Suyash P. Awate

Asha and Keshav Bhide Chair Professor,
Computer Science and Engineering (CSE) Department,
Indian Institute of Technology (IIT) Bombay, Mumbai
www.cse.iitb.ac.in/~suyash

Research Areas

Medical image computing, Machine learning, Image analysis, Computer vision,
Statistical modeling and inference

Positions Held

2023 – present	*Indian Institute of Technology (IIT) Bombay, Department of Computer Science and Engineering* Asha and Keshav Bhide Chair Professor
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

2023	"Excellence in Teaching Award" from Computer Science and Engineering Dept. at IITB
2022	"Best Paper Award" at IEEE Int. Symp. Biomedical Imaging (ISBI) conference
2022	Keynote Talk at MICCAI Int. Conf. Workshop on Computational Diffusion MRI (CDMRI)
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	1st rank in college (about 120 students), 8th 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

Elsevier MedIA, Elsevier MELBA, IEEE TMI, are the top journals for medical image analysis
IEEE TIP, Elsevier Pattern Recognition, IEEE TPAMI are among the top journals for image analysis
Elsevier NeuroImage is among the top journals for image-analysis-oriented brain research

1. Sharma R, Awate SP
   A semi-supervised multiscale generalized-VAE Framework for one-class classification
   Neurocomputing 2025, 620:129172, Elsevier
2. Lekadir K et al. (including Awate SP)
   FUTURE-AI: international consensus guideline for trustworthy and deployable artificial intelligence in healthcare
   British Medical Journal (BMJ) 2025, 388:e081554
3. Sharma V, Awate SP
   Adversarial EM for variational deep learning: Application to semi-supervised image quality enhancement in low-dose PET and low-dose CT
   Medical Image Analysis (MedIA) 2024, 97:103291, Elsevier
4. Gaikwad A, Awate SP
   Deep Monte-Carlo EM for semantic segmentation using weakly-and-semi-supervised learning using very few expert segmentations
   Machine Learning for Biomedical Imaging (MELBA) 2024, 2:717-760
5. Shah K^, Bhartia V^, Biswas C, Sahu A, Shetty P, Singh V, Velayutham P, Awate SP*, Moiyadi A*
   Tumor location and neurocognitive function–unravelling the association and identifying relevant anatomical substrates in intra-axial brain tumors
   Neuro-Oncology Advances 2024, 6(1):vdae020, Oxford Academic
6. Kulkarni P, Merchant SN, Awate SP
   Mixed-dictionary models and variational inference in task fMRI for shorter scans and better image quality
   Medical Image Analysis (MedIA) 2022, 78:102392, Elsevier
7. 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
8. 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
9. Wadhwani 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
10. 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

11. 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

12. 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

13. 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

14. 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

15. 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

16. Awate SP, Whitaker RT
Multiatlas segmentation as nonparametric regression
IEEE Trans. Medical Imaging (TMI) 2014, 33(9):1803-1817

17. 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

18. 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

19. 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

20. 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

21. 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

22. 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

23. 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

24. Awate SP, Whitaker RT
Feature-preserving MRI denoising: a nonparametric empirical-Bayesian approach
IEEE Trans. Medical Imaging (TMI) 2007, 26(9):1242-1255

25. 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

26. 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)

27. 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, IEEE ISBI are the premier international conferences for medical image analysis

28. Sharma V, Awate SP
Bayesian learning with stochastic perturbations and Langevin expectation maximization for unsupervised DNN image quality enhancement
Information Processing in Medical Imaging (IPMI) 2025, xx-xx, Springer LNCS
(***podium presentation, acceptance rate ~11%***)

29. Pal J, Welling S, Saini H, Awate SP
Reviving poor object segmentations in OOD medical images using variational-deep-PCA modeling on segmentation maps with sampling-free learning
Winter Conf. on Applications of Computer Vision (WACV) 2025: 9346-55, IEEE Xplore

30. Sharma V, Goyal A, Awate SP
On the role of adversarial perturbations in unsupervised deep learning for enhancing image quality of degraded medical images
IEEE Int. Symposium on Biomedical Imaging (ISBI) 2025, 1-5, IEEE Xplore
(***podium presentation, acceptance rate ~17%***)

31. Pal J, Awate SP
Convex segments for convex objects using DNN boundary tracing and graduated optimization
Medical Image Computing and Computer Assisted Intervention (MICCAI) 2024, (8)91-101
Springer LNCS 15008
(***acceptance rate 30%, awarded MICCAI RISE Registration Grant***)

32. Pal J, Awate SP
A hard convex-shape constraint in DNNs for object segmentation
IEEE Int. Conf. Image Processing (ICIP) 2024, 2074-2080, IEEE Xplore

33. Sharma V, Awate SP
Adversarial EM for partially-supervised image-quality enhancement
IEEE Int. Conf. Image Processing (ICIP) 2024, 4007-4013, IEEE Xplore
(***podium presentation, acceptance rate 17%***)

34. Sharma R, Shi H, Cai J, Awate SP, Birbilis N
Deep semi-supervised anomaly detection using VQ-VAE
Digital Image Computing: Techniques and Applications (DICTA) 2023, IEEE Xplore

35. Gaikwad A, Varma H, Awate SP
    Deep variational segmentation of topology-constrained object sets, with correlated uncertainty models, for robustness to degradations
    IEEE Int. Conf. Image Processing (ICIP) 2023, 2195-99, IEEE Xplore

36. Varma H, Gaikwad A, Awate SP
    Adversarial training with multiscale boundary-prediction DNN for robust topologically-constrained segmentation in OOD images
    IEEE Int. Symposium on Biomedical Imaging (ISBI) 2023, 1-5, IEEE Xplore

37. Sharma V, Khurana A, Yenamandra S, Awate SP
    Semi-supervised deep expectation-maximization for low-dose PET-CT
    IEEE Int. Symposium on Biomedical Imaging (ISBI) 2022, 1-5, IEEE Xplore
    (Best Paper Award, podium presentation, double-blind review)

38. Sharma R, Awate SP
    Robust and uncertainty-aware VAE (RU-VAE) for one-class classification
    IEEE Int. Symposium on Biomedical Imaging (ISBI) 2022, 1-5, IEEE Xplore

39. Sharma R, Mashkaria S, Awate SP
    A semi-supervised generalized VAE framework for abnormality detection using one-class classification
    Winter Conf. on Applications of Computer Vision (WACV) 2022: 1302-1310, IEEE Xplore

40. 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

41. 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

42. 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

43. 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

44. 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

45. 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

46. 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)

47. 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)

48. 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%)

49. 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

50. 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***)

51. Gupta K, Awate SP
Bayesian reconstruction of undersampled multicoil HARDI
IEEE Int. Conf. Image Processing (ICIP) 2019, 1247-51
(podium presentation)

52. 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

53. 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

54. 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)

55. 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%*)

56. 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%*)

57. 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%***)

58. 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

59. 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%***)

60. 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%***)

61. 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***)

62. 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%***)

63. 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%*)

64. Baid A, Kotwal A, Bhalodia R, Merchant SN, Awate SP
Joint desmoking, specularity removal, and denoising of laparoscopy images
IEEE Int. Symposium on Biomedical Imaging (ISBI) 2017, 732-736
(***podium presentation, acceptance rate ~19%***)

65. 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***)

66. 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***)

67. Awate SP, Dhar M, Kulkarni N
Robust kernel principal nested spheres
IEEE Int. Conf. Pattern Recognition (ICPR) 2016, 402-407

68. 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%*)

69. 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%*)

70. 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%*)

71. 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%*)

72. 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***)**

73. 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%***)

74. 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%*)

75. 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%*)

76. 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%*)

77. 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

78. 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%*)

79. 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%*)

80. 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%*)

81. 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%*)

82. 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

83. 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%*)

84. 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%*)

85. 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*)

86. 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%*)

87. 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%*)

88. 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%*)

89. 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%*)

90. 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%*)

91. 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%*)

92. 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

93. Song Z, Awate SP, Gee JC
Nonparametric Markov priors for tissue segmentation
IEEE Int. Symposium on Biomedical Imaging (ISBI) 2008, 5:73-76

94. 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%*)

95. 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%*)

96. 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%*)

97. 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%*)

98. 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%*)

99. 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%*)

100. 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%*)

101. 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)

102. 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 IEEE ICCV 2021, 3248-57
(podium presentation)

103. 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%*)

104. 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)

105. 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)

106. 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%)

107. 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. Awate SP
Image encoding in MRI and Bayesian image reconstruction:
Classical & AI Methods for Image Recon: From Fundamentals to Translation
Int. Society of Magnetic Resonance in Medicine (ISMRM) conference 2024
(*invited talk*)

2. Awate SP
   Uncertainty-aware and robust statistical learning for improved neuroimaging
   MICCAI Int. Conf. Workshop on Computational Diffusion MRI (CDMRI) 2022
   (*keynote talk*)

3. Pain C, Sudarshan VP, Upadhyay U, Awate SP, Egan G
   MRI guided deep learning image reconstruction for low-dose PET
   Internal Medicine Journal (IMJ) 2021, 51:29-30

4. 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*)

5. 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%)

6. 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

7. 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%)

8. 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)

9. Cook T, Tustison N, Song G, Awate SP, Torigian D, Gefter 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

10. 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%)

11. 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, 1st rank in college, 8th 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, Frontiers in Neuroscience: Brain Imaging Methods, 2020-2023
  - Associate Editor, Medical Physics, American Association of Physicists in Medicine, 2008-2022
  - IEEE Bio Imaging and Signal Processing Technical Committee (BISP TC) Member (elected), 2021-26
  - Program Chair, IEEE International Symposium on Biomedical Imaging (ISBI) 2022
  - Challenge Committee member, Medical Image Computing and Computer-Assisted Intervention (MICCAI) Conference 2025
  - Area Chair, Medical Image Computing and Computer-Assisted Intervention (MICCAI) Conference 2019
  - Area Chair, Medical Imaging with Deep Learning (MIDL) Conference 2019, 2021
  - Area Chair, IEEE Int. Conf. Image Processing (ICIP), 2022-24
  - Area Chair, IEEE Int. Conf. Pattern Recognition (ICPR), 2024
  - Area Chair, IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP), 2024-25
  - Session Chair (podium), Information Processing in Medical Imaging (IPMI) Conference 2019-21
  - 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
  - Awards Committee Member for Indian Chapter of Knowledge Discovery and Data Mining (IKDD) 2022
  - 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,
  - 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) 2011-2025

- Medical Image Computing and Computer Assisted Intervention (MICCAI) 2007-2025
- IEEE International Symposium on Biomedical Imaging (ISBI) 2009-2025
- IEEE Int. Conf. Image Processing (ICIP) 2022-2025
- European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) 2019
- IEEE Int. Conf. Pattern Recognition (ICPR) 2010, 2020
- Int. Conf. Acoustics, Speech and Signal Processing (ICASSP) 2021
- Advisory Board / Program Committee member, MICCAI workshop on Shape in Medical Imaging (ShapeMI) 2023
- Program Committee member, MICCAI workshop on Computational Diffusion MRI (CDMRI) 2020-21, 2023-25
- Program Committee member, CVPR workshop on Differential Geometry in Computer Vision and Machine Learning (DiffCVML) 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) 2014
- 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
- ACM SIGGRAPH 2023