MICCAI) 2005*; 8(2):517-525  
Springer LNCS 3750  
**(podium presentation, acceptance rate 7%)**
82. Awate SP, Whitaker RT  
Nonparametric neighborhood statistics for MRI denoising  
*Information Processing in Medical Imaging (IPMI) 2005*; 19:677-688, Springer LNCS 3565  
(acceptance rate 26%)
83. Awate SP, Whitaker RT  
Higher-order image statistics for unsupervised, information-theoretic, adaptive image filtering  
*IEEE Computer Vision and Pattern Recognition (CVPR) 2005*; (2):44-51  
**(podium presentation, acceptance rate 6%)**

### Refereed Full-Length Workshop Publications (double-blind review)

84. Upadhyay U, Sudarshan VP, Awate SP  
Uncertainty-aware GAN with adaptive loss for robust MRI enhancement  
*Int. Workshop Computer Vision for Automated Medical Diagnosis (CVAMD) at ICCV 2021*, xx-xx  
**(podium presentation)**
85. Gupta K, Adlakha D, Agarwal V, Awate SP  
Regularized dictionary learning with robust sparsity fitting for compressed sensing multishell HARDI  
*Int. Workshop Computational Diffusion MRI (CDMRI) at Int. Conf. MICCAI 2016*, 35-48  
Springer Mathematics and Visualization  
**(podium presentation, acceptance rate ~25%)**
86. Wang B, Prastawa M, Saha A, Awate SP, Irimia A, Chambers M, Vespa P, van Horn J, Pascucci V, Gerig G  
Modeling 4D changes in pathological anatomy using domain adaptation: analysis of TBI imaging using a tumor database  
*Int. Workshop Multimodal Brain Image Analysis (MBIA) at Int. Conf. MICCAI 2013*, 3:31-39  
Springer LNCS 8159  
**(Best Paper Award from 24 papers published at MBIA, podium presentation)**
87. Awate SP, Zhu P, Whitaker RT  
How many templates does it take for a good segmentation?: Error analysis in multiatlas segmentation

as a function of database size

*Int. Workshop Multimodal Brain Image Analysis (MBIA) at Int. Conf. MICCAI 2012, 2:103-114*

Springer LNCS 7509

**(Best Paper Award from 19 papers published at MBIA, podium presentation)**

(talk at National Alliance for Medical Image Computing's retreat (Algorithms Core), Park City)

88. Prastawa M, Awate SP, Gerig G  
Building spatiotemporal anatomical models through joint segmentation, registration, and 4D-atlas estimation  
*IEEE Workshop Mathematical Methods in Biomedical Image Analysis (MMBIA), 2012, 49-56*  
**(podium presentation, acceptance rate 22%)**
89. Liu W, Awate SP, Anderson J, Yurgelun-Todd D, Fletcher PT  
Monte Carlo expectation maximization with hidden Markov models to detect functional networks in resting-state fMRI  
*Int. Workshop Machine Learning in Medical Imaging (MLMI) at Int. Conf. MICCAI 2011, 2:59-66*  
Springer LNCS 7009

## Refereed Papers and Abstracts, Presentations

1. Sudarshan VP, Li S, Fernandez A, Ward P, Jamadar S, Egan G, Awate SP, Chen Z  
MRI-assisted high temporal resolution dynamic FDG-PET imaging for assessing brain functions  
*Int. Society of Magnetic Resonance in Medicine (ISMRM) 2020*  
**(podium presentation, acceptance rate 15%, magna cum laude award)**
2. Sudarshan VP, Fernandez A, Pawar K, Li S, Egan G, Awate SP, Chen Z  
Synthesis of standard dose FDG PET images from low dose acquisition using a combination of atlas and CNN based method  
*Int. Society of Magnetic Resonance in Medicine (ISMRM) 2019*  
**(podium presentation, acceptance rate 15%)**
3. Wu J, Awate SP, Licht DJ, Avants B, Clouchoux C, Plessis A, Gee JC, Limperopoulos C  
Cortical folding measurement is a potential indicator for prenatal brain maturity  
*Workshop on Image Analysis of Human Brain Development at Int. Conf. MICCAI 2011, 1:8*
4. Wu J, Awate SP, Licht DJ, Limperopoulos C, Gee JC  
Cortical folding analysis for normal fetuses  
*Int. Society of Magnetic Resonance in Medicine (ISMRM) 2010*  
**(podium presentation, acceptance rate 15%)**
5. Limperopoulos C, Wu J, Licht DJ, Gee JC, Awate SP, Clouchoux C, du Plessis AJ  
Quantitative MRI measurements of cortical development in the fetus  
*Pediatric Academic Society*  
**(podium presentation)**
6. Cook T, Tustison N, Song G, Awate SP, Torigian D, Geftter W, Gee JC  
Segmentation-based quantitation of pulmonary alveolar proteinosis, pre- and post-lavage, using high-resolution computed tomography  
*Proc. Second Int. Workshop on Pulmonary Image Processing at Int. Conf. MICCAI 2009, 61-71*
7. Awate SP, Zhang H, Gee JC  
Novel statistical models and methods for DTI fiber-bundle segmentation  
*Int. Society of Magnetic Resonance in Medicine (ISMRM) 2008*  
**(podium presentation, acceptance rate 15%)**
8. Awate SP, Whitaker RT  
An interactive, parallel, multiprocessor, level-set solver with dynamic load balancing  
School of Computing, University of Utah, Technical Report UUCS-05-002

SIAM Conf. Parallel Processing for Scientific Computing (PPSC) 2004  
(podium presentation)

## Software

- Contributed multi-threaded C++ code to widely-used open-source Insight Segmentation and Registration Toolkit (ITK)

## Education

- 2006      **Ph.D. in Computer Science**  
University of Utah  
Dissertation: Adaptive nonparametric Markov models with information-theoretic methods for image restoration and segmentation
- 2001      **B.E. in Computer Engineering** (Distinction each semester, 1<sup>st</sup> rank in college, 8<sup>th</sup> rank in univ.)  
University of Mumbai  
Thesis: Image restoration using artificial neural networks

## Professional Service

- Activities, Organization
  - Editorial Board Member, Medical Image Analysis, Elsevier, 2020-present
  - Associate Editor (*guest*), Medical Physics, American Association of Physicists in Medicine, 2008-present
  - Associate Editor, Frontiers in Neuroscience: Brain Imaging Methods, 2020-present
  - IEEE Bio Imaging and Signal Processing Technical Committee (BISP TC) Member (elected), 2021-23
  - Program Chair, IEEE International Symposium on Biomedical Imaging (ISBI) 2022
  - Session Chair, Information Processing in Medical Imaging (IPMI) Conference 2019-2021
  - Area Chair, Medical Image Computing and Computer-Assisted Intervention (MICCAI) Conference 2019
  - Area Chair, Medical Imaging with Deep Learning (MIDL) Conference 2019, 2021
  - Chair for MedImage workshop at Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2018
  - Organizer for Global Initiative of Academic Networks (GIAN) workshop on Medical Image Computing: Machine Learning Methods and Advanced-MRI Applications (with Prof. Y Rathi, Harvard University). 108 participants from across the nation. 2018
  - Co-Chair for MedImage workshop at Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2016
  - Area Chair, Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2016-18
- Peer reviewing for journals
  - IEEE Transactions
    - Medical Imaging (TMI)
    - Image Processing (TIP)
    - Pattern Analysis and Machine Intelligence (TPAMI)
    - Signal Processing (TSP)
    - Computational Imaging (TCI)
    - Fuzzy Systems (TFS)
    - Visualization and Computer Graphics (TVCG)
  - IEEE
    - Signal Processing Letters
    - Access
  - Elsevier
    - Medical Image Analysis (MedIA)

- Pattern Recognition (PR)
  - Computer Vision and Image Understanding (CVIU)
  - Image and Vision Computing (IVC)
  - NeuroImage (NIMG)
  - Signal Processing
- Frontiers
  - Computer Science: Computer Vision and Image Analysis
  - Neuroscience: Brain Imaging Methods
  - Oncology: Cancer Imaging and Image-directed Interventions
- Springer
  - International Journal of Computer Vision (IJCV)
  - Signal Image and Video Processing
  - Sadhana, Indian Academy of Sciences
  - National Academy Science Letters
- Society for Industrial and Applied Mathematics (SIAM)
  - Multiscale Modeling and Simulation (MMS)
  - Imaging Sciences (SIIMS)
- Wiley
  - Magnetic Resonance in Medicine (MRM)
  - Journal of Magnetic Resonance Imaging (JMRI)
- SPIE
  - Journal of Electronic Imaging
- Public Library of Science (PLOS)
  - ONE
- Others
  - British Journal of Radiology
  - Cerebral Cortex, Oxford Journals
- Peer reviewing for conferences
  - Scientific Review Committee member for Information Processing in Medical Imaging (IPMI) 2011-2021
  - Medical Image Computing and Computer Assisted Intervention (MICCAI) 2007-2021
  - IEEE International Symposium on Biomedical Imaging (ISBI) 2009-2021
  - European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) 2019
  - Int. Conf. Pattern Recognition (ICPR) 2010, 2020
  - Int. Conf. Acoustics, Speech and Signal Processing (ICASSP) 2021
  - Program Committee member, CVPR workshop on Differential Geometry in Computer Vision and Machine Learning (DiffCVML) 2021
  - Program Committee member, MICCAI workshop on Computational Diffusion MRI (CDMRI) 2020-2021
  - Program Committee member, MICCAI workshop on Bayesian and Graphical Models for Biomedical Imaging (BAMBI) 2014-2016
  - Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP)
  - National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG)
  - Asian Conference on Computer Vision (ACCV) 2009
  - British Machine Vision Conference (BMVC) 2020
  - Medical Imaging and Augmented Reality (MIAR) 2008
  - Society for Optical Engineering (SPIE) Medical Imaging 2007