

Prof. Ajit Rajwade

Present Address

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Occupation

- Associate Professor, (August 2019 onwards) in the Department of Computer Science and Engineering, IIT Bombay
- Assistant Professor, (July 2013 to July 2019) in the Department of Computer Science and Engineering, IIT Bombay

Work Experience after Ph.D.

- Post-doctoral researcher, Dept. of Electrical and Computer Engineering (ECE), Duke University (Feb 2011 to June 2012)
Worked on Bayesian methods for compressive sensing and dictionary learning with application to reconstruction of hyperspectral images and video data from coded compressive measurements.
- Assistant Professor, Dhirubhai Ambani Institute of Information and Communication Technology (DAICT), Gandhinagar, July 2012 to June 2013

Education

- University of Florida, Gainesville, Florida, USA.
Ph.D. in Computer Science, Jan. 2005 to Oct. 2010, GPA: 3.87
Advisors: Anand Rangarajan, Arunava Banerjee.
Thesis title: Probabilistic Approaches to Image Registration and Denoising.
- McGill University, Montreal, Quebec, Canada.
M.Sc. in Computer Science, Aug. 2002 to Dec. 2004, GPA: 3.72
Master's thesis title: Facial Pose Estimation and Face Recognition from 3D Data.
- Government College of Engineering, Pune (University of Pune), India.
B.E., Aug. 2001, Computer Engineering (*First class with distinction in every semester*).

Current Areas of Research Interest

- Compressed sensing: theoretical bounds, algorithms, applications
- Image/video restoration: denoising, deblurring, inpainting, compressive sensing, underwater imaging
- Tomographic Reconstruction: CT and Cryo-EM
- Medical Imaging: Reconstruction in MRI, CT, diffusion MRI/HARDI
- Image and video compression using machine learning and sparse representations, inpainting-based methods
- Probability Density Estimation
- CAPTCHAs and Automated Turing Tests

Awards/ Honors

- February 2020: Elevated to Senior Member, IEEE
- September 2019: Received Departmental Award for Excellence in Teaching (2019)
- Travel grant from Google to PhD student Jerin Geo James for attending ICCV 2019
- My Ph.D. student Jerin Geo James was one of the 8 recipients of the Qualcomm Innovation Fellowship (India) from a total of 95 teams from IIT-B/D/M/Ka/Kh, IISc and IIIT-H.

- Young Faculty Award from IIT Bombay, 2013.
- Best Scientific Paper Award at the International Conference on Pattern Recognition (ICPR), 2008, Tampa, Florida.
- Selection with full funding at Summer School on Image Processing at the Park City Math Institute/Institute for Advanced Study (IAS), Park City, Utah in June/July 2010, [declined].
- Travel Grants from the Department of CISE at the University of Florida to present papers at the *Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR)*, Bonn, Germany (Summer 2009), and from the Department of CISE and the Student Government at the University of Florida to present my paper at the *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, New York (Summer 2006).
- Tuition Fee Waiver for Summer 2003, McGill University (awarded to two international students out of 100 in the year 2003-2004, in recognition of academic excellence).
- Rank 8 in Computer Engineering at the University of Pune (out of 800 students) in the year 1999-2000.

Research Projects

- ‘Pooled Testing for COVID-19 Samples using Compressed Sensing’, grant from WRCB (IITB) and DST-Rakshak, Rs 10 lakhs each, along with Prof. Manoj Gopalkrishnan
- ‘Theoretical Analysis of Sparse Recovery for Imaging under Realistic Noise Models’, SERB Matrics Grant, PI, Rs 6 lakhs
- ‘Applications involving Source separation’, Seed grant from IRCC, IIT Bombay, from 2014 to 2019, Rs 14 lakhs; PI
- ‘Underwater Image Restoration’, grant from Qualcomm Inc. as part of the Qualcomm India Innovation Fellowship, 2018 to 2020, Rs 10 lakhs; PI
- ‘Algorithms for Radiation Reduction in Longitudinal Computed Tomography’, from Tata Memorial Hospital, Jan 2019 till Jan 2021; PI
- ‘Algorithms for Histopathology Image Analysis’, from Aditya Imaging Technologies Pvt. Ltd. (now named Aira Matrix), July 2014 till July 2018; co-PI (PI: Prof. Suyash Awate)

Student Guidance

I am currently guiding the following students (I am the main guide except when specified otherwise):

1. Apoorv Chetan, (Ph.D. student), thesis topic: MRI trajectory calibration, started January 2020, co-advised with Prof. Zhaolin Chen, Monash University
2. Jerin Geo James (Ph.D. student), thesis topic: Underwater Image Processing, started January 2017
3. Ashutosh Vaish (Ph.D. student at IIIT-Delhi), main guide: Prof. Anubha Gupta from IIIT-Delhi, thesis topic: Diffusion Tensor Imaging, started July 2018
4. Jian Vora, BTech student, thesis topic: Tensors for probability density estimation, started June 2020
5. Denil Mehta, BTech student, thesis topic: Cryo-electron Tomography, started June 2020
6. Ameya Anjarlekar, BTech student, thesis topic: Compressed Sensing Matrix Design, started June 2020
7. Yadnyesh Patil, MTech student, thesis topic: Tomographic reconstruction with template priors, started June 2020 (co-advised with Prof. Sharat Chandran)
8. Rishi Raj Singh, MTech student, thesis topic: Cryo-electron tomography

I have finished guiding the following students at IIT Bombay:

1. Krunal Parmar, (M. Tech student), thesis topic: Bird species recognition from image data, graduated June 2020

2. Shuvayan Banerjee, (M. Tech student), thesis topic: Compressed sensing under Poisson noise with outliers, graduated June 2020, co-advised with Prof. Radhendushka Srivastava
3. R. Sudarsanan, (B. Tech student), thesis topic: Poisson-Gaussian inverse problems, graduated June 2020
4. Parthasarathi Khirwadkar, (B. Tech student), thesis topic: Topics in motion estimation, graduated June 2020
5. Rupesh, B. Tech. student, thesis topic: Topics in cryo-EM, graduated June 2020
6. Maitrey Gramopadhye, B. Tech. student, thesis topic: Topics in cryo-EM, graduated June 2020
7. Preeti Gopal (Ph.D. student), thesis topic: 'Tomographic Reconstruction: A Radiation Reduction Approach', co-advised with Prof. Sharat Chandran (IITB, CSE) and Prof. Imants Svalbe (Monash University), defended PhD thesis on 31st January 2020
8. Avinash Modi, (M. Tech. student), thesis topic: Compressive Inversion under Poisson and Poisson-Gaussian noise with tight analytical bounds and regularization parameter selection, graduated July 2019
9. Khursheed Ali, (M. Tech. student), thesis topic: Particle-picking and Reconstruction in cryo-em, graduated in June 2019
10. Kalpesh Dusane, (M. Tech. student), thesis topic: Underwater image processing, graduated in June 2019
11. Dhruv Shah, (B. Tech student), thesis topic: Designing sensing matrices for compressive tasks, co-advised with Prof. Rajbabu Velmurugan, graduated in June 2019
12. Chinmay Talegaonkar, (B. Tech student), thesis topic: Phase retrieval, co-advised with Prof. Subhasis Chaudhuri, graduated in June 2019
13. Arunabh Ghosh, (B. Tech student), thesis topic: Tomography under unknown angles, co-advised with Prof. Subhasis Chaudhuri, graduated in June 2019
14. Arijit Pramanik, (B. Tech student), thesis topic: Topics in Raman Spectroscopic Imaging, graduated in June 2019
15. Udayan Joshi, (B. Tech student), thesis topic: Greedy techniques for sparse non-linear regression, co-advised with Dr. Karthik Gurumoorthy (ICTS-TIFR), graduated in June 2019
16. Pakshal Bohra (Dual degree student), thesis topic: Inverse problems under Poisson noise, graduated in July 2018
17. Himanshu Pandotra (Dual degree student), thesis topic: Handling perturbations in compressed sensing: mismatch in measurement matrix, representation matrix and object pose, graduated in July 2018
18. Ritwick Kumar (B.Tech. student), thesis topic: graduated in June 2018
19. Eeshan Malhotra (3 year M. Tech. student), thesis topic: Tomographic Reconstruction without knowledge of angles, graduated in July 2017
20. Sania Qamar (3 year M. Tech. student), thesis topic: Transformation invariant dictionary learning, co-advised with Prof. Suyash Awate, graduated in July 2017
21. Deepak Garg (2 year Mtech student), thesis topic: Poisson Compressive Sensing, started: graduates in July 2017
22. Alankar Kotwal (Dual degree student), thesis topic: Design of Sensing Matrices in Compressive Sensing, graduated in July 2017
23. Vishal Agrawal (B. Tech. student), thesis topic: Image-based CAPTCHAs, graduated in May 2016
24. Sukanya Patil (Dual Degree Student), thesis topic: Image Reconstruction under Poisson Noise, co-advised with Prof. Rajbabu Velmurugan, started: June 2015, graduated in July 2016
25. Souvik Sinha Deb (M. Tech. student), thesis topic: Music Transcription using Image Analysis, started: June 2015, graduated in July 2016

26. Deepak Babu Sam (M. Tech. student), thesis topic: Video Compressive Sensing using Bayesian Models, graduated in July 2015
27. He Laldhbera (M. Tech. student), thesis topic: Image-based CAPTCHAs, started: June 2014, graduated in July 2015
28. Yellamraju Tarun (B. Tech. student), thesis topic: Video Compression using Coded Snapshots, co-advised with Prof. Subhasis Chaudhuri, graduated in July 2015

Research Collaborators

My research collaborators are the following:

- Dr. Karthik Gurumoorthy, International Center for Theoretical Sciences (ICTS)
- Profs. Imants Svalbe and Zhaolin Chen, Monash University
- Profs. Sharat Chandran, Suyash Awate, Rajbabu Velmurugan, Subhasis Chaudhuri, IIT Bombay
- Prof. Anubha Gupta, IIIT Delhi

Research/ Publications

DBLP Records: here and here, **Google Scholar Page:** here

Web-link: Publications link on webpage

1. Compressive Sensing
 - (a) Sukanya Patil, Karthik S. Gurumoorthy and Ajit Rajwade, *Using an Information Theoretic Metric for Compressive Recovery under Poisson Noise*, Signal Processing (Elsevier), 2019, acceptance rate: 17 percent over the last three years, <https://journalinsights.elsevier.com/journals/0165-1684>
 - (b) Pakshal Bohra, Deepak Garg, Karthik S. Gurumoorthy and Ajit Rajwade, *Variance Stabilization Based Compressive Inversion under Poisson or Poisson-Gaussian Noise with Analytical Bounds*, accepted to Inverse Problems (IOP), 2019, impact factor 1.946, <https://www.scimagojr.com/journalrank.php?category=1711>
 - (c) Himanshu Pandotra, Eeshan Malhotra, Ajit Rajwade and Karthik S. Gurumoorthy, *Dealing with Frequency Perturbations in Compressive Reconstructions with Fourier Sensing Matrices*, Signal Processing (Elsevier), 2019, acceptance rate: 17 percent over the last three years
 - (d) Rudrajit Das and Ajit Rajwade, *Nonlinear blind compressed sensing under signal dependent noise*, accepted to ICIP 2019
 - (e) Chinmay Talegaonkar, Parthasarathi Khirwadkar, Ajit Rajwade, *Compressive Phase Retrieval under Poisson Noise*, accepted to ICIP 2019
 - (f) Dhruv Shah and Ajit Rajwade, *Projection design for compressive source separation using mean errors and cross-validation*, accepted to ICIP 2019
 - (g) Himanshu Pandotra, Eeshan Malhotra, Ajit Rajwade and Karthik S. Gurumoorthy, *Signal recovery in Perturbed Fourier Compressed Sensing*, IEEE GlobalSIP 2018.
 - (h) Pakshal Bohra and Ajit Rajwade, *Poisson Low-rank Matrix Recovery using the Anscombe Transform*, IEEE GlobalSIP 2018 [oral presentation].
 - (i) Himanshu Pandotra, Rajbabu Velmurugan, Karthik S. Gurumoorthy and Ajit Rajwade, *Perturbed Compressed Sensing Based Single Snapshot DOA estimation*, IEEE GlobalSIP 2018 [oral presentation].
 - (j) Dhruv Shah, Alankar Kotwal and Ajit Rajwade, *Designing constrained projections for compressed sensing: mean errors and anomalies with coherence*, IEEE GlobalSIP 2018.
 - (k) Chinmay Talegaonkar and Ajit Rajwade, *Performance Bounds for Tractable Poisson Denoisers with Principled Parameter Tuning*, IEEE GlobalSIP 2018 [oral presentation].
 - (l) Eeshan Malhotra, Himanshu Pandotra, Ajit Rajwade, Karthik S. Gurumoorthy, *Dealing with Frequency Perturbations in Compressive Reconstructions with Fourier Sensing Matrices*, Submitted to Journal

- (m) Eeshan Malhotra, Karthik Gurumoorthy and Ajit Rajwade, *Stronger Recovery Guarantees for Sparse Signals Exploiting Coherence Structure in Dictionaries*, Accepted to ICASSP 2017.
 - (n) Deepak Garg and Ajit Rajwade, *Performance Bounds for Poisson Compressed Sensing using Variance Stabilization Transforms*, Accepted to ICASSP 2017.
 - (o) Sukanya Patil and Ajit Rajwade, *Poisson noise removal for image demosaicing*, Accepted to British Machine Vision Conference (BMVC), 2016
 - (p) Sukanya Patil, Rajbabu Velmurugan and Ajit Rajwade, *Dictionary learning for Poisson compressed sensing*, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2016
 - (q) Ajit Rajwade, David Kittle, Tsung-Han Tsai, David Brady and Lawrence Carin, *Coded Hyperspectral Imaging and Blind Compressive Sensing*, SIAM Journal on Imaging Sciences, 6(2): 782-812 (2013).
2. Underwater Imaging
- (a) Jerin Geo James and Ajit Rajwade, *Fourier-based pre-processing for seeing through water*, accepted to IEEE WACV 2020
 - (b) Jerin Geo James, Pranay Agrawal and Ajit Rajwade, *Restoration of Non-rigidly Distorted Underwater Images using a Combination of Compressive Sensing and Local Polynomial Image Representations*, International Conference on Computer Vision (ICCV), 2019, [oral presentation: acceptance ratio 4.3%]
3. Tomographic Reconstruction
- (a) Arunabh Ghosh, Ritwick Chaudhry, Ajit Rajwade, *Ab initio tomography with object heterogeneity and unknown viewing parameters*, ICIP 2019, [oral presentation]
 - (b) Preeti Gopal, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Low Dose Tomography: Poisson-Gaussian Convolution-Based Reconstruction*, ISBI 2019 (abstract)
 - (c) Preeti Gopal, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Tomography in Longitudinal Studies: Detecting New Structures from Sparse Measurements*, ISBI 2019 (abstract)
 - (d) Preeti Gopal, Ritwick Chaudhry, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Tomographic Reconstruction using Global Statistical Priors*, DICTA 2017, Sydney.
 - (e) Preeti Gopal, Ajit Rajwade, Sharat Chandran and Imants Svalbe, *Multi-slice Tomographic Projection: To Couple or not to Couple*, Accepted to Indian Conference on Vision, Graphics and Image Processing, 2016 [oral presentation, acceptance rate 12%].
 - (f) Preeti Gopal, Ajit Rajwade, Sharat Chandran and Imants D. Svalbe, *A Comparison of Some Methods for Direct 2D Reconstruction from Discrete Projected Views*, DGCI 2016: 117-128.
 - (g) Eeshan Malhotra and Ajit Rajwade, *Tomographic reconstruction from projections with unknown view angles exploiting moment-based relationships*, International Conference on Image Processing (ICIP), 2016.
4. Dictionary Learning
- (a) Yu-Tseh Chi, Mohsen Ali, Ajit Rajwade and Jeffrey Ho, *Block and Group Regularized Sparse Modeling for Dictionary Learning*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013.
5. Music Transcription
- (a) Souvik Sinha Deb and Ajit Rajwade, *An Image Analysis Approach for Transcription of Music Played on Keyboard-like Instruments*, Accepted to Indian Conference on Vision, Graphics and Image Processing (ICVGIP), 2016 [oral presentation, acceptance rate 12%].
6. Image Denoising

- (a) Ajit Rajwade, Anand Rangarajan and Arunava Banerjee, *Image denoising using the higher order singular value decomposition*, IEEE Transactions on Pattern Analysis and Machine Intelligence, 35(4): 849-862 (2013)
- (b) Ajit Rajwade, Anand Rangarajan and Arunava Banerjee, *Video denoising using the higher order singular value decomposition*, International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), July 2011, Leningrad, Russia.
- (c) Ajit Rajwade, Anand Rangarajan and Arunava Banerjee, *Automated Filter Parameter Selection using Measures of Noisiness*, Canadian Robot Vision Conference, June 2010, Ottawa (Canada).
- (d) Ajit Rajwade, Arunava Banerjee and Anand Rangarajan, *Image Filtering Driven by Level Curves*, International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), Aug 2009, Bonn (Germany). [Oral Presentation]

7. Image Compression

- (a) Chandrajit Chaudhuri, Yellamraju Tarun, Ajit Rajwade and Subhasis Chaudhuri, *Low Bit-rate Compression of Video and Light-field Data using Coded Snapshots and Learned Dictionaries*, Accepted to IEEE International Workshop on Multimedia Methods in Signal Processing (MMSP), 2015 [oral presentation, acceptance rate 17%].
- (b) Karthik Gurumoorthy, Ajit Rajwade, Arunava Banerjee and Anand Rangarajan, *A Method for Compact Image Representation using Sparse Matrix and Tensor Projections onto Exemplar Orthonormal Bases*, IEEE Transactions on Image Processing (TIP), Volume 10, Issue 2, Feb. 2010, pp. 322-344.
- (c) Karthik Gurumoorthy, Ajit Rajwade, Arunava Banerjee and Anand Rangarajan, *Beyond SVD: Sparse Projections Onto Exemplar Orthonormal Bases for Compact Image Representation*, International Conference on Pattern Recognition (ICPR), Dec 2008, Tampa (USA). **Best Scientific Paper Award**.
- (d) Xin Hou, Karthik S. Gurumoorthy, Ajit Rajwade: Color Image Compression Using a Learned Dictionary of Pairs of Orthonormal Bases. DCC 2011: 458

8. Probability Density Estimation for Image/Signal Processing

- (a) Ajit Rajwade, Arunava Banerjee and Anand Rangarajan, *Probability Density Estimation using Isocontours and Isosurfaces: Applications to Information Theoretic Image Registration*, IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Volume 31, Issue 3, March 2009, pp. 475-491. (This work has been cited by various research groups in computer vision, visualization and medical imaging, and in two recent books: 'Information Theory in Computer Vision and Pattern Recognition' by F. Escolano, S. Pablo and B. Bonev, (September 2009) and 'Image Fusion Theories, Techniques and Applications' by H. Mitchell (March 2010), both published by Springer Verlag)
- (b) Ajit Rajwade, Arunava Banerjee and Anand Rangarajan, *A New Method of Probability Density Estimation with Application to Mutual Information Based Image Registration*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2006, New York (USA) [Oral presentation, acceptance rate 6 %].
- (c) Ajit Rajwade, Arunava Banerjee and Anand Rangarajan, *Continuous Image Representations solve the Histogram Binning Problem in Mutual Information Based Image Registration*, International Symposium on Biomedical Imaging (ISBI), April 2006, Arlington, VA (USA).

9. Partially Observable Markov Decision Processes

- (a) Masoumeh Tabaeh Izadi, Ajit Rajwade and Doina Precup, *Using core beliefs for point-based value iteration*, International Joint Conference on Artificial Intelligence (IJCAI), August 2005, Edinburgh (UK).

10. Face Recognition

- (a) Ajit Rajwade and Martin Levine, *Facial Pose from 3D Data*, Image and Vision Computing, Volume 24, Issue 1, August 2006, pp. 849-856.

Previous Research Work and Employment History

- **Research assistant at the University of Florida** Work on probability density estimation of image intensity values (applied to information theoretic image registration), image compression and image denoising (January 2005 to present).
- **Research assistant at McGill University** Department of Computer Science, working on Partially Observable Markov Decision Processes (POMDPs) (Fall 2005).
- **Research assistant at McGill University** Department of Agriculture, applied machine learning techniques to determining nitrogen content from hyperspectral features of soil (Fall 2005).
- **Thesis on 3D face recognition at McGill University** (Summer 2003 to Fall 2004).
- **Associate Software Engineer** at Veritas Software India Ltd., now part of Symantec Corp. (August 2001 to August 2002).

Teaching Experience

Served as course instructor for:

- Newly designed elective course on Advanced Image Processing (CS 754; a course on compressed sensing, tomography, sparse representations and low rank matrix recovery) at IIT Bombay, Spring 2017-2020
- Course on undergraduate statistics at IIT Bombay, Fall 2015-2019
- Courses on Image Processing, Computer Vision and Mathematical Methods in Visual Computing at IIT Bombay since July 2013
- A course on Data Structure and Algorithms for masters students at DAIICT in Winter 2013
- A course on Image Representation and Analysis for masters and PhD students at DAIICT in Autumn 2012 (http://intranet.daiict.ac.in/~ajit_r/IT530_Autumn2012.html, this course has been cited on the renowned Compressive Sensing Blog called Nuit Blanche, and is one of the earliest and few courses in India that teach compressive sensing and matrix completion)
- A course on Applications of Discrete Structures at the University of Florida (Dept. of CISE), for a class of 110 undergraduate students.
- A course on Calculus instructor for a class of 20 students, as part of the University of Florida STEPUP program for smooth transitioning of minority high school students into university life.

Talks

- June/July 2020: Talks on compressed sensing for COVID-19 pooled testing at Weizmann Institute (group of Prof. Yonina Eldar), at Information Theory Group (organized by Profs. Dror Baron from NCSU and Chandra Murthy from IISc), and for FUSS (Faculty Unplugged Seminar Series), CSE department, IITB
- Invited tutorial speaker for PReMI 2019, held at Tezpur University
- Invited as a speaker for ACM India Summer School on Algorithmic and Theoretical Aspects of Machine Learning, IIIT Bangalore to be held in June 2019 <http://tfocs.iiitb.ac.in/>
- Three talks at IEEE GlobalSIP, Anaheim, CA in November 2018
- April 2018, Faculty Unplugged Seminar Series (FUSS) at CSE, IITB, two talks, one on introduction to compressed sensing, and a research talk on ‘Dealing with Perturbations in Compressed Sensing’
- March 2018, Institute Seminar at IIIT Delhi, on ‘Dealing with Perturbations in Compressed Sensing’
- January 2018, Talk on introduction to compressed sensing, at Xavier College of Engineering, Mumbai

- One-day workshop (part of STTP series) at VNIT Nagpur, on Optimization in Signal and Image Processing
- Talk at IEEE MMSP in Xiamen (China), as part of MMSP 2015
- ‘Bayesian Methods for Compressive Reconstruction of Hyperspectral Images and Video’ at NASCOVIP 2012 (Rajkot, September 2012), Siemens Research (Bangalore, September 2012), IIT Delhi (November 2012), IIT Madras (March 2013), IIIT Hyderabad (May 2013)
- ‘Patch-based Methods for Image Denoising’ at IISc Bangalore (January 2013), IIT Bombay (January 2013), IIT Madras (November 2012), IIIT Delhi (August 2011), DAIICT (August 2011)
- ‘A New Method of Probability Density Estimation with Application to Mutual Information Based Image Registration’, at CVPR 2006 (New York)
- ‘Probability Density Estimation using Isocontours and Isosurfaces: Applications to Information Theoretic Image Registration’, at UF Landmines Seminar (October 2008)
- ‘Image Filtering Driven by Level Curves’ at EMMCVPR 2009, Bonn, Germany

Professional Service

1. Area Chair for ICVGIP 2016, 2018
2. Reviewer for following journals:
 - Applied Optics for the years 2013 and 2014
 - Information Sciences, 2014
 - IEEE Transactions on Pattern Analysis and Machine Intelligence for the years 2005, 2006, 2007, 2010, 2011.
 - IEEE Transactions on Image Processing for years 2014, 2015, 2016, 2017.
 - IEEE Transactions on Multimedia, 2017
 - IEEE Transactions on Signal Processing, 2018, 2019
 - IEEE Transactions on Vehicular Technology, 2018
 - Proceedings of National Academy of Sciences, India, 2017
 - IEEE Transactions on Biomedical Engineering for 2011.
 - IEEE Transactions on Medical Imaging, 2008 and 2009.
 - Machine Vision and Applications, 2006, 2009.
 - Computer Vision and Image Understanding, 2007, 2008 and 2010.
 - Pattern Recognition Letters, 2012
 - SIAM Journal on Imaging Sciences, 2012
 - Elsevier Signal Processing
 - IOP Inverse Problems
3. Reviewer for following conferences/workshops:
 - ICVGIP 2014, 2016
 - NCC 2016-2018
 - ICCV 2011-2019.
 - CVPR, 2009, 2011-2020.
 - MICCAI, 2008.
 - EMMCVPR 2005
 - Medimage Workshop (in conjunction with ICVGIP) in 2016 and 2018, Frontiers in Algorithmics (2016)
 - ISBI 2019
4. Member of IEEE since 2005, senior member since Feb 2020 .

Skills

- **Languages** C (expert), C++ (advanced), MATLAB (expert), Java (basic).
- **Operating Systems** Linux, Windows.
- **Packages** GNU Scientific Library (GSL), Visualization Toolkit (VTK) and Insight Toolkit (ITK).

Hobbies

- Writing English poetry
- Learning languages (German, French) besides English, Hindi and Marathi.
- Hindustani classical music (vocal)
- President of the UF chapter of SPICMACAY (Society for Promotion of Indian Classical Music and Culture Amongst Youth), Summer 2009 to Summer 2010.
- Member of magazine committee at the Government College of Engineering in the year 1998-1999.