

CURRICULUM VITAE

Holambe Raghunath Sambhaji,

Professor of Instrumentation and Dean Alumni affairs

Department of Instrumentation Engineering

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01. Educational Qualification:

Sr. No.	Name of Examination	Name of Examining Body	Year of Passing	Class %Marks
1.	Higher Secondary Certificate (H. S. C.)	H. S. C. Board Aurangabad	1981	First 62.33
2.	Bachelor of Engineering. (Instrumentation)	Marathwada University Aurangabad	1985	First 60.81
3.	Master of Engineering. (Instrumentation)	Marathwada University Aurangabad	1990	First 69.68
4.	Ph. D. (Digital Signal Processing)	Indian Institute of Technology, Kharagpur, India	1997	-----

Title of M. E. Thesis: *Review of Techniques and Development of Software of Computer Aided Design of FIR & IIR Filters*

Title of Ph. D. Thesis: *Signal Reconstruction and Identification of Nonminimum Phase System Using Bispectrum: A Phase-Only Reconstruction Approach*

02. Experience:

a) Teaching:

Sr. No.	Post Held	From	To	Name of the Employer	Total Experience
1.	Lecturer in Instrumentation	30/07/85	19/07/93	SGGS College of Engg. & Tech. Vishnupuri, Nanded (MS) –India	8 Years
2.	Assistant Professor in Instrumentation	20/07/93	31/01/01	-do-	7 years and 7 months
3.	Professor in Instrumentation	27/08/02	this date	-do-	14 years and 10 Months

b) Industry:

Sr. No.	Post Held	From	To	Name of the Employer	Total Experience
1	Consultant	01/02/01	26/08/02	Siemens Information Systems Ltd., Pune	19 months

c) Research:

Since last 27 years, I have been working in Digital Signal/Image Processing. I did my PG and Ph. D. in the same area. I have supervised 10 Ph. D. and around 25 PG students in Digital Signal/Image Processing. While working in Siemens Information Systems Ltd., Pune I had developed “Person Authentication System” based on voice and face. I am currently working on different biometrics modalities for person authentication. We have published more than 25 research papers in high quality international peer reviewed journals with good impact factor. Apart from this many papers in national journals and national/international conferences have been published. We have published five books and two book chapters in the area of research. Four research projects have been completed from Digital Signal/Image Processing area.

Many invited talks in short term training programs for faculty have been delivered at different institutes in the country and abroad.

I have attended one week International Summer School on “Biometrics for Secure Authentication: New Sensors, Evaluation and Database Collection” organized by University of Sassari, Alghero, Italy and attended training on Biometrics for Person Verification for 10 days at Institute National Des Telecommunication, Evry Cedex, France (in June 2006). I attended two training programs at Universiti Teknologi Petronas, Malaysia.

d) Administrative:

Presently working as a **Dean of Alumni Affairs** at SGGS Institute of Engineering and Technology, Nanded. In July 2015, we conducted two Alumni Meets in USA. We have established a chapter of alumni association for North America.

Since last ten years I am working as a Rector (Chief of the Hostels) of Hostels of SGGS Institute of Engineering and Technology, Vishnupuri, Nanded. The capacity of the Hostel is around 1400. We are successfully running the hostels with 100% accommodation to girl students. I had shouldered the responsibility of hostels of the same institute for three years as a Warden during very early stage of my career (1990-1993).

Since July 2, 2012 to July 9, 2014, I have worked as Head of the Department of Instrumentation, SGGS Institute of Engineering and Technology, Vishnupuri, Nanded. Also, during academic year 2012-13 I worked as a Head of the Department of Electrical Engineering, SGGS Institute of Engineering and Technology, Vishnupuri, Nanded.

I had worked as an Institute Coordinator of Technical Education Quality Improvement Program–I (TEQIP-I) of SGGS Institute of Engineering and Technology, Nanded. The program was launched by Government of India and sponsored by World Bank. Under this program institute received financial support of Rs. 10 crores. Apart from financial support implementation of many transformations like autonomy were expected in this project. We have very successfully implemented this program and we scored 9.3 score on scale of 10 in Academic Audit carried out under the program. I also worked as a Coordinator of TEQIP-II till June 2012. We prepared the Institute Development Proposal (IDP) and planned all activities for Phase-II of the programme.

Apart from this I shouldered several responsibilities like Chief Superintendent for university examinations, Chairman of PG admission committee, member of UG admission committee, in-charge of electrical maintenance of the campus etc.

03 Ph. D. Dissertation Supervised:

Sr. No.	Title of the Thesis	Month and Year of Submission of Thesis	Date of Defense
1.	Contact Lens Detection for Iris Recognition using Multi-resolution Analysis	September 2017	Awaited
2.	Wavelet Based Compression of Multichannel Human Chromosome Images	June 2016	December 5, 2016
3.	Design and Implementation of Supervised and Unsupervised Automatic Speaker Recognition System in Indian Language	September 2014	April 13, 2015
4.	Optimal Compression and Encryption Techniques for Telebiometric Systems	September 2014	March 31, 2015
5.	Novel Approaches to the Design of Separable and Non-separable Filter Banks for Iris Feature Extraction and Recognition using k-out-of-n: A Post-Classifer	July 2012	April 27, 2013
6.	Speech Recognition Techniques: Study of Some Aspects and Development of Algorithms	July 2012	March 9, 2013
7.	Text-independent speaker identification: A review and some novel techniques	December 2011	July 7, 2012
8.	Text-Independent Speaker Identification: New Spectral Feature Extraction Techniques	June 2010	January 29, 2008
9.	Isolated Word Recognition: New Feature Extraction Techniques	July 2009	May 5, 2009
10.	Person Identification Based on Facial Features: New Feature Extraction Techniques *	June 2008	October 9, 2010
11.	Automatic Fingerprint Matching: New Feature Extraction Techniques based on Textural Characteristics	May 2007	April 19, 2011

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 1. This thesis received ISTE National Award of Outstanding Research Work
 2. The research work was short listed for INDIAN NATIONAL ACADEMY OF ENGINEERING – Innovative Student Projects Award – 2010 of DOCTOR LEVEL

Three Ph. D. students are working in the area of signal and image processing.

04. P. G. Dissertations Guided:

Sr. No.	Title of the Project	Month and Year of Completion	Language Used
1.	Iris Recognition System Using Raspberry Pi	July 2017	Open CV C++
2.	Palm Print Based Person Recognition	July 2017	Matlab
3.	Wavelet Design Techniques to Match the Signal Shape	July 2016	Matlab
4.	Development of Iris Recognition System using Embedded Kit Raspberry - PI	July 2016	C++
5.	Development of Robust Low Cost Iris Recognition System Using Raspberry-Pi	July 2015	Matlab
6.	Iris Recognition System: Half Iris Feature Extraction and Recognition	July 2014	Matlab
7.	Human Face Detection and Recognition System	July 2014	Matlab
8.	Development of Online Face Detection and Recognition System	July 2013	Matlab
9.	Design of an Algorithm for Robust Iris Recognition System: Selective Signatures Classification Approach	July 2013	Matlab
10.	Online Signature Verification	July 2012	Matlab
11.	Person Verification System Based on Iris Texture Recognition	July 2011	Matlab
12.	Fingerprint Orientation Refinement and Classification Based on 2D Fourier Expansion	July 2010	Matlab
13.	Speech Recognition using TMS320C6713 DS	July 2009	C
14.	Implementation of Real Time Applications on TMS320C6713	July 2008	C
15.	Residual Excited Linear Predictive Vocoder System with TMS320C6713 DSP	July 2007	C
16.	Real Time Video Data Compression	July 2007	C
17.	Fingerprint Verification: Complex Wavelet Transform Approach	July 2006	Matlab
18.	Person Verification Based on Fingerprint	July 2005	Matlab
19.	Face Recognition, PCA and SVD Based Algorithms	July 2004	Matlab
20.	Speaker Recognition Based on Vector Quantization and Polynomial Classifier	June 2004	Matlab
21.	Study of Wavelets and Filter Banks	February 2001	Matlab
22.	Image Data Compression using Laplacian Pyramid and Vector Quantisation	January 2001	
23.	Digital Image Restoration using Different Techniques	June 2000	Matlab
24.	Image Compression using Wavelet Transform and Vector Quantisation	June 2000	C
25.	Digital Image Compression using Linear Prediction	February 2000	Matlab
26.	Texture Classification Using Morphological Filters	December 1999	C
27.	Multiscale Feature and Neural Network for Texture Segmentation	December 1999	C
28.	Image Restoration by Wavelet Expansion	October 1999	Matlab
29.	Model Reduction of 2-D Discrete System Based on Pade-Type Approximation	July 1999	C
30.	Multichannel Restoration of Single Channel Images Using a Wavelet-Based Subband Decomposition	February 1999	Matlab

31.	Image Compression and Classification using Laplacian Pyramid	March 1998	C
32.	Phase and Magnitude Recovery from Bispectrum	February 1998	C
33.	Texture Classification using Wavelet Transform	February 1998	C
34.	PC Based Implementation of PID Controller for Studying the Effects of Tuning Parameters	January 1998	C

05. Research Projects:

Sr. No.	Title of the Project	Month and Year of Completion	Language Used	Agency
1.	Biometrics Based Person Identification and Verification for Security	May 2012	Matlab	All India Council of Technical Education
2.	Human Face Recognition using Eigen Faces	March 2002	VC++	Siemens Information Systems Ltd., Pune
3.	Text-Independent Speaker Identification	August 2001	VC++	Siemens Information Systems Ltd., Pune
4.	Restoration of Images Degraded by Blur and Noise	May 2000	C	All India Council of Technical Education

06. Subjects Taught:

<i>a) Under Graduate</i>	:	<ul style="list-style-type: none"> ▪ Signals and Systems ▪ Microcontrollers and Digital Signal Processors ▪ Digital Signal Processing ▪ Feedback Control System
<i>b) Post Graduate</i>	:	<ul style="list-style-type: none"> ▪ Digital Image Processing ▪ Advanced Digital Signal Processing ▪ Modeling and Simulation ▪ Modern Control Theory

07. List of Papers Published/Accepted for Publication/Under Review:

International Journal:

1. S. P. Madhe, B. D. Patil, and R. S. Holambe, "On the design of Arbitrary Shape Two-Channel Filter Bank using Eigenfilter Approach", *Circuits, Systems, and Signal Processing (Springer)*, pp. 1-12, February 2017, (Impact factor 1.694)
2. M. B. Nagare, B. D. Patil, R. S. Holambe, "A Multi Directional Perfect Reconstruction Filter Bank Designed with 2-D Eigenfilter Approach: Application to Ultrasound Speckle Reduction," *Journal of Medical Systems, (Springer)*, vol. 41, no. 2, pp. 1-13, Dec. 2016 (Impact factor 2.456).

3. J. P. Gawande, A. D. Rahulkar and R. S. Holambe, "A New Approach to Design Triplet Halfband Filter Banks Based on Balanced-Uncertainty Optimization", *Digital Signal Processing (Elsevier)*, vol. 56C, pp. 123-131, June 2016 (Impact factor 2.337).
4. J. P. Gawande, A. D. Rahulkar and R. S. Holambe, "Design of new class of biorthogonal wavelet filter banks using generalized and hybrid lifting structures", *Signal, Image and Video Processing (SIViP)*, (*Springer*), vol. 9 (1), pp 265-273, Dec. 2015 (Impact factor 0.872).
5. Jayanand P. Gawande, Amol D. Rahulkar & Raghunath S. Holambe "Design of regular biorthogonal wavelet filter banks using generalized and hybrid lifting structures." *Signal Image and Video Processing (Springer)* vol. 9, no. 7, pp. 265-273, October 2015 (Impact factor 1.430).
6. A. K. Naik and R. S. Holambe "A New Approach to the Design of Low Complexity 9/7 tap Wavelet Filters with Maximum Vanishing Moments" *IEEE Trans. on Image Processing*, Vol. 23, No. 12, pp. 5722-5732, Dec. 2014.
7. A. K. Naik and R. S. Holambe "Design of Low-complexity High - Performance Wavelet Filters for Image Analysis" *IEEE Trans. on Image Processing*, Vol. 22, No. 5, pp. 1848-1858, May 2013, (Impact Factor 3.19)
8. Amol D. Rahulkar, Laxman M. Waghmare and Raghunath S. Holambe, "A New Approach to the Design of Hybrid Finer Directional Wavelet Filter Bank for Iris Feature extraction and Classification Using k-out-of-n: A post-Classifer", *Springer-Verlag, Pattern Analysis and Applications* (In press: Available Online, April 27, 2013) (Impact factor 0.814).
9. Amol D. Rahulkar, Bhushan D. Patil and Raghunath S. Holambe, "A New Approach to the Design of Biorthogonal Triplet Halfband Filter Banks Using Generalized Halfband Polynomials", *Signal Image and Video Processing (Springer)* (In press; available online September 30, 2012) (Impact factor 0.409)
10. P. K. Ajmera, N. S. Nehe, D. V. Jadhav, R. S. Holambe, "Robust Feature Extraction from Spectrum Estimated Using Bispectrum for Speaker Recognition" *International Journal of Speech Technology* Vol. 15, No. 4, June 2012 (Springer)
11. P. K. Ajmera, R. S. Holambe, "Fractional Fourier Transform Based Modified MFCC Features for Speaker Recognition Using Support Vector Machine," *Computer and Electrical Engineering (Elsevier Press)* (available on line from June 13, 2012) (Impact factor -484).
12. Y. S. Angal, M. S. Deshpande, R. S. Holambe and R. H. Chile, "Speech Recognition in Noisy Conditions using radon transform and Discrete Cosine Transform from the Features Derived from Gammatone Filter Bank," *CiiT International Journal of Digital Signal Processing*, vol.4, no.4, pp.175-181, April-2012, (Impact factor 0.102).
13. Y. S. Angal, A. D. Rahulkar, R. S. Holambe and R. H. Chile, "Design of Wavelet Packets Based on New Class of Triplet Half Band Filter Bank for the Feature Extraction of Speech Signal", *CiiT International Journal of Digital Signal Processing*, Vol 4, No 3, pp. 99 - 105, March 2012 (Impact factor 0.102).
14. A. D. Rahulkar and R. S. Holambe, "Half-Iris Feature Extraction and Recognition Using A New Class of Biorthogonal Triplet Halfband Filter Bank and Flexible k-out-of-n: A Post-Classifer.", *IEEE Transactions on Information Forensics and Security* vol. 7 No. 1, February 2012 pp 230-240 (Impact Factor 2.38)
15. A. D. Rahulkar and R. S. Holambe, "Partial Iris Feature Extraction and Recognition Based on a New Combined Directional and Rotated Directional Wavelet Filter Banks" *Neurocomputing*, vol. 81, April, 2012 pp. 12-23 (*Elsevier Press*), (Impact Factor 1.440).

16. A. D. Rahulkar, D. V. Jadhav and R. S. Holambe, "Fast Discrete Curvelet Transform Based Anisotropic Iris Coding and Recognition Using k-out of - n: A Fused Post-Classifer.", *Springer, Machine Vision and Applications* Vol. 23, pp. 1115-1127, 2012 (Impact factor 1.48)
17. R. S. Holambe, T. K. Basu, A.K.Ray, Y.S. Angal, "Signal Reconstruction From Phase: A New Efficient Closed-Form Solution", *IETE Research Journal*. (impact factor 0.076) (accepted for publication).
18. P. K. Ajmera, D. V. Jadhav, and R. S. Holambe, "Text Independent Speaker Identification Using Radon and Discrete Cosine Transforms Based Features of Speech Spectrogram". *Pattern Recognition (Elsevier Publication)*, 44 (2011) (Impact Factor 2.554) pp. 2749-2759.
19. P. K. Ajmera, R. S. Holambe, "Speaker Recognition Using Auditory Features and Polynomial Classifier," *International Journal of Computer Applications,(IJCA)*, vol. 1, no. 14, pp. 91-95, Feb. 2010 (impact factor 0.8).
20. D. V. Jadhao, R. S. Holambe, "Rotation, illumination invariant polynomial kernel Fisher discriminant analysis using Radon and discrete cosine transforms based features for face recognition," *Pattern Recognition Letters (Elsevier Press)*, vol. 31, pp 1002–1009, 2010. (Impact Factor 1.303)
21. M. S. Deshpande, R. S. Holambe, "Speaker identification using admissible wavelet packet based decomposition," *Journal of Signal Processing, World Academy of Science, Engineering and Technology*, vol. 6, no. 1, 2010, pp. 20-23.
22. D. V. Jadhav, R. S. Holambe, "Feature extraction using Radon and wavelet transforms with application to face recognition," *Neurocomputing, (Elsevier Press)*, vol. 72, pp. 1951-1959, 2009 (Impact Factor 1.440).
23. N. S. Nehe and R. S. Holambe, "New feature extraction techniques for Marathi digit recognition," *International Journal of Recent Trends in Engineering*, [ISSN: 1797-9617] Finland, vol. 2, no. 1, pp. 22-24, December 2009.
24. M. S. Deshpande, R. S. Holambe, "Teager energy operator based robust speaker identification in noisy environment," *International journal of Computational Intelligence and Healthcare Informatics*, 2009, pp. 15-19.
25. M. S. Deshpande, R. S. Holambe, "New filter structure based on admissible wavelet packet transform for text-independent speaker identification," *International Journal of Recent Trends in Engineering*, Academy Press, vol. 2, no. 1, pp. 121-125, Nov. 2009.
26. D. V. Jadhav, R. S. Holambe, "Radon and discrete cosine transforms based feature extraction and dimensionality reduction approach for face recognition," *Signal Processin (Elsevier Press)*, vol. 88, pp. 2604-2609, 2008 (Impact Factor 1.135).
27. D. V. Jadhav, R. S. Holambe, "Multiresolution feature based fractional power polynomial kernel Fisher discriminant model for face recognition," *Journal of Multimedia, Academy Publisher*, vol. 3, no. 1, pp. 47-53, May 2008.
28. J. V. Kulkarni, B. D. Patil and R. S. Holambe, "Orientation feature for fingerprint matching", *Pattern Recognition (Elsevier Publication)*, vol. 39, no. 8, pp. 1551-1554, August 2006 (Impact Factor 2.554).
29. J. V. Kulkarni, Jayadevan R, Suresh. N.Mali, Hemant. K.Abhyankar and R. S. Holambe, "A new approach for fingureprint classification based on minutiae distribution", *IJCS [ISSN 1306-4428]* vol.1 number 4 2006.

30. R. S. Holambe, A. K. Ray and T. K. Basu, "Signal phase recovery using bispectrum", *Signal Processing(Elsevier Press)*, Vol. 55, no.3, pp. 321-337, December 1996. (Impact Factor 2.212)
31. R. S. Holambe, A. K. Ray and T. K. Basu, "Phase-only blind deconvolution using bicepstrum iterative reconstruction algorithm (BIRA)", *IEEE Trans. Signal Processing*, vol. 44, no. 9, pp. 2356--2359, September 1996 (Impact Factor 1.135).

National Journal

1. Y. S. Angal, R. H. Chile and R. S. Holambe, "Comparison of end Point Detection Algorithms in Isolated Words Speech Signal Processing", *Journal of Instrument Society of India*, vol. 40, No. 4, pp. 305-307 Dec-2010.
2. Y. S. Angal, R. H. Chile and R. S. Holambe, "Speech Recognition for Isolated Words Using MFCC and VQ" *Journal of Instrument Society of India*, Sep-2011, Vol.41, No.3, pp.201-204.
3. S. G. Hirlekar, R. S. Holambe and T. K. Basu, "Phase recovery from bispectrum", *IETE Journal of Research*, vol. 46, NO. 3, pp. 139-145, May-June 2000.

International Conferences:

1. M. B. Nagare, B. D. Patil, R. S. Holambe , "Design of Two-Dimensional Quincunx FIR Filter Banks using Eigen Filter Approach," *International Conference on Signal and Information Processing (IconSIP), Nanded, India 2016*, pp. 1-5. doi: 10.1109/ICONSIP 2016.
2. N. P. Jawarkar, R. S. Holambe, and T. K. Basu, "Use of Fuzzy Min-Max Neural Network for Speaker Identification" *In Proc. of IEEE Inter. Conf. On Recent Trends in Information Technology, ICRTIT 2011, Chennai, India – 2011*.
3. P. K. Ajmera, R. S. Holambe, "Multiresolution Features Based Polynomial Kernel Discriminant Analysis for Speaker Recognition," *In Proceedings of the IEEE International conference on Advances in Computing, Control, & Telecommunication Technologies, ACT '09, Kerala*, Dec. 2009, pp. 333-337.
4. N. S. Nehe and R. S. Holambe, "Mel Frequency Teager Energy Features for Isolate Word Recognition in Noisy Environment," *Proc. of IEEE Inter. Conf. On Emerging Trends in Engineering and Technology, ICETET09, Nagpur, India*, pp. 904-908, 16-18 Dec. 2009.
5. N. S. Nehe and R. S. Holambe, "Robust Bispectrum Features for Isolated Word Recognition," *Proc. of IEEE Fourth Inter Conf. on Industrial and Information Systems (ICIIS 2009)*, Sri Lanka, December 2009.
6. N. S. Nehe and R. S. Holambe, "New Feature Extraction Techniques for Marathi Digit Recognition," *Proc. of IEEE International Joint Journal Conference in Computer Electronics and Electrical, Kerala, India*, December 2009.
7. N. S. Nehe and R. S. Holambe, "Isolated Word Recognition using Normalized Teager Energy Cepstrum Features," *Proc. of IEEE Inter. International Conference on Advances in Computing, Control, and Telecommunication Technologies, ACT 2009, Kerala, India*, pp. 106-110, 28-29 December 2009.
8. N. S. Nehe and R. S. Holambe, "Performance of classifiers on isolated word recognition," *Proc. of Inter. conference on Advances in Computer Vision and Information Technology ACVIT'09, Aurangabad, India*, December 2009.

9. N. S. Nehe and R. S. Holambe, "Isolated word recognition using polynomial classifier," *Proc. of Inter. conference on Control, Automation, Communication and Energy Conservation INCACEC'09*, Tamilnadu, India, pp. 1-3, 4-6 June 2009.
10. N. S. Nehe and R. S. Holambe, "Isolated word recognition using low dimensional features and kernel based classification," *Proc. of IEEE Inter. conference on Advances in Recent Technologies in Communication and Computing ARTCom 2009*, Kottayam, Kerala, India, pp. 194 -198, 27-28 October 2009.
11. N. S. Nehe, D. V. Jadhav and R. S. Holambe, "Multiresolution features and polynomial kernel subspace approach for isolated word recognition ," *Proc. Of ACM Inter. Conf. on Advances in Computing, Communication and Control(ICAC3'09)*, Mumbai, India, pp. 373-379, 23-24 January 2009.
12. N. S. Nehe and R. S. Holambe, "New robust subband cepstral features for isolated word recognition," *Proc. of ACM Inter. Conf. on Advances in Computing, Communication and Control (ICAC3'09)*, Mumbai, India, pp. 326-330, 23-24 January 2009.
13. M. S. Deshpande, R. S. Holambe, "Speaker Identification based on robust AM-FM Features," *Proceedings of second IEEE International conference on emerging trends in engineering and technology (ICETET-2009)*, Nagpur, December 2009.
14. M. S. Deshpande, R. S. Holambe, "New Filter Structure based on Admissible Wavelet Packet Transform for Text-independent Speaker Identification," *Proceedings of IEEE International joint journal conference in Computer, Electronics and Electrical (CEE 2009)*.
15. M. S. Deshpande, R. S. Holambe, "Robust Q Features for Speaker Identification," *Proceedings of IEEE International conference on Advances in Recent Technologies in Communication and computing (ARTCom 2009)*, Kottayam, Kerala, October 2009.
16. M. S. Deshpande, R. S. Holambe, "Teager energy operator based robust speaker identification in noisy environment", *International conference on VLSI and communication (ICVcom-2009)*, Kottayam, April 16-18, 2009, pp. 541-545.
17. M. S. Deshpande, R. S. Holambe, "Improving speaker identification in noisy environment," *Proceedings of the 4th Indian International Conference on Artificial Intelligence (IICAI-09)*, Tumkur, Bangalore, December 2009.
18. M. S. Deshpande, R. S. Holambe, "Speaker Discrimination using higher order formant frequencies," *Proceedings of the second International Conference on Advances in Computer Vision and Information Technology (ACVIT-2009)*, Aurangabad, December 16-18, 2009 (Accepted).
19. N. S. Nehe and R. S. Holambe, "Power spectrum difference Teager energy features for speech recognition in noisy environment," *Proc. of IEEE Third Inter Conf. on Industrial and Information Systems (ICIIS 2008)*, Kharagpur, India, 8-10 December 2008.
20. N. S. Nehe and R. S. Holambe, "Auditory perception based admissible wavelet packet trees for speech recognition ," *Proc. of IEEE Third Inter Conf. on Industrial and Information Systems (ICIIS 2008)*, Kharagpur, India, 8-10 December 2008.
21. N. S. Nehe and R. S. Holambe, "New feature extraction methods using DWT and LPC for isolated word recognition," *Proc. of IEEE TENCON 2008*, Hyderabad, India, 18-20 November 2008.
22. M. S. Deshpande, R. S. Holambe, "Text-independent speaker identification using hidden Markov model," *Proceedings of first IEEE International conference on emerging trends in engineering and technology (ICETET-2008)*, Nagpur, July 16-18, 2008, pp. 641-644.

23. D. V. Jadhao, R. S. Holambe, "Feature Extraction Techniques for Machine Recognition of Human Faces," *International Conference on Sensors, Signal Processing, Communication and Control*, Vishwakarma Institute of Technology, Pune, 3-5 January 2008, pp. 34-37 (Invited Paper).
24. D. V. Jadhao, R. S. Holambe, "Gabor Wavelet Featured Based Face Recognition using Fractional Power Polynomial Kernel Fisher Classifier for Face Recognition," *Proceedings of the 7th IEEE International Conference on Computational Intelligence and Multimedia Analysis, (ICCIMA-07)*, 13-16 December 2007.
25. D. V. Jadhao, R. S. Holambe, "Feature Extraction and Dimensionality Reduction Using Radon and Fourier transforms with Application to Face Recognition," *Proceedings of the 7th IEEE International Conference on Computational Intelligence and Multimedia Analysis, (ICCIMA-07)*, 13-16 December 2007.
26. D. V. Jadhao, R. S. Holambe, "Multiresolution Based Kernel Fisher Discriminant Model for Face Recognition," *Proceedings of 4th IEEE International Conference on Information Technology: New Generation (ITNG-07)* published by IEEE Computer society, Los Vegas, Newada, 2-4 April 2007 pp. 848-853.
27. D. V. Jadhao, R. S. Holambe, "Gabor Featured Based Classification using the Kernel Fisher Discriminant Model for Face Recognition," *Proceedings of First International conference on Signal and Image Processing*, B. V. B. college of Engineering and Technology, Hubli, (India) 7-9 December 2006, pp. 821-825.
28. M. S. Deshpande, R. S. Holambe, "Comparative study of Vector Quantization and Gaussian mixture models for speaker recognition," *Proceedings of ASIAN conference on intelligent systems and networks (AISN-2006)*, Jagadri, Haryana, Feb. 24-25, pp. 58-63, 2006.
29. B. D. Patil, J. V. Kulkarni and R. S. Holambe, "Fingerprint Verification Using Wavelet and Logical Dominant Orientation", *Proceedings of IET, International conference on Visual Information Engineering 2006(VIE 2006)*, 26-28 September 2006.
30. D. V. Jadhav, R. S. Holambe, "Comparing principal component analysis (PCA) with Kernel PCA (non linear PCA) for face recognition" *Proc. Int. National Conf. on Cognition and Recognition*, pp. 824-830, P. E. S. College of Engineering Mandya, Karnataka, India, Dec. 2005.
31. R. S. Holambe, A. K. Ray and T. K. Basu, "Recovery of phase of a system from bispectrum", *Proc. Int. National Conf. On Communications, Computers and Devices (ICCD-2000)*, pp.675-678, Indian Institute of Technology, Kharagpur, India, Dec. 2000.
32. S. N. Talbar, R. S. Holambe and T. R. Sontakke, "Supervised texture classification using wavelet transform", *Proc. Fourth International Conference on Signal Processing*, pp. 1177-1180, Beijing, China, October 1998.
33. R. S. Holambe, C. B. Deshpande and T. K. Basu, "Review of techniques and development of software for IIR filters", *Proc. 5th International Congress and Exhibition*, pp. 162-165, New Delhi, India, November 1991.

National Conferences:

1. Y. S. Angal, R. H. Chile and R. S. Holambe, "Speech Recognition for Isolated Words Using MFCC and VQ" National Symposium on Instrumentation on January 7-9, 2011 at VTU Belgaum, Karnataka State.
2. M. S. Deshpande, R. S. Holambe, "Comparative study of different speech features for speaker identification," *Proceedings of National conference TSYGCA-06*, Aurangabad, Jan. 23-24, 2006, pp. 206-212.

3. R. H. Chile, Y. S. Angal, and R. S. Holambe, "Voice activated device control (speech recognition)", *Proc. of the National Conference*, Government College of Engineering Aurangabad, Maharashtra pp. 275-281, January 2006.
4. R. H. Chile, Y. S. Angal, and R. S. Holambe, "Comparative study of different speech features for speaker identification", *Proc. of the National Conference*, Government College of Engineering Aurangabad, Maharashtra, January 2006.
5. M. S. Deshpande, R. S. Holambe, "Speaker identification using Gaussian mixture models," *Proceedings of national conference on electrical engineering developments, NCEED*, Gitam, Vishakhapatnam, July, 17-18, 2005.
6. D. V. Jadhao, R. S. Holambe, "Face recognition based access control system," *Proc. of National Conference on Signal Processing, Communication and Control*, VIT, Pune pp. 34-37, July 2005.
7. D. V. Jadhao, R. S. Holambe, "A survey of human and machine recognition of faces," *Proc. of the 2nd National Conference on Intelligent systems and networks*, pp. 122-126, February 2005.
8. D. V. Jadhao, R. S. Holambe, "Validation of Fisher classifier for face recognition," *Proc. of the 2nd National Conference on Intelligent Systems and Networks*, pp. 118-121, February 2005.
9. J. V. Kulkarni, R. S. Holambe and H. K. Abhyankar, "Automatic speaker identification based on covariance and Mahalanobis distance metrics", *Proc. of the National Conference on Signal Processing, Intelligent Systems and Networking*, M. S. Ramaiah Institute of Technology MSR Nagar, Bangalore, India pp. 16-18, December 2003.
10. R. S. Holambe, A. K. Ray and T. K. Basu, "Nonminimum phase system identification using bispectrum", *Proc. National Conference on Communications*, pp. 215-221, Indian Institute of Technology, Kharagpur, January 1999.
11. S. N. Talbar, S. C. Deshpande and R. S. Holambe, "Laplacian pyramid for texture classification", *Proc. National Conference on Communications*, pp. 269-274, Indian Institute of Technology, Kharagpur, January 1999.
12. R. S. Holambe, A. K. Ray and T. K. Basu, "Signal reconstruction from the bispectrum: A bicepstrum domain approach", *Proc. Indian Conf. Pattern Recog. Image Processing and Computer Vision*, pp. 9-13, Indian Institute of Technology, Kharagpur, India, December 1995.
13. R. S. Holambe, C. B. Deshpande and T. K. Basu, "Computer aided frequency sampling design of nonrecursive digital filter", *Proc. National Conf. Real Time Systems*, pp. 275-279, SGSITS Indore, India, February 1991.

08. Books:

1. A. D. Rahulkar and R. S. Holambe , *Iris Image Recognition:Wavelet Filter-banks Based Iris Feature Extraction Schemes* Springer, New York Dordrecht London, Springer
Briefs in Electrical and Computer Engineering-Signal Processing, 2014.
2. R. S. Holambe and M. S. Deshpande *Advances in Non-Linear Modeling for Speech Processing*, Springer, New York , USA, 2012
3. Navnath Nehe and Raghunath Holambe "Isolated Word Recognition: New Feature Extraction Techniques" , *VDM Publishing House Ltd, USA 2011*
4. M. S. Deshpande and R. S. Holambe, *Speaker Identification: New Spectral Feature Extraction Techniques; Linear and nonlinear modeling techniques, LAP LAMBERT Academic Publishing GmbH & Co. KG, Germany 2011*

5. S. P. Narote, R. S. Holambe and L. M. Waghmare, *Iris Recognition Based New Technique for Person Identification: DTCWWT Based Feature Extraction*, VDM Publishing House Ltd, Mauritius 2011
6. Editor of *Proceedings of Instrumentation, Control and Signal Processing –2013 (ICSP 2013)*; The conference was organized by Department of Instrumentation, SGGS Inst of Engg and Tech Vishnupuri, Nanded, organized during 8th -9th July, 2013

Book Chapters:

1. D. V. Jadhao, R. S. Holambe, “Transform Based Feature Extraction and Dimensionality Reduction”, *Advances in Face Image Analysis: Techniques and Technologies*, Edited by Yu-Jin Zhang (Tsing Hua University), IGI Global Publishing, 2010 [ISBN 10:1615209913], pp120-136.
2. R. S. Holambe and M. S. Deshpande “Noise Robust Speaker Identification: Nonlinear Modeling Techniques” *Advances in forensic speaker recognition: criminal justice and counter terrorism*, Springer New York USA (in press)

09. Short Term Courses Attended:

National:

1. 2017 - One week Summer School on Speech Signal Processing (S4P) held during July 08-12, 2017 at Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar, Gujrat
2. 2015 - Two week short term interdisciplinary training program on "Mathematical and Statistical Foundation to Signal and Image Processing" held during May 28-June 6, 2015, organized at SGGS Institute of Engg and Tech Vishnupuri, Nanded. 2013 - Two day Workshop on “Bio-Design” August 8-9, 2013, organized by SGGS Inst of Engg and Tech, Vishnupuri, Nanded in association with Stanford India Biodesign Center AIIMS, Delhi.
3. 2012 – Two-day STTP on "MHRD’s National Mission for Teachers and Administrators, Consultation Programme", IIM, Indore; December 15-16, 2012.
4. 2010 – Two-Day Workshop on Virtual DSP Lab Dec 13-14, 2010, IIT Bombay, Mumbai
5. 2008 – Signal Processing, June 30, 2008 –July 4, 2008 (5 days), Indo-US Engineering Faculty Leadership Institute, Global Education Center Infosys Technologies, Mysore.
6. 2007 – Management Training, Nov 21-25, 2007 (5 days), Sinhgad Institute of Technology, Lonawala.
7. 2006 – Workshop on Intellectual Property Rights
8. 2005 – Management Capacity and Vision Development: Training for Deans / Heads – 3 Days – IIT, Mumbai
9. 2005 – Institutional Capacity Building for Future – 1 week – SGGS Institute of Engineering and Technology, Nanded
10. 2000 – Digital Signal and Image Processing – 2 Weeks – Department of Electronics and Computer Science and Engineering, SGGS College of Engineering and Technology, Nanded
11. 1997 - Intensive Course in Telematics - 2 Weeks - Department of Electrical Engineering, IIT, Delhi
12. 1996 - Biomedical Instrumentation - 2 Weeks - Department of Electrical Engineering, IIT, Kharagpur
13. 1993 - Process Control and DCS Overview – 1 Week - Department of Instrumentation SGGS College of Engineering and Tech., Nanded
14. 1988 - Thyristorised Drives - 2 weeks - Department of Electronics Engineering, College of Engineering, Anna University, Madras
15. 1987 - A workshop on Engg Design – Three Days- S. J. College of Engg., Mysore, India

International:

1. 2013 – One-Day short course on Advance Imaging Techniques for Biomedical Applications; August 29,2013, 2013; University Teknologi Petronas, Malaysia
2. 2013 – A Two-Day Short term Course on Statistical Inference Theory and Practice; August 24-25, 2013; University Teknologi Petronas, Malaysia
3. 2006 – International Summer School on Biometrics for Secure Authentication: New Sensors, Evaluation and Database Collection – 1 Week - University of Sassari, Alghero, Italy; June 2006
4. 2006 – Training on Biometrics for Person Verification – 10 Days – Institute National Des Telecommunication, Evry Cedex, France; June 2006.

10. Conferences/Seminars/Workshops attended:

1. 2008- International Conference on Sensors, Signal Processing, Communication and Control, Vishwakarma Institute of Technology, Pune
2. 2007 - TI developers conference organized by Texas Instruments India Ltd., Bangalore
3. 2006 - TI developers conference organized by Texas Instruments India Ltd., Bangalore
4. 2005 - National Conference on Signal Processing, Communication and Control, VIT, Pune
5. 2004 - Awareness of Patents – 1 Day - SRTM University, Nanded
6. 2000 - DSP's fest' 2000 Organised by Texas Instruments India Ltd., Bangalore
7. 1999 - DSP's fest' 1999 Organised by Texas Instruments India Ltd., Bangalore
8. 1999 - National Communication Conference, IIT, Kharagpur, India
9. 1995 - Pattern Recognition, Image Processing and Computer Vision, IIT Kharagpur, India
10. 1990 - Real Time Systems Conference, SGITS, Indore, India

11. Short Term Courses/Workshops/Seminars/Conferences Conducted:

1. Winter School on “Biometrics for Person Authentication: Fundamentals, and Advances”, December 23-27, 2013
2. Instrumentation, Control and Signal Processing (ICSP -2013): Department of Instrumentation, SGGS Inst of Engg and Tech Vishnupuri, Nanded, July 8-9, 2013. Conference Chair
3. Workshop on “Applications of Digital Signal Processing in Industry” March 20-21, 2010
4. Nation Students' Conference on Instrumentation and Control (ICON 2008), February 22-23, 2008
5. Winter School on “Digital Signal Processing: Fundamentals, Advances and Applications”, December 18-23, 2006
6. Following eight training programs for faculty and staff were conducted and coordinated at institute level. An appreciation letter for coordination of these programs has been received from Joint Director, Aurangabad

Name of the Training Module	Type of Participants	Schedule	
Enhancing Skills for System Improvement Development	Supporting Staff (Nontechnical) Office staff	15-01-09	17-01-09
Enhancing Skills for System Development	Supporting Staff (Account)	30-01-09	31-01-09
Enhancing skills for Lab Development (three programs)	Supporting staff / Lab. Asstts. (Tech.)	06-02-09	12-02-09
Effective Role execution for Institutional Development	Professors & Asstt. Professors	27-02-09	28-02-09
Pedagogical Training in Engineering Education	Lecturers of Polytechnics and Engg Colleges(Freshly Joined)	04-03-09	05-03-09
Pedagogical Training in Engineering Education	Lecturers of Polytechnics and Engg Colleges(More than 05 Years Teaching Experience)	06-03-09	07-03-09
Enhancing Skills for System Development	HOD's of Polytechnic Institutes	16-03-09	17-03-09
Orientation Program for changing mindsets	Class IV Employees	26-03-09	16-03-09

12. Invited Lectures (National/International)

International:

1. August 2016 - "Orthogonal Transforms : Fourier to Wavelet" , at Universiti Teknologi Petronas, Malaysia.
2. June 2006 – Biometrics for Person Verification- Institute National Des Telecommunication, Evry, France

National:

1. June 25, 2015: Talk on "Signal Modeling for Pattern Recognition" in STTP on "Advances in Control, Automation, Signal and Image Processing" during 22-26 June 2015. Konkan Gyanpeeth College of Engg., Karjat (Raigad)
2. April 24, 2015: Talk on "Signal Modeling for Pattern Matching" in ISTE STTP on Recent Trends in Computer Vision" at Yeshwantrao Chavan College of Engg, Nagpur
3. January 17, 2015: Talk on "Introduction to Pattern Classifiers" in STTP on "Emerging Trends in Speech Signal Processing" at AISSMS Institute of Information Technology, Pune
4. January 23, 2014: Talk on "Overview and Advances of Digital Signal Processing" in three day national seminar on "Interdisciplinary Applications of Digital Signal Processing" at GHRCEM, Wagholi, Pune
5. December 27, 2013: Talk on "Face Recognition for Person Authentication" in Winter School on "Biometrics for Person Authentication: Fundamentals and Advances", Department of Instrumentation, SGGS Inst of Engg and Tech Nanded.
6. April 15, 2013; Invited talk in STTP "Signal and Image processing" at Zeal Education's Dnyanganga College of Engineering and Research, Pune

7. November 29, 2012: Invited talks on “Speaker Identification” and “Human Face Recognition” in TEQIP sponsored STTP on “Advances in Signal and Image Processing (ASIP)” during Novemebr 26-30, 2012 at Government College of Engineering Jalgaon
8. May 23, 2012: Invited talk on “Integral Transforms” in short term course on “Linear Algebra and Its Applications” at Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded (under TEQIP), during 21.05.2012 to 02.06.2012
9. December 14, 2011- Invited talk on “Introduction to Wavelets” in Staff Development Programme on “Recent Advances in Speech, Image and Video Processing” 12-23 December-2011, at SGGGS Inst of Engg and Tech., Vishnupuri, Nanded,
10. June 15, 2011 – Invited talk on “ LPC Analysis and Homomorphic Processing” in Short Term Training Programme on “Speech and Image Processing” at Babasaheb Naik College of Engineering Pusad (MS)
11. April 2011- Expert Talk on “IIR Digital Filter Design” In Padmashree Dr. D Y Patil Institute of Engineering and Technology, Pimpri, Pune (MS).
12. February 2011 – Invited talk on “Introduction to Orthogonal Transforms and Their Applications” in UGC sponsored national seminar on “Advances in Mathematics” at Rajashree Shahu Mahavidyalaya, Latur (MS)
13. January 2011 – Delivered a talk on “Wavelet transform and Matalab Toolbox” in AICTE approved short term course on “Matlab and Its Engineering Applications” at A. G. Awate College of Engineering, Pune
14. January 2011 - Delivered a talk on “ Human Face Recognition” in National Workshop on Advances in Signal Processing and Applications at (NWASPA-2011 at MCT’s Rajiv Gandhi Institute of Technology, Versova, Mumbai-400053
15. October 2010 – Invited talk on “Orthognal Transforms and Their Applications” at Cummins college of Engineering, Pune.
16. September 2010 – Invited talk on “Image Restoration” and “Human Face Recognition” at Walchand College of Engineering Sangli.
17. January 2008- Digital signal processing: Fundamentals, and advances in Digital Signal Processing, Vishwesharayya College of Engineering, Chincholi, Sinner.
18. December 2007- Advances in Digital Signal Processing, Sinhgad college of Engineering, Pune.
19. February 2007- Workshop on Digital Signal Processing, College of Engineering, Ahmednagar
20. December 2006- Digital Signal Processing: Fundamentals, applications and advances, SGGSIET, Nanded.
21. July 2006 – Advances in Signal Processing - COE, Ambejogai.
22. January 2006 – Recent Trends in Instrumentation and Control - SGGGS Institute of Engg. and Tech. Nanded
23. January 2006 – Recent Trends in Signal and Image Processing - SGGGS Institute of Engg. and Tech. Nanded
24. December 2004 – Programming Paradigms: Verification Perspective -SGGS Institute of Engg. and Tech. Nanded

- 25. June 2004 – Image Processing – VJTI, Mumbai
- 26. April 2004 – Advanced Signal and Image Processing Applications in Instrumentation- VIT, Pune
- 27. March 2004 – Computer Vision – Dr. BAT University, Lonere, Dist. Raigad
- 28. July 2000 – Programming with C and C++ - SGGS Institute of Engg. And Tech. Nanded
- 29. June 2000 - Digital Signal and Image Processing - SGGS Institute of Engg. And Tech. Nanded
- 30. March 1998 – Digital Signal Processing – SGGS Institute of Engg. and Tech. Nanded

13. International Exposure:

- August 2-8, 2016: Visit to Universiti Teknologi Petronas, Malasia, to explore the possibilities of joint International Research Projects.
- July 8-22, 2015: Visit to USA. During this visit following activities carried out.
 - Attended two alumni meets at New Jersey and San Jose.
 - Visited following Universities for research collaborations and faculty and students exchange

NOAA-CREST Center, The City University of New York
 Oakland University, Rochester, MI
 San Jose State University, San Jose, CA
 University of California, Santa Barbara, CA
 Autodesk Inc, San Francisco, CA

- Visited following Industries

Autodesk Inc., San Francisco, CA
 Bloom Energy, Sunny Vale, CA

- August 24-29, 2013: Visited Teknologi Petronas, Malaysia to explore the research collaborations in Signal and Image Processing area. Also, during this visit two training programs attended.
- August 30, 2013: Visit to Electrical Engineering Department of Nanyang Technical University (NTU) Singapore to explore the possibilities of research collaborations in Signal and Image Processing.
- June 12-22, 2006: Training on Biometrics for Person Verification, Institute National Des Telecommunication, Evry Cedex, France.
- June 5-9, 2006: Attended International Summer School on Biometrics for Secure Authentication: New Sensors, Evaluation and Database Collection at University of Sassari, Alghero, Italy.

14. Membership of Professional Bodies:

- Life Member of Indian Society for Technical Education (ISTE): (LM – 23319)

15. Other Academic Activities:

- Acting as Auditor and Mentor in TEQIP-II for following Institutes

- JNTUA College Of Engineering, Pulivendula, (Andhra Pradesh) - Auditor
- Lukhdhirji Engineering College, Morbi, (Gujrat) - Auditor
- University College of Engineering, Kakatiya University, Kothagudem, (Andhra Pradesh) - Auditor
- Muzaffarpur Institute of Technology, Muzaffarpur (Bihar) - Mentor
- Government Engineering College, Bilaspur (Chatisgarh) - Mentor
- Acting as a member of Board of Studies of General Engineering of SRT University Nanded.
- Acting as a member of Board of Studies of Electrical Engineering of University of Bombay, Mumbai.
- Acted as a member of Board of Studies of SRTMU, Nanded
- Acted as a member of Faculty of Engineering of SRTMU, Nanded
- Acted as a member of Board of Studies of Pune University
- Acted as a member of Board of Studies of North Maharashtra University
- Started following courses for M. E. (Instrumentation), Dept. of Instrumentation, SGGS college of Engg. and Tech., Nanded
 - Digital Image Processing
 - Estimation and Identification
 - Modeling and Simulation
- Developed Advanced Digital Signal Processing Laboratory
- Reviewer of reputed International Journals like IEEE Transaction on Image Processing, Pattern Recognition Letters etc.
- Acting as a member of Academic Advisory Body of Bhivrabai College of Engineering and Research, Pune

16. Personal Details:

Date of Birth : March 5, 1962.
 Sex : Male.
 Nationality : Indian.
 Marital Status : Married.
 Languages Known : English, Hindi and Marathi.
 Permanent Address : 12, Lokmanya Apparments,
 Tilak Nagar, Nanded – 431 605 (MS),
 India.
 Hobbies : Swimming and Reading

17. References:

- Prof. Ajoy Kumar Ray, Director, Indian Institute of Engineering Science and Technology, Shibpur, Howrah-711103 (WB), India. e-mail- ajoy_ray2004@yahoo.com, mobile: +91-9434004711.
- Prof. V. M. Gadre, Professor Department of Electrical Engg. I. I. T., Bombay, Powai, Mumbai-400076, (MS), India. e-mail- vmgadre@ee.iitb.ac.in, mobile: +91-9819007426.
- Prof. L. M. Waghmare, Director, Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded (MS), INDIA, email:- director@sggs.ac.in, mobile: +91-9822663185.

Place: Nanded

Date: October 13, 2017

Dr. Raghunath S. Holambe