

## Curriculum Vitae

**Dr. Ram Bilas Pachori**, FIET (UK), FIETE (India), FIEI (India), SMIEEE (USA), PMACM (USA)

Professor, Department of Electrical Engineering  
Indian Institute of Technology Indore  
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### Work Experience:

- Professor, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India from 18 December, 2017 to present. (Also Associated with Center for Advanced Electronics)
- Visiting Professor, Faculty of Information & Communication Technology, University of Malta, Malta from 26 June, 2023 to 29 July, 2023.
- Visiting Professor, Department of Computer Engineering, Modeling, Electronics and Systems Engineering, University of Calabria, Rende, Italy from 25 July, 2023 to 27 July, 2023.
- Visiting Professor, Neural Dynamics of Visual Cognition Lab, Free University of Berlin, Germany from 15 July, 2022 to 14 September, 2022.
- Guest Faculty, Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar, India, November-December, 2021.  
*Courses: Signals and Networks, Principle of Signals and Systems.*
- Visiting Professor, School of Medicine, Taylor's University, Subang Jaya, Malaysia, from 01 December, 2018 to 30 November, 2019.
- Associate Professor, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India from 27 September, 2013 to 17 December, 2017.
- Visiting Scholar, Intelligent Systems Research Centre, School of Computing and Intelligent Systems, Ulster University, Londonderry, UK from 01 December, 2014 to 31 December, 2014.
- Assistant Professor, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India from 02 December, 2009 to 26 September, 2013.
- Assistant Professor, Communication Research Center, International Institute of Information Technology, Hyderabad, India from 01 April, 2008 to 30 November, 2009.
- Post-Doctoral Fellow, Charles Delaunay Institute, University of Technology of Troyes, Troyes, France from 01 April, 2007 to 31 March, 2008.  
*Topic: Development of new methodologies for human postural control.*

### Research Interests:

- Signal and Image Processing
- Biomedical Signal Processing
- Non-stationary Signal Processing
- Speech Signal Processing
- Brain-Computer Interface
- Machine Learning
- Artificial Intelligence (AI) and Internet of Things (IoT) in Healthcare

### Education:

- Doctor of Philosophy (Ph.D.) in Signal Processing from Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur, India, April, 2008.

*Topic: Methods based on Fourier-Bessel representation for analysis of non-stationary signals.*

- Master of Technology (M.Tech.) in Signal Processing from Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur, India, April, 2003.  
*Topic: Time-frequency analysis of multi-component non-stationary signals.*
- Bachelor of Engineering (B.E.) with Honors in Electronics and Communication Engineering from Rajiv Gandhi Pradyogiki Vishwavidyalaya, Bhopal, India, June, 2001.

### Google Scholar Profile:

- Citations: **16311**, h-index: **69**, i10 index: **220** on 25 April, 2024.  
(Link: <https://scholar.google.co.in/citations?user=j3iJOWMAAAAJ&hl=en>)

### Sponsored and Consultancy Projects:

#### Completed:

Serial No.	Project Title	Sponsoring/ Funding Agency	Amount	Role	Duration
1	Automated classification system for human emotions based on physiological signals	Council of Scientific and Industrial Research (CSIR)	Rs. 23,96,160	PI	Three years (March, 2021- March, 2024)
2	Implementation of Indo-South Korea Joint Network Center for Environmental Cyber Physical Systems	Department of Science and Technology, Government of India & Ministry of Science and ICT, Republic of Korea	Rs. 1,17,84,720	Investigator	Three years (January, 2021- January, 2024)
3	Indo-Norwegian collaboration in intelligent offshore mechatronics systems (INMOST)	Norwegian Research Council (RCN) under INTPA RT Scheme	56,20,000 NOK (42, 000 NOK for IIT Indore)	Co-PI	Three years (April, 2020- April, 2023)
4	Real-time detection of diseases in paddy/soyabean using via memristive crossbar array-based image	Center for Rural Development and Technology (CRDT), IIT Indore	Rs. 1,50,000	Co-PI	Eleven months (September, 2022-March, 2023, June-September, 2023)
5	Advanced nonlinear filtering using improved quadrature rule	Science and Engineering Research Board (SERB)	Rs. 33,00,000	Co-PI	Three years (February, 2020-August, 2023)
6	Detection of human brain disorders using novel machine learning approaches	Council of Scientific and Industrial Research (CSIR)	Rs. 31,26,240	Co-PI	Three years (January, 2018- January, 2021)
7	A multi-class computer-aided system for diagnosis of cardiovascular disease using non-invasively measured cardiac signals	TEQIP Collaborative Research Scheme, National Project Implementation Unit (NPIU), Government of India	Rs. 10,46,000	Co-PI	June, 2019- September, 2020
8	Development of a portable acoustic sensor based canine pregnancy detection system and biomarker-based canine pregnancy test kit	Department of Biotechnology (DBT)	Rs. 30,00,000	Co-PI	Two years (March, 2018- March, 2020)

9	Analysis of coronary artery disease by signal processing through MATLAB	Professional Group of Conferences (PGC), Visakhapatnam, India	Rs. 2,00,200	Consultant	20 months (August, 2017-March, 2019)
10	Development of new methodologies for analysis and classification of epileptic seizure EEG signals	Council of Scientific and Industrial Research (CSIR)	Rs. 19,80,200	PI	Three years (December, 2015-December, 2018)
11	Analysis and classification of EEG signals based on nonlinear and non-stationary signal models  <i>Awarded Excellent grade by DST Expert Committee in the review of the project</i>	Science and Engineering Research Board (SERB), Department of Science & Technology (DST)	Rs. 14,95,000	PI	Three years (February, 2012-February, 2015)

### Ongoing:

Serial No.	Project Title	Sponsoring/ Funding Agency	Amount	Role	Duration
1	Implementable pacemaker chip (iPACE-CHIP)	Chip to Startup (C2S) Programme, Ministry of Electronics and Information Technology (MeitY), Government of India	Rs. 4,80,00,000 (Rs. 96,00,000 for IIT Indore)	Co-CI	Five years (May 2023-May 2028)
2	Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services	Grant in aid, Department of Health Research, Indian Council of Medical Research (ICMR)	Rs. 1,23,49,960 (Rs. 63,29,478 for IIT Indore)	PI	Two years (December, 2021-June, 2024)
3	Fundus image based diagnosis and clinical decision support system for early prediction of glaucoma and grading of diabetic retinopathies  (Collaborative Project)	Amrit Grand Challenge-Jancare by Biotechnology Industry Research Assistance Council (BIRAC), Grand Challenges India (GCI)-BIRAC, National Association of Software and Service Companies (NASSCOM) through IKP Knowledge Park, Hyderabad, India	10 Lakhs	Co-PI	Eight months (December, 2023-August, 2024)

### Conference and course grants:

1. Global Initiative for Academic Networks (GIAN), IIT Kharagpur, India, GIAN course on Health AI: Artificial Intelligence (AI) applications in Healthcare, 10-14 January, 2022, IIT Indore. (Rs. 5.68 Lakhs)
2. Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Conference grant for International Conference on Machine Intelligence and Signal Processing (MISP 2017), 22-24 December, 2017, IIT Indore. (Rs. 1 Lakh)
3. Council of Scientific and Industrial Research (CSIR), Conference grant for International Conference on Machine Intelligence and Signal Processing (MISP 2017), 22-24 December, 2017, IIT Indore. (Rs. 1 Lakh)
4. Travel grant, Department of Science and Technology (DST) for attending the IEEE Signal Processing and Signal Processing Education workshop, 2015.

5. Travel grant, Council of Scientific & Industrial Research (CSIR) for attending the 10th International Conference on Information Science, Signal Processing and their Applications (ISSPA 2010), 2010.
6. Travel grant, Department of Science and Technology (DST) for attending the European Signal Processing Conference (EUSIPCO), 2008.
7. Travel grant, Centre for Cooperation in Science and Technology among Developing Societies (CSTDS) for attending the European Signal Processing Conference (EUSIPCO), 2008.
8. Travel grant, Council of Scientific & Industrial Research (CSIR) for attending the IEEE DSP workshop, 2006.

## Publications:

### Patents:

1. R.B. Pachori, M.S. Manikandan, and J. Varghese V, Apparatus, systems and methods for quality-aware energy-efficient PPG signal analysis and cardiovascular disease diagnosis and prediction, *Indian Patent*, Patent application no. 202221075607, Filed: 26 December, 2022, Published: 13 October, 2023.
2. R.B. Pachori, M.S. Manikandan, and N. Phukan, Systems and methods for contextual information aware physiological parameter analysis and intelligent human disease prediction, *Indian Patent*, Patent application no. 202221075605, Filed: 26 December, 2022, Published: 13 October, 2023.
3. R.B. Pachori, M.S. Manikandan, and J. Varghese V, Systems and methods for quality-aware energy-efficient respiration rate estimation from photoplethysmography (PPG) signal, *Indian Patent*, Patent application no. 202221075071, Filed: 23 December, 2022, Published: 13 October, 2023.
4. R.B. Pachori, M.S. Manikandan, and F.A. Razak, Apparatus and methods for noise-aware and energy-efficient pulse rate variability and heart rate variability analysis, *Indian Patent*, Patent application no. 202221075073, Filed: 23 December, 2022, Published: 13 October, 2023.
5. R.B. Pachori, M.S. Manikandan, and A. Mondal, Apparatus and methods for noise-aware energy-efficient ECG signal analysis and cardiovascular disease diagnosis and prediction, *Indian Patent*, Patent application no. 202221075072, Filed: 23 December, 2022, Published: 13 October, 2023.
6. R.B. Pachori and K. Das, System and method for predicting Parkinson's disease, *Indian Patent*, Patent application no. 202221027358, Filed: 12 May, 2022, Published: 26 May, 2023.
7. D. Nayak, R.B. Pachori, G. Banda, S.D. Choudhari, and S. Neema, A remote pregnancy detection and monitoring device for mammal with multiple fetuses, *Indian Patent*, Patent application no. 202121016255, Filed: 07 April, 2021, Published: 14 October, 2022.
8. B. Fatimah, P. Singh, A. Singhal, and R.B. Pachori, System and method for biometric identification using ECG signals, *Australian Patent*, Patent no. 2021106695, Filed: 24 August, 2021, Granted: 23 December, 2021.

### Books:

1. R.K. Tripathy and R.B. Pachori, Artificial intelligence enabled signal processing based models for neural information processing, *CRC Press*, June, 2024, ISBN: 9781032529301.
2. R.K. Tripathy and R.B. Pachori, Signal processing driven machine learning techniques for cardiovascular data processing, *Elsevier*, June, 2024, ISBN: 9780443141416.
3. R.B. Pachori, Time-frequency analysis techniques and their applications, *CRC Press*, May, 2023, ISBN: 9781032392974.
4. D.S. Sisodia, L. Garg, R.B. Pachori, and M. Tanveer, Machine intelligence techniques for data analysis and signal processing: Proceedings of the 4th international conference MISP 2022, Volume 1, *Springer*, May, 2023, ISBN: 9789819900848.
5. R.K. Chaurasiya, D.K. Agrawal, and R.B. Pachori, AI-enabled smart healthcare using biomedical signals, *IGI Global*, May, 2022, ISBN: 9781668439470.
6. D. Gupta, R.S. Goswami, S. Banerjee, M. Tanveer, and R.B. Pachori, Pattern recognition and data analysis with applications, *Springer*, September, 2022, ISBN: 9789811915192.

7. S.K. Pani, S.K. Singh, R.B. Pachori, L. Garg, and X. Zhang, Intelligent data analytics for terror threat prediction: Architectures, methodologies, techniques and applications, *Wiley-Scrivener*, January, 2021, ISBN: 9781119711094.
8. D.S. Sisodia, R.B. Pachori, and L. Garg, Handbook of research on advancement of artificial intelligence in healthcare engineering, *IGI Global*, February, 2020, ISBN: 9781799821205.
9. M. Tanveer and R.B. Pachori, Machine intelligence and signal analysis, *Advances in Intelligent Systems and Computing*, Springer, August, 2019, ISBN: 9789811309236.
10. R.B. Pachori and P. Sircar, Non-stationary signal analysis: Methods based on Fourier-Bessel representation, *LAP LAMBERT Academic Publishing*, Saarbrucken, Germany, December, 2010, ISBN: 9783843388078.

#### Book Chapters:

1. S.V. Bhalerao, S.S. Ainwad, and R.B. Pachori, FBSE based automated classification of motor imagery EEG signals in brain-computer interface, *Handbook of Neural Engineering, Volume 2: Brain-Computer Interfaces*, Elsevier, 2024.
2. H.K. Damodaran, R.K. Tripathy, and R.B. Pachori, Time-frequency domain deep representation learning for detection of heart valve diseases using PCG recordings for IoT-based smart healthcare applications, *Signal Processing Driven Machine Learning Techniques for Cardiovascular Data Processing*, Elsevier, 2024.
3. N. Muralidharan, S. Gupta, A. Gade, M.R. Prusty, R.K. Tripathy, and R.B. Pachori, Two-dimensional automatic SSA domain multi-modal deep neural network for detection of COVID19 from lung ultrasound images, *Clinical Practice and Unmet Challenges in AI-Enhanced Healthcare Systems*, IGI Global, 2024.
4. K. Das, A. Mondal, N. Phukan, and R.B. Pachori, Multivariate adaptive signal decomposition techniques and their applications to EEG signal processing: An introduction, *Handbook of Neural Engineering, Vol. 1: Signal Processing Strategies*, Elsevier, 2024.
5. A. Patwari, S. Dash, R.K. Tripathy, G. Panda, and R.B. Pachori, Ramanujan filter-bank domain deep CNN for detection of atrial fibrillation using 12-lead ECG, *Signal Processing Driven Machine Learning Techniques for Cardiovascular Data Processing*, Elsevier, 2024.
6. S. Dash, R.K. Tripathy, and R.B. Pachori, Detection of stress levels during Stroop Color-Word Test using multivariate projection-based MUSIC domain EWT of multichannel EEG signal and machine learning, *Artificial Intelligence Enabled Signal Processing based Models for Neural Information Processing*, CRC Press, 2024.
7. K. Das, V.K. Singh, and R.B. Pachori, Introduction to EEG signal recording and processing, *Artificial Intelligence Enabled Signal Processing based Models for Neural Information Processing*, CRC Press, 2024.
8. S.V. Bhalerao and R.B. Pachori, Automatic detection of motor imagery EEG signals using swarm decomposition for robust BCI systems, *Human-Machine Interface Technology Advancements and Applications*, CRC Press, 2023.
9. P. Gaur, V. Malaviya, A. Gupta, G. Bhatia, B. Mishra, R.B. Pachori, and D. Sharma, An optimal model selection for COVID 19 disease classification, *Biomedical Signal and Image Processing with Artificial Intelligence*, EAI/ Springer, September, 2022.
10. A. Nalwaya, K. Das, and R.B. Pachori, Emotion identification from TQWT based EEG rhythms, *AI-Enabled Smart Healthcare Using Biomedical Signals*, IGI Global, May, 2022.
11. S.I. Khan and R.B. Pachori, Empirical wavelet transform based framework for diagnosis of epilepsy using EEG signals, *AI-Enabled Smart Healthcare Using Biomedical Signals*, IGI Global, May, 2022.
12. A. Ullal and R.B. Pachori, Variational mode decomposition based automated diagnosis method for epilepsy using EEG signals, *Deep Learning, Machine Learning and IoT in Biomedical and Health Informatics Techniques and Applications, Biomedical Engineering*, CRC Press, February, 2022.
13. P.K. Chaudhary and R.B. Pachori, Denoising of biomedical images using two-dimensional Fourier-Bessel series expansion based empirical wavelet transform, *Assistive Technology Intervention in Healthcare Publisher*, CRC, Taylor & Francis Group, UK, December, 2021.
14. R.R. Sharma, P. Meena, and R.B. Pachori, Enhanced time-frequency representation based on variational mode decomposition and Wigner-Ville distribution, *Recent Trends in Image and Signal Processing in Computer Vision*, Springer, March, 2020.
15. R. Singh and R.B. Pachori, Iterative filtering based automated method for detection of normal and ALS EMG signals, *Recent Trends in Image and Signal Processing in Computer Vision*, Springer, March, 2020.
16. R. Sharma, P. Sircar, and R.B. Pachori, Automated seizures classification using deep neural network based on autoencoder, *Advancement of Artificial Intelligence in Healthcare Engineering*, IGI Global, March, 2020.



17. D. Bhati, A. Raikwar, R.B. Pachori, and V.M. Gadre, Three channel wavelet filter banks with minimal time frequency spread for classification of seizure-free and seizure EEG signals, *Advancement of Artificial Intelligence in Healthcare Engineering*, IGI Global, February, 2020.
18. R.B. Pachori and V. Gupta, Biomedical engineering fundamentals, *Intelligent Internet of Things: From Device, to Fog, and Cloud*, Springer, January, 2020.
19. R. Sharma, P. Sircar, and R.B. Pachori, Computer-aided diagnosis of epilepsy using bispectrum of EEG signals, *Application of Biomedical Engineering in Neuroscience*, Springer, November, 2019.
20. V. Gupta, A. Bhattacharyya, and R.B. Pachori, Automated identification of epileptic seizures from EEG signals using FBSE-EWT method, *Biomedical Signal Processing-Advances in Theory, Algorithms and Applications*, Springer, November, 2019.
21. D. Bhati, R.B. Pachori, M. Sharma, and V.M. Gadre, Automated detection of seizure and nonseizure EEG signals using two-band biorthogonal wavelet filter banks, *Biomedical Signal Processing-Advances in Theory, Algorithms and Applications*, Springer, November, 2019.
22. A. Agrawal, L. Garg, E.E. Audu, R.B. Pachori, and J.H.G. Dauwels, Early detection of epileptic seizures based on scalp EEG signals, *Medical imaging: Artificial Intelligence, Image Recognition, and Machine Learning Techniques*, CRC Press, September, 2019.
23. R.R. Sharma, M. Kumar, and R.B. Pachori, Classification of EMG signals using eigenvalue decomposition based time-frequency representation, *Biomedical and Clinical Engineering for Healthcare Advancement*, IGI Global, July, 2019.
24. R. Sharma and R.B. Pachori, Automated classification of focal and non-focal EEG signals based on bivariate empirical mode decomposition, *Biomedical Signal and Image Processing in Patient Care*, IGI Global, August, 2017.
25. R.B. Pachori, R. Sharma, and S. Patidar, Classification of normal and epileptic seizure EEG signals based on empirical mode decomposition, *Complex System Modelling and Control through Intelligent Soft Computations, Studies in Fuzziness and Soft Computing*, Springer, November, 2014.
26. S. Patidar and R.B. Pachori, Classification of heart disorders based on tunable-Q wavelet transform of cardiac sound signals, *Chaos Modelling and Control Systems Design, Studies in Computational Intelligence*, Springer, January, 2014.
27. V. Bajaj and R.B. Pachori, Detection of human emotions using features based on the multiwavelet transform of EEG signals, *Brain-Computer Interfaces: Current Trends and Applications*, Intelligent Systems Reference Library, Springer, January, 2014.

### Journal Papers:

1. S.V. Bhalerao and R.B. Pachori, Automated classification of cognitive visual objects using multivariate swarm sparse decomposition from multichannel EEG-MEG signals, *IEEE Transactions on Human-Machine Systems*, In press, 2024.
2. D. Das, D.R. Nayak, and R.B. Pachori, AES-Net: An adapter and enhanced self-attention guided network for multi-stage glaucoma classification using fundus images, *Image and Vision Computing*, In press, 2024.
3. A. Mondal, M.S. Manikandan, and R.B. Pachori, Automatic ECG signal quality determination using CNN with optimal hyperparameters for quality-aware deep ECG analysis systems, *IEEE Sensors Journal*, In press, 2024..
4. K. Jyoti, M.K. Gautam, S. Kumar, S. Sushma, R.B. Pachori, and S Mukherjee, Memristive crossbar array-based computing framework via DWT for biomedical image enhancement, *IEEE Transactions on Emerging Topics in Computing*, In press, 2024.
5. K. Radha, M. Bansal, and R.B. Pachori, Speech and speaker recognition using raw waveform modeling for adult and children's speech: A comprehensive review, *Engineering Applications of Artificial Intelligence*, vol. 131, 107661, pp. 1-23, May, 2024.
6. V.K. Kashyap, R.R. Sharma, and R.B. Pachori, Complex flexible analytic wavelet transform for UAV state identification using RF signal, *IEEE Transactions on Aerospace and Electronic Systems*, vol. 60, issue 2, pp. 1471-1481, April, 2024.
7. K. Radha, M. Bansal, and R.B. Pachori, Automatic speaker and age identification of children from raw speech using SincNet over ERB scale, *Speech Communication*, vol. 159, 103069, pp. 1-12, April, 2024.
8. K. Das and R.B. Pachori, Multivariate iterative filtering based SSVEP detection in mobile environment for brain-computer interface application, *IEEE Sensors Letters*, vol. 8, issue 4, 6003604, April, 2024.

9. A. Mondal, M.S. Manikandan, and R.B. Pachori, Fast CNN based electrocardiogram signal quality assessment using Fourier magnitude spectrum for resource-constrained ECG diagnosis devices, *IEEE Sensors Letters*, vol. 8, issue 4, 7002004, April, 2024.
10. N. Phukan, M.S. Manikandan, and R.B. Pachori, Fast and resource efficient atrial fibrillation detection framework for long term health monitoring devices, *IEEE Sensors Letters*, vol. 8, issue 4, 7001704, April, 2024.
11. A. Anuragi, D.S. Sisodia, and R.B. Pachori, Mitigating the curse of dimensionality using feature projection techniques on electroencephalography datasets: An empirical review, *Artificial Intelligence Review*, vol. 57, 75, pp. 1-28, February, 2024.
12. A.S.S. Reddy and R.B. Pachori, Multivariate dynamic mode decomposition for automatic imagined speech recognition using multichannel EEG signals, *IEEE Sensors Letters*, vol. 8, issue 2, 6001604, February, 2024.
13. A. Nalwaya and R.B. Pachori, Fourier-Bessel domain adaptive wavelet transform based method for emotion identification from EEG signals, *IEEE Sensors Letters*, vol. 8, issue 2, 7000904, pp. 1-4, February, 2024.
14. S.V. Bhalerao and R.B. Pachori, Clustering sparse swarm decomposition for automated recognition of upper limb movements from non-homogeneous cross-channel EEG signals, *IEEE Sensors Letters*, vol. 8, issue 1, 7000804, pp. 1-4, January, 2024.
15. A. Nishad and R.B. Pachori, Classification of epileptic electroencephalogram signals using tunable-Q wavelet transform based filter-bank, *Journal of Ambient Intelligence and Humanized Computing*, vol. 15, pp. 877-891, January, 2024.
16. A. Nishad, R.B. Pachori, and U.R. Acharya, Application of TQWT filter-bank for sleep apnea screening using ECG signals, *Journal of Ambient Intelligence and Humanized Computing*, vol. 15, pp. 893-904, January, 2024.
17. L. Dora, S. Agrawal, R. Panda, and R.B. Pachori, Pathological brain classification using multiple kernel-based deep convolutional neural network, *Neural Computing and Applications*, vol. 36, pp. 747-756, January, 2024.
18. S. Mahapatra, S. Agrawal, P.K. Mishro, R. Panda, L. Dora, and R.B. Pachori, A review on retinal blood vessel enhancement and segmentation techniques for color fundus photography, *Critical Reviews in Biomedical Engineering*, vol. 52, issue 01, pp. 41-69, 2024.
19. N. Phukan, M.S. Manikandan, and R.B. Pachori, AFibri-Net: A lightweight convolution neural network based atrial fibrillation detector, *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 70, issue 12, pp. 4962-4974, December, 2023.
20. R. Krishna, K. Das, H.K. Meena, and R.B. Pachori, Spectral graph wavelet transform based feature representation for automated classification of emotions from EEG signal, *IEEE Sensors Journal*, vol. 23, issue 24, pp. 31229-31236, December, 2023.
21. V.G. Yamalakonda, R.B. Pachori, B. Appina, and A.K. Singh, Embedded cubature Kalman filter for glucose and insulin concentration estimation using noisy glucose sensor data and multiple meal disturbances, *IEEE Sensors Letters*, vol. 7, issue 12, 7007204, December, 2023.
22. G. Kumar, A.K. Naik, R.B. Pachori, R. Swaminathan, and A.K. Singh, Improved Gaussian filtering for handling concurrent delayed and missing measurements, *Asian Journal of Control*, vol. 25, issue 6, pp. 4244-4256, November, 2023.
23. N.P. Guhan Seshadri, B.K. Singh, and R.B. Pachori, EEG based functional brain network analysis and classification of dyslexic children during sustained attention task, *IEEE Transactions on Neural Systems & Rehabilitation Engineering*, vol. 31, pp. 4672-4682, November, 2023.
24. D.S. Ramteke, A. Parey, and R.B. Pachori, A new automated classification framework for gear fault diagnosis using Fourier-Bessel domain based empirical wavelet transform, *Machines*, vol. 11 (12), 1055, pages 17, November, 2023.
25. R. Dubey, R.R. Sharma, A. Upadhyay, and R.B. Pachori, Automated variational nonlinear chirp mode decomposition for bearing fault diagnosis, *IEEE Transactions on Industrial Informatics*, vol. 19, issue 11, pp. 10873-10882, November, 2023.
26. D. Das, D.R. Nayak, and R.B. Pachori, CA-Net: A novel cascaded attention-based network for multi-stage glaucoma classification using fundus images, *IEEE Transactions on Instrumentation & Measurement*, Vol. 72, 2531110, pp. 1-10, October, 2023.
27. A.K.R. Poreddy, R.B.C. Ganeswaram, B. Appina, P. Kokil, and R.B. Pachori, No-reference virtual reality image quality evaluator using global and local natural scene statistics, *IEEE Transactions on Instrumentation and Measurement*, vol. 72, issue 5029816, pp. 1-16, October, 2023.
28. V.G. Yamalakonda, G. Kumar, R.B. Pachori, and A.K. Singh, Oscillatory Kalman filtering for Duffing, Coulomb, and Van der Pol oscillators, *Signal Processing*, vol. 211, 109091, pp. 1-9, October, 2023.

29. A. Gade, D.K. Dash, T.M. Kumari, S.K. Ghosh, R.K. Tripathy, and R.B. Pachori, Multiscale analysis domain interpretable deep neural network for detection of breast cancer using thermogram images, *IEEE Transactions on Instrumentation and Measurement*, vol. 72, 4011213, pp. 1-13, September, 2023.
30. K. Das and R.B. Pachori, Electroencephalogram based motor imagery brain computer interface using multivariate iterative filtering and spatial filtering, *IEEE Transactions on Cognitive and Developmental Systems*, vol. 15, issue 03, pp. 1408-1418, September, 2023.
31. A. Bhattacharyya, V. Aarushi, R. Ranta, and R.B. Pachori, Ocular artifacts elimination from multivariate EEG signal using frequency-spatial filtering, *IEEE Transactions on Cognitive and Developmental Systems*, vol. 15, issue 03, pp. 1547-1559, September, 2023.
32. N. Ghassemi, A. Shoeibi, M. Khodatars, J. Heras, A. Rahimi, A. Zare, Y. Zhang, R.B. Pachori, and J. M. Gorriz, Automated diagnosis of COVID-19 from CT images using CycleGAN and transfer learning, *Applied Soft Computing*, vol. 144, 110511, pp. 1-15, September, 2023.
33. K. Atrey, B.K. Singh, N.K. Bodhey, and R.B. Pachori, Mammography and ultrasound based dual modality classification of breast cancer using a hybrid deep learning approach, *Biomedical Signal Processing and Control*, vol. 86, part A, 104919, pp. 1-15, September, 2023.
34. Y.S. Upendra Vishwanath, S. Esakkirajan, B. Keerthiveena, and R.B. Pachori, A generalized classification framework for power quality disturbances based on synchrosqueezed wavelet transform and convolutional neural networks, *IEEE Transactions on Instrumentation & Measurement*, vol. 72, 2525313, pp. 1-13, August, 2023.
35. P. Saideepthi, P. Gaur, A. Chowdhury, and R.B. Pachori, Sliding window along with EEGNet based prediction of EEG motor imagery, *IEEE Sensors Journal*, vol. 23, issue 15, pp. 17703-17713, August, 2023.
36. S. Dash, P. Gajbhiye, P. Sawangjai, G. Sawadwuthikul, T. Sudhawiyangkul, R.K. Tripathy, and R.B. Pachori, Dyadic boundary points based empirical wavelet transform for the elimination of eye movement and eye blink-based ocular artifacts from EEG signals, *Biomedical Signal Processing and Control*, vol. 85, 104996, pp. 1-13, August, 2023.
37. R.K. Tripathy, D.K. Dash, S.K. Ghosh, and R.B. Pachori, Detection of different stages of anxiety from single channel wearable ECG sensor signal using Fourier-Bessel domain adaptive wavelet transform, *IEEE Sensors Letters*, vol. 7, issue 5, 7002304, pp. 1-4, May, 2023.
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54. P. Gaur, R.B. Pachori, H. Wang, and G. Prasad, An empirical mode decomposition based filtering method for classification of motor-imagery EEG signals for enhancing brain-computer interface, *The International Joint Conference on Neural Networks*, Killarney, Ireland, 12-17 July, 2015.
55. R.B. Pachori, Automatic diagnosis of epilepsy using non-stationary signal decomposition based methods, *International Conference on Significant Advances in Biomedical Engineering*, Philadelphia, USA, 27-29 April, 2015.
56. A. Mathur, N. Choudhary, A. Upadhyay, and R.B. Pachori, Detection of glottal closure instants from voiced speech signals using the Fourier-Bessel series expansion, *4th IEEE International Conference on Communication and Signal Processing*, Melmaruvathur, India, 02-04 April, 2015.
57. M. Shah, S. Saurav, R. Sharma, and R.B. Pachori, Analysis of epileptic seizure EEG signals using reconstructed phase space of intrinsic mode functions, *9th IEEE International Conference on Industrial and Information Systems*, 15-17 December, 2014, Gwalior, India.
58. S. Patidar, R.B. Pachori, and N. Garg, Detection of septal defects from cardiac sound signals using tunable-Q wavelet transform, *IEEE International Conference on Digital Signal Processing*, 20-23 August, 2014, Hong Kong.
59. T.S. Kumar, V. Kanhangad, and R.B. Pachori, Classification of seizure and seizure-free EEG signals using multi-level local patterns, *IEEE International Conference on Digital Signal Processing*, 20-23 August, 2014, Hong Kong.
60. R. Sharma, R.B. Pachori, and S. Gautam, Empirical mode decomposition based classification of focal and non-focal EEG signals, *IEEE International Conference on Medical Biometrics*, 30 May-01 June, 2014, Shenzhen, China.
61. V. Bajaj and R.B. Pachori, Human emotion classification from EEG signals using multiwavelet transform, *IEEE International Conference on Medical Biometrics*, 30 May-01 June, 2014, Shenzhen, China.
62. P.S. Rathore and R.B. Pachori, Instantaneous fundamental frequency estimation of speech signals using DESA in low-frequency region, *IEEE International Conference on Signal Processing and Communication*, pp. 470-473, 12-14 December, 2013, Noida, India.

63. R. Bodade, R.B. Pachori, A. Gupta, P. Kanani, and D. Yadav, A novel approach for automated skew correction of vehicle number plate using principal component analysis, *IEEE International Conference on Emerging Trends in Communication, Control, Signal Processing and Computing Applications*, 10-11 October, 2013, Bangalore, India.
64. P. Jain and R.B. Pachori, GCI identification from voiced speech using the eigen value decomposition of Hankel matrix, *IEEE 8th International Symposium on Image and Signal Processing and Analysis*, pp. 371-376, 04-06 September, 2013, Trieste, Italy.
65. P. Kanani, A. Gupta, D. Yadav, R. Bodade, and R.B. Pachori, Vehicle license plate localization using wavelets, *IEEE Conference on Information and Communication Technologies*, 11-12 April, 2013, Thuckalay, India.
66. S. Patidar and R.B. Pachori, A continuous wavelet transform based method for detecting heart valve disorders using phonocardiograph signals, *International Conference on Convergence and Hybrid Information Technology*, CCIS 310, pp. 513-520, 23-25 August, 2012, Daejeon, South Korea.
67. V. Bajaj and R.B. Pachori, Separation of rhythms of EEG signals based on Hilbert-Huang transformation with application to seizure detection, *International Conference on Convergence and Hybrid Information Technology*, LNCS 7425, pp. 493-500, 23-25 August, 2012, Daejeon, South Korea. (Best Paper Award)
68. V. Bajaj and R.B. Pachori, EEG signal classification using empirical mode decomposition and support vector machine, *International Conference on Soft Computing for Problem Solving*, AISC 131, pp. 623-635, 20-22 December, 2011, Roorkee, India.
69. V. Bajaj and R.B. Pachori, Application of the sample entropy for discrimination between seizure and seizure-free EEG signals, *5th Indian International Conference on Artificial Intelligence*, pp. 1232-1247, 14-16 December, 2011, Tumkur, India.
70. P. Jain and R.B. Pachori, A new approach for glottal closure instants detection from speech signals, *5th Indian International Conference on Artificial Intelligence*, pp. 1216-1231, 14-16 December, 2011, Tumkur, India.
71. R.B. Pachori and D. Hewson, Identification of time-varying effects of sensory perturbations for postural stability analysis, *5th Indian International Conference on Artificial Intelligence*, pp. 1280-1292, 14-16 December, 2011, Tumkur, India.
72. A. Parey and R.B. Pachori, Modified empirical mode decomposition process for improved fault diagnosis, *8th IFToMM International Conference on Rotor Dynamics*, pp. 261-265, 12-15 September, 2010, Seoul, Korea.
73. R.B. Pachori and S.V. Gangashetty, AM-FM model based approach for detection of glottal closure instants, *IEEE International Conference on Information Science, Signal Processing and their Applications*, pp. 266-269, 10-13 May, 2010, Kuala Lumpur, Malaysia.
74. R.B. Pachori and S.V. Gangashetty, Detection of voice onset time using FB expansion and AM-FM model, *IEEE International Conference on Information Science, Signal Processing and their Applications*, 149-152, 10-13 May, 2010, Kuala Lumpur, Malaysia.
75. S. Chhabra, R. Bajaj, R.B. Pachori, and R.N. Biswas, Features based on Fourier-Bessel expansion for application of speaker identification system, *Proceedings Indian Conference for Academic Research by Undergraduate Students*, 26-28 March, 2010, IIT Kanpur, India.
76. P. Sircar, R.B. Pachori, and R. Kumar, Analysis of rhythms of EEG signals using orthogonal polynomial approximation, *ACM International Conference on Convergence and Hybrid Information Technology*, pp. 176-180, 27-29 August, 2009, Daejeon, South Korea.
77. R.B. Pachori, D. Hewson, H. Snoussi, and J. Duchne, Postural time-series analysis using empirical mode decomposition and second-order difference plots, *IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 537-540, 19-24 April, 2009, Taipei, Taiwan.
78. R.B. Pachori, D. Hewson, H. Snoussi, and J. Duchene, Analysis of center of pressure signals using empirical mode decomposition and Fourier-Bessel expansion, *IEEE Tencon Conference*, Article no. 4766596, 18-21 November, 2008, Hyderabad, India.
79. R.B. Pachori and P. Sircar, Time-frequency analysis using time-order representation and Wigner distribution, *IEEE Tencon Conference*, Article no. 4766782, 18-21 November, 2008, Hyderabad, India.
80. R.B. Pachori and P. Sircar, Modeling of multicomponent AM-FM signals using FB expansion and linear TVAR process, *16th European Signal Processing Conference*, 25-29 August, 2008, Lausanne, Switzerland.
81. R.B. Pachori and P. Sircar, Speech analysis using Fourier-Bessel expansion and discrete energy separation algorithm, *IEEE Digital Signal Processing Workshop and Workshop on Signal Processing Education*, pp. 423-428, 24-27 September, 2006, Wyoming, USA.
82. R.B. Pachori and P. Sircar, Analysis of multicomponent nonstationary signals using Fourier-Bessel transform and Wigner distribution, *14th European Signal Processing Conference*, 04-08 September, 2006, Florence, Italy.

83. J. Kumar and R.B. Pachori, A novel technique for merging of multisensor and defocussed images using multiwavelets, *IEEE Tencon Conference*, pp. 1733-1738, 22-24 November, 2005, Melbourne, Australia.
84. R.B. Pachori and P. Sircar, A novel technique to reduce cross terms in the squared magnitude of the wavelet transform and the short time Fourier transform, *IEEE International Workshop on Intelligent Signal Processing*, pp. 217-222, 01-03 September, 2005, Faro, Portugal.
85. R.B. Pachori and P. Sircar, Modeling of time varying AR process using nonlinear energy operator, *IEEE 8th International Symposium on Signal Processing and its Applications*, pp. 643-646, 28-30 August, 2005, Sydney, Australia.
86. R.B. Pachori and P. Sircar, A new technique to reduce the cross terms in Wigner distribution, *11th National Conference on Communications*, pp. 427-431, 28-30 January, 2005, IIT Kharagpur, India.

### Short-Term Courses, Webinars, Workshops, and Conference Organized:

1. Workshop on Advanced signal processing and deep learning techniques for smart health monitoring, 18-19 November, 2023, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India.
2. Workshop on Machine learning for brain signal analysis and classification for computer-aided medical diagnosis, 18 May, 2023, International Congress on Artificial Intelligence in Medical Sciences (AIMS 2023), 17-19 May, 2023, Kish Island, Iran.
3. Workshop on Time-frequency signal processing and applications, 27-29 January, 2023, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India.
4. Workshop on Signal processing and machine learning for biomedical devices, 28-29 October, 2022, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India.
5. GIAN course on Health AI: Artificial intelligence (AI) applications in healthcare, 10-14 Januray, 2022, Indian Institute of Technology Indore, Indore, India (Foreign faculty: Dr. Lalit Garg, University of Malta, Malta).
6. Online short term course on Time-frequency analysis and applications, 17-18 April, 2021, Centre for Advanced Electronics, Indian Institute of Technology Indore, Indore, India.
7. QIP sponsored short term course on Matrix computation and its application to system, signal and control problems, 16-21 February, 2021, Indian Institute of Technology Indore, Indore, India. (with Prof. Niraj K Shukla and Dr. Sk. Safique Ahmad)
8. QIP sponsored short term course on Computational methods in signal processing and machine learning, 14-19 December, 2020, Indian Institute of Technology Indore, Indore, India.
9. TEQIP-III sponsored faculty training on Future skill technologies on artificial intelligence and machine learning, 20-27 November, 2020, Indian Institute of Technology Indore, Indore, India (with Dr. M. Tanveer, Prof. Aruna Tiwari, and Dr. Md. Aquil Khan)
10. TEQIP-III sponsored short term course on Artificial intelligence driven biomedical data analysis for disease diagnosis, 05-10 November, 2020, Indian Institute of Technology Indore, Indore, India. (with Dr. M. Tanveer)
11. A webinar on Time-frequency analysis, 01 November, 2020, Indian Institute of Technology Indore, Indore, India.
12. TEQIP-III sponsored short-term course on Current trends in biomedical signal and image processing, 20-22 October, 2020, Indian Institute of Technology Indore, Indore, India.
13. A webinar on Computer-aided medical diagnosis of heart and brain diseases, 11 October, 2020, Indian Institute of Technology Indore, Indore, India.
14. A webinar on Fourier-Bessel series expansion and its applications in signal processing, 13 September, 2020, Indian Institute of Technology Indore, Indore, India.
15. An online short term course on Signal processing and machine learning methods and their applications, 22-24 August, 2020, Indian Institute of Technology Indore, Indore, India.
16. An online short term course on Signal processing and machine learning techniques for automated fault detection of mechanical systems, 16-17 June, 2020, Indian Institute of Technology Indore, Indore, India (with Prof. A. Parey).
17. Faculty training programme on Data science & analytics, Sponsored by TEQIP-III, MHRD, 02-12 March, 2020, Indian Institute of Technology Indore, Indore, India (with Dr. P. Kar, Dr. M. Tanveer, Prof. A. Dutta, Dr. S. Manna, and Dr. S. Das).
18. TEQIP-III 6-days short term course on Industrial applications of control systems and signal processing, 19-24 August, 2019, Indian Institute of Technology Indore, Indore, India (with Dr. A.K. Singh).

19. Short term course on Control system and signal processing: Solutions to biomedical problems, 03-04 June, 2019, Indian Institute of Technology Indore, Indore, India (with Dr. A.K. Singh).
20. Short term course on Machine learning, 13-15 December, 2018, Indian Institute of Technology Indore, Indore, India (with Prof. N.S. Chaudhari, Prof. S. Prakash, Prof. A. Tiwari, and Prof. A. Parey).
21. Short term course on Artificial intelligence and advanced signal processing techniques for engineering applications, 05-07 October, 2018, Indian Institute of Technology Indore, Indore, India (with Prof. A. Parey).
22. Short term course on Advanced signal processing techniques for fault detection of mechanical and electrical systems, 10-11 March, 2018, School of Engineering, Indian Institute of Technology Indore, Indore, India. (with Prof. A. Parey).
23. International conference on Machine intelligence and signal processing, 22-24 December, 2017, Indian Institute of Technology Indore, Indore, India. (with Dr. M. Tanveer).
24. Short-term course on Condition monitoring of mechanical and electrical systems using advanced signal processing techniques, 06-07 March, 2017, School of Engineering, Indian Institute of Technology Indore, Indore, India. (with Prof. A. Parey).
25. Short-term course on Condition monitoring of mechanical systems using advanced signal processing, 27-28 June, 2016, School of Engineering, Indian Institute of Technology Indore, Indore, India. (with Prof. A. Parey).
26. Short-term course on Signal and image processing, 30-31 May, 2015, Department of Electrical Engineering, Indian Institute of Technology Indore, Indore, India. (with Prof. V. Kanhangad).

### Development of New Courses:

1. EE 740: Speech Signal Processing
2. EE 641: Advanced Signal Processing
3. EE 701: Time-Frequency Analysis
4. EE 645: Mathematical Methods for Signal Processing

### Subjects Taught:

1. Digital Signal Processing (UG, EC 4100, EE 304), Spring-2009, Spring-2016 (with Prof. V. Kanhangad).
2. Time-Frequency Analysis (PG, EE 701, Elective), Spring-2009, Autumn-2010, Spring-2011, Autumn-2012, Autumn-2013, Autumn-2014, Autumn-2015, Autumn-2016, Autumn-2017, Autumn-2018, Autumn-2019, Autumn-2020, Autumn-2021, Autumn-2022, Autumn-2023.
3. Soft Computing Techniques (PG, EE 604), Spring-2014, Spring-2018 (CS 401/601: Soft Computing), Spring-2019.
4. Advanced Signal Processing (PG, EE 641), Autumn-2011.
5. Basic Electronics and Electrical Engineering (UG, EE 104), Autumn-2010, Autumn-2019 (with Prof. V. Kanhangad, Prof. P.K. Upadhyay, Prof. T. Jain, and Prof. S.K. Vishvakarma).
6. Basic Electronics and Electrical Engineering Lab (UG, EE 154), Autumn-2010, Autumn-2022 (with Dr. A.K. Singh, Dr. N. Tiwari, and Dr. S. Ghosh).
7. Signals and Systems (UG, EC 3105) and (UG, EE 202), Autumn-2008 (with Prof. J. Sivaswamy), Autumn-2009, Spring-2011, Spring-2012, Spring-2013, Spring-2014, Spring-2015, Spring-2017, Spring-2018, Spring-2019 (with Dr. A.K. Singh), Spring-2020 (with Prof. S. Vasudevan), Spring-2021 (with Prof. S. Vasudevan), Spring-2022 (with Prof. S. Vasudevan), Spring-2023 (with Dr. Appina Balasubramanyam and Dr. Sumit Gautam).
8. Introduction to Electrical and Electronic Circuits (UG, EE 102), Spring-2010 (with Prof. A.C. Umarikar).
9. Communication Systems (UG, EE 307), Autumn-2011, Autumn-2012, Autumn-2013, Autumn-2014, Autumn-2015 (with Prof. V. Bhatia), Autumn-2020 (with Prof. V. Bhatia), Autumn-2021 (with Prof. V. Bhatia).
10. Experimental Engineering Lab (UG, IC 211), Autumn-2011 (with Prof. R. Kumar, Dr. A. Kumar, and Prof. S.K. Vishvakarma), Autumn-2023 (with Dr. Ankur Miglani, Dr. S Janakiraman, Dr. V. Laxmi, Prof. V. Kanhangad, and Prof. V. Bhatia).
11. Communications Lab (UG, EE 356), Spring-2012, Spring-2013 (with Prof. V. Kanhangad), Spring-2017 (with Prof. V. Kanhangad and Prof. P.K. Upadhyay).
12. Speech Signal Processing (PG, EE 740), Spring-2015, Spring-2020, Spring-2021, Spring-2022 (with Dr. N. Tiwari), Spring-2023, Spring-2024.

13. Wireless Communication (PG, EE 642), Spring-2016 (with Prof. P.K. Upadhyay).
14. Image Processing (PG, EE 644), Spring-2017 (with Prof. V. Kanhangad).

### Post-Doctoral Research/Research Associate/Senior Research Fellow/Junior Research Fellow Supervision:

1. Aditya Nalwaya, Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services (ICMR Project), April, 2024 to present (Research Associate-I).
2. Achinta Mondal, Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services (ICMR Project), February, 2022 to present (Junior Research Fellow).
3. Nabasmita Phukan, Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services (ICMR Project), March, 2022 to present (Senior Research Fellow).
4. Aditya Nalwaya, Automated classification system for human emotions based on physiological signals (CSIR project), March, 2021 to March, 2024 (Senior Research Fellow).
5. Himanshu Singh, Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services (ICMR Project), June, 2023 to December, 2023 (Research Associate-I).
6. Shailesh Mohine, Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services (ICMR Project), February, 2022 to October, 2022 (Research Associate-I).
7. Vipin Gupta, Development of new methodologies for analysis and classification of epileptic seizure EEG signals (CSIR project), June, 2016-December, 2018 (Research Associate).
8. Manish Sharma, Automated classification of biomedical signals based on time-frequency localized wavelet filter banks, December, 2015-December, 2016 (Post-Doctoral Fellow).

### Ph. D. Thesis Supervision:

#### **Completed:**

1. Amrit Panda, Hyperspectral image processing for chronic myeloid leukemia diagnosis. (with Dr. Neeta Devi Sinnappah-Kang, Christian Medical College Ludhiana, India), June, 2023 (Submitted).
2. Dada Saheb Ramteke, Automated methods for gearbox fault diagnosis using advanced signal processing techniques. (with Prof. Anand Parey), January, 2024.
3. Arti Anuragi, Improving automated analysis and leaning of EEG signals for brain disorders detection using Fourier-Bessel series expansion based empirical wavelet transform. (at NIT Raipur, with Dr. Dilip Singh Sisodia), December, 2023.
4. Pradeep Kumar Chaudhary, Fourier-Bessel series expansion for medical image processing, May, 2023.
5. Akanksha Tiwari, Angular disparity and dimensionality in mental rotation: Characteristics of saccadic eye movement and electroencephalogram, February, 2022. (with Dr. Sanjram Premjit Khangarba)
6. Vipin Gupta, Fourier-Bessel domain based new methods for automated classification of EEG signals, January, 2022.
7. Rahul Sharma, Biomedical signal processing using higher order statistics, September, 2020. (at IIT Kanpur, with Prof. P. Sircar)
8. Shishir Maheshwari, Advanced image analysis techniques for automated glaucoma diagnosis using retinal fundus images, July, 2020. (with Dr. V. Kanhangad)
9. Anurag Nishad, Tunable-Q wavelet transform based filter banks for non-stationary signals analysis and classification, July, 2019.
10. Mohit Kumar, Automated diagnosis methods for heart diseases using flexible analytic wavelet transform, February, 2019.
11. Rishi Raj Sharma, Non-stationary signal processing techniques based on eigenvalue decomposition of Hankel matrix, November, 2018.
12. Abhijit Bhattacharyya, Advanced wavelet transforms based EEG signal processing methods for epilepsy diagnosis, October, 2018.
13. Abhay Upadhyay, New methods based on variational mode decomposition for speech signal analysis, November, 2017.



14. Dinesh Bhati, Design of time-frequency localized three-band wavelet filter banks and applications in EEG signal analysis, February, 2017. (at IIT Bombay, with Prof. V.M. Gadre)
15. Rajeev Sharma, Automated identification systems based on advanced signal processing techniques applied on EEG signals, February, 2017.
16. Shivnarayan Patidar, Tunable-Q wavelet transform based methodologies for analysis and classification of cardiac signals, May, 2015.
17. Pooja Jain, Noise resilient speech signal analysis using non-stationary signal processing techniques, April, 2015.
18. Varun Bajaj, Analysis and classification of EEG signals using novel features based on non-stationary signal decompositions, February, 2014.

### **In Progress:**

1. Vivek Kumar Singh, Improved eigenvalue decomposition for non-stationary signal processing.
2. Kritiprasanna Das, Multivariate iterative filtering for EEG signal processing.
3. Makam Kiran Kumar, New methods for electromyogram signal processing.
4. Shailesh Bhalerao, Sparse spectrum enabled swarm decomposition for brain signal processing.
5. Aditya Nalwaya, Nonstationary signal decomposition-based methodologies for emotion recognition using physiological signals.
6. Ashok Mahato, Improved Fourier decomposition methods for brain-computer interfacing.
7. Alavala Siva Sankar Reddy, Multi-channel EEG based brain-computer interfacing from multi-modalities.
8. Yamalakonda Venu Gopal, Estimation and filtering for dynamic control system. (with Dr. Appina Balasubramanyam and Dr. Abhinoy Kumar Singh, IIT Patna)
9. Kumari Jyoti, Memristive device based implementation of signal processing methods. (with Dr. Shaibal Mukherjee)
10. Amishi Vijay, Automated classification of speech signals for medical applications. (with Dr. Appina Balasubramanyam)
11. Achinta Mondal, Quality-aware bio-signal processing for smart health monitoring. (with Dr. M. Sabarimalai Manikandan, IIT Palakkad)
12. Nabasmita Phukan, Intelligent systems for vital sign monitoring for smart healthcare. (with Dr. M. Sabarimalai Manikandan, IIT Palakkad)
13. Avni Majawadia Jain, Biomedical signal analysis and classification.
14. Krishnakant Sharma, New methods for Brain-computer interface.

### **M. S. (by Research) Thesis Supervision:**

#### **Completed:**

1. Vaibhav Mishra, Power quality assessment based on eigenvalue decomposition and singular value decomposition of Hankel matrix, June, 2023, (Submitted).

### **M. Tech. Thesis Supervision:**

#### **Completed:**

1. Shirly Susan Bethapudi, Fourier-Bessel domain-based band-limited entropies for automated detection of human emotions, June, 2023.
2. Akah Precious C, Imagined speech EEG-based BCI using dynamic mode decomposition, June, 2023.
3. Richa Kumari, Stock market price prediction based on cubature Kalman filter, June, 2023.
4. Sunilkumar Ainwad, Motor imagery EEG based brain-computer interfacing using Fourier-Bessel series expansion, June, 2022.
5. Mohnish Narayan Belani, Local wavelet pattern based glaucoma detection from fundus images, June, 2022.

6. Rahul Krishna, EEG signal classification based on graph signal processing, June, 2022.
7. Muktagucha Naga Viswanath, Automated sleep apnea detection from ECG signals based on flexible analytic wavelet transform, June, 2020.
8. Borra Jeevan Teja, Automated method based on TQWT for the classification of alcoholism using EEG signals, June, 2020.
9. Rishita Sharma, Windowed FBSE-EWT method for non-stationary signal analysis, June, 2020.
10. Manoj Tripathi, EEG based automated identification of schizophrenia from FBSE-EWT technique, June, 2020.
11. Richa Singh, Automated classification system for normal and ALS EMG signals based on iterative filtering, July, 2019.
12. Rajat Katiyar, Determination of respiratory and heart rates from PPG signals using FBSE-EWT method, July, 2019.
13. Preeti Meena, Reduction of cross terms in Wigner-Ville distribution using variational mode decomposition, July, 2019.
14. Piyush Varshney, Iterative filtering based automated detection of epileptic seizure EEG signals, July, 2018. (with Prof. S.K. Vishvakarma).
15. Puneet Jain, New approaches for speech enhancement based on variational mode decomposition and iterative filtering with applications of subspace approach, July, 2018. (with Prof. S.K. Vishvakarma)
16. Pratishtha Chandra, Eigenvalue decomposition based analysis and classification for electromyogram signals, July, 2018.
17. Lokesh Singh, Improved empirical wavelet transform for non-stationary signal analysis using Fourier-Bessel series expansion, July, 2018.
18. Avinash Kalyani, Cross-terms free time-frequency representation using empirical wavelet transform and Wigner-Ville distribution, June, 2018.
19. Ashish Kumar, Automated detection of congestive heart failure based on the eigenvalue decomposition of HRV signals, June, 2017.
20. Kapil Swarnkar, Classification of focal and non-focal electroencephalogram signals using recurrence plot method, June, 2016.
21. Surabhi Sood, Analysis and development of integrated index for diagnosis of coronary artery disease based on heart rate signals, June, 2016.
22. Satyartha Sharma, Detection of atrial fibrillation in electrocardiogram signals using tunable-Q wavelet transform, June, 2016.
23. Aswani Kumar Tiwari, Retinal blood vessel image segmentation and classification of epileptic seizure EEG signals for computer-aided diagnosis, June, 2016. (with Prof. V. Kanhangad)
24. Omkishor Sahu, Automated classification of magnetic resonance brain images using bi-dimensional empirical mode decomposition, June, 2015. (with Prof. V. Kanhangad)
25. V. Hari Rohit, Performance analysis of resource allocation types in LTE, July, 2009. (at IIIT Hyderabad with Prof. R. Govindarajulu, Dr. S. Kalyanasundaram, and Mr. V. Kamble)
26. Ashish Patwari, A proportional fair scheduling algorithm for cooperative transmission in OFDMA networks, July, 2009. (at IIIT Hyderabad with Prof. R. Govindarajulu, Dr. S. Kalyanasundaram, and Mr. N. Balamurli)

## **B. Tech. Project Supervision:**

### **Completed:**

1. Rajaputhra Shivani, Automated eye movement classification system based on EMG of EOM using synchrosqueezed wavelet transform, December, 2023.
2. Gnana Swaroop Chintada, ECG based biometric identification system using dynamic mode decomposition and machine learning, December, 2023.
3. Bhamidipati SV Shashanka, Automated cognitive reading task classification using swarm decomposition from electroencephalogram signals, December, 2023.
4. Padma Harshith, Automated approach for human emotion detection using biomedical signals, December, 2023.

5. AkruTi Taori, Automated identification of normal and abnormal speech signals using synchrosqueezed wavelet transform, December, 2023.
6. Shreya Deep, Two-dimensional tunable-Q wavelet transform based skin cancer detection, November, 2022.
7. Patnam Harshey, Iterative filter-based technique for heart sound detection, November, 2022.
8. Sunchu Jahnvi, Synchrosqueezed wavelet transform based tachycardia ECG signal classification, November, 2022.
9. Sai Pranavee K, Biometric identification based on EEG signals, November, 2022.
10. Vineet Tripathi, Objective loudness growth prediction using tone-burst auditory brainstem responses, November, 2022. (with Dr. Nitya Tiwari)
11. Vardhan Paliwal, Age prediction based on EEG signals, November, 2022. (with Dr. Vasily Vakorin, Simon Fraser University, Canada)
12. Kashish Bansal, Automated muscular diseases identification from EMG signals, November, 2022. (with Dr. Gourinath Banda)
13. Aahan Tyagi, Complex signal analysis using Fourier-Bessel series expansion based empirical wavelet transform, May, 2022.
14. Sonu Yadav, Automated classification of normal and glaucoma fundus images using EWT method, May, 2021.
15. Varun Patil, FAWT based automated detection of sleep apnea using EEG signals, May, 2021.
16. Abhishek Vashishtha, Singular spectrum analysis for automated detection of epilepsy using EEG signals, May, 2021.
17. Chethan N., Pitch frequency determination from speech signals based on FBSE-EWT method, May, 2021.
18. Pankaj Verma, Study on effects of chanting on EEG signal rhythms, December, 2019.
19. Anmay Kumar, Fundamental frequency determination for speech signals of Vedic mantras, December, 2019.
20. Himali Singh, Sliding-mode singular spectrum analysis for sleep apnea detection using ECG signals, December, 2019.
21. Mayur Dahyabhai Chopda, Automated identification of human emotions based on non-stationary EEG signal processing, December, 2018.
22. Anmol Mansingh and Banka Nithin, Automated screening of sleep apnea from ECG signals using digital Taylor-Fourier transform, December, 2018.
23. Addepalli Hari Narayana, Infrared image processing for IoT module using NIR spectroscopy, December, 2017. (with Mr. Pravin Kumar Angolkar, Analog Devices India Pvt. Ltd., Bangalore)
24. Swastik Gupta and Konduri Hari Krishna, Automated classification of focal and non-focal EEG signals using Fourier-Bessel series expansion, December, 2017. (with Dr. M. Tanveer)
25. Tanvi Priya and Abhishek Kumar Yadav, Computer-aided detection of non-focal and focal EEG signals using flexible analytic wavelet transform, December, 2016.
26. Abhinav Tripathi and Dhaivat Janmejy Joshi, Automated classification of abnormal EMG signals using tunable-Q wavelet transform, December, 2016.
27. Archit Mathur and Naveen Chaudhary, Detection of glottal closure instants from voiced speech signals using the Fourier-Bessel series expansion, May, 2015.
28. Meet Shah and Sumit Saurav, Classification of epileptic seizure EEG signals using reconstructed phase space of intrinsic mode functions, May, 2015.
29. Pakala Avinash and Kora Shashank, Classification of normal and diabetic RR interval signals using empirical mode decomposition, May, 2015.
30. Harish Padigala, Singular value decomposition based method for AM-FM signal enhancement, May, 2014.
31. Rahul Shivaji Pawar, Design of adaptive doppler filter bank for ground based radars, May, 2014.
32. Sanjay Kumar Meena, Comparison study of image enhancement techniques, May, 2014. (with Prof. A. Vijesh)
33. Vimal Kumar Meena, Image enhancement using various filtering techniques, May, 2014. (with Prof. A. Vijesh)
34. Arvind Kumar Meena and Devendra Kumar Meena, Determination of instantaneous fundamental frequency from speech signals, May, 2014.
35. Sachin Londhe, Kishan Soni, and Abhishek Kumar, Detection of human emotions based on EEG and ECG signals, May, 2014.

36. Suhani and Manila Chaudhary, Classification of normal, seizure, and seizure-free EEG signals, May, 2014.
37. Aakash Gupta, Deepak Yadav, and Pritesh Kanani, Vehicle license plate recognition, May, 2013. (with Prof. R. Bodade, MCTE Mhow)
38. Varun Joshi, Applications of fractional calculus in signal processing, May, 2013. (with Prof. A. Vijesh)
39. Anamika Patel, Emotion recognition using EEG signals, May, 2013.
40. Ronak Bajaj and Saransh Chhabra, Fourier-Bessel expansion based features for speaker identification, November, 2009. (at IIT Hyderabad with Prof. R.N. Biswas)

## **Professional Activities:**

### **Professional Affiliation:**

1. Fellow, The Institution of Engineers (India) (IEI), Membership number: F-1289507, since 27 April, 2022.
2. Fellow, Institution of Engineering and Technology (IET), Membership number: 1100759368, since 17 June, 2020.
3. ACM Professional Member, Membership number: 8354810, since 22 May, 2020.
4. Fellow, the Institution of Electronics and Telecommunication Engineers (IETE), Membership number: F-234608, since 22 July, 2017.
5. Senior Member, the Institute of Electrical and Electronic Engineers (IEEE), Membership number: 92164938, since 05 July, 2016. (Also, Member, IEEE Engineering in Medicine and Biology Society and IEEE Signal Processing Society, since 23 January, 2024).

### **Editorship:**

1. Associate Editor: IEEE Open Journal of Engineering in Medicine and Biology, 8 April, 2024 to present.
2. Associate Editor: 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 15-19 July, 2024, Orlando, Florida, USA. (Theme: Biomedical Signal Processing)
3. Associate Editor: Computers and Electrical Engineering (Elsevier), 7 December, 2023 to present.
4. Guest Editor: Special issue on Advances in Machine Learning, Deep Learning and Computer Vision, MDPI Mathematics journal, 25 July, 2023-30 April, 2024. (with Dr. Karri Chiranjeevi and Dr. Lalit Garg)
5. Guest Editor: Special issue on Distributed Sensing and Imaging Technologies for Health Monitoring Applications, MDPI Sensors journal, 11 April, 2023-25 February, 2024. (with Dr. M. Sabarimalai Manikandan)
6. Associate Editor: IEEE EMBS Conference Editorial Board (CEB) for 45th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 24-28 July, 2023, Sydney, Australia. (Theme: Biomedical Signal Processing)
7. Associate Editor: IEEE EMBS Conference Editorial Board (CEB) for 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society, 11-15 July, 2022, Glasgow, UK. (Theme: Biomedical Signal Processing)
8. Associate Editor: IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2 September, 2021 to 14 February, 2024.
9. Review Editor: Editorial Board of Brain Imaging Methods (specialty section of Frontiers in Neuroscience and Frontiers in Neurology), 20 February, 2021 to 13 June, 2023.
10. Review Editor: Editorial board of Mathematics of Computation and Data Science (specialty section of Frontiers in Applied Mathematics and Statistics), 12 August, 2020 to 06 October, 2021.
11. Guest Editor: Special issue on Machine Learning and Big Data Analytics in Energy Infrastructure, including Economic Implications, MDPI Energies journal, 18 September, 2020-30 June, 2021. (with Prof. Dipankar Deb and Prof. Moinak Maiti)
12. Associate Editor: 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) in conjunction with the 43rd Annual Conference of the Canadian Medical and Biological Engineering Society, 20-24 July, 2020, Montreal, Canada. (Theme: Biomedical Signal Processing)
13. Associate Editor: Electronics Letters, 29 January, 2019 to present.
14. Associate Editor: IEEE EMB Conference for the Biosignal Processing Theme, 41st EMB Conference 2019, 23-27 July, 2019, Berlin, Germany.
15. Associate Editor: Biomedical Signal Processing and Control (Elsevier), 15 February, 2018 to present.

16. Editor: IETE Technical Review Journal, 18 May, 2017 to present.
17. Editor: Journal of Intelligent Systems, 1 March, 2012- 27 September, 2018.
18. Associate Editor: Special session on Non-stationary signal analysis methods and applications at 5th Indian International Conference on Artificial Intelligence (IICAI-11), 14-16 December, 2011, Tumkur, India.

#### General Chair/Session Chair/Program Chair, etc.:

1. Track Chair, Signal Processing track, 10<sup>th</sup> International Conference on Signal Processing and Communication (ICSC 2025), 20-22 February, 2025, IIIT, Noida, India.
2. Technical Chair, International Conference on Communication, Cloud Computing, and Machine Learning (I4CML 2024), 23-24 November, 2024, Indore, India.
3. Honorary General Chair, 4th International Conference on Emerging Technologies in Data Mining and Information Security (IEMIS 2024), 28-29 September, 2024, Eminent College of Management and Technology (ECMT), Kolkata, India.
4. Technical Program Committee Chair, 2024 4th International Conference on Computer, Remote Sensing and Aerospace (CRSA 2024), 05-07 July, 2024, Osaka, Japan.
5. TPC Chairman, 2024 International Conference on Computer Vision, Robotics and Automation Engineering (CRAE 2024), 21-23 June, 2024, Kunming, China.
6. General Chair, 1<sup>st</sup> International Conference on Advances in Signal Processing, Power, Communication and Computing (ASPCC-2024), 6-8 June, 2024, IIIT Bhubaneswar, India.
7. Honorary Conference Chair, 3<sup>rd</sup> International Conference on Biologically Inspired Techniques in Many-Criteria Decision-Making (BITMDM-2024), 06-07 December, 2024, Nagaland University, Dimapur, India.
8. General Conference Chair, 2024 5<sup>th</sup> International Conference on Computer Vision, Image and Deep Learning (CVIDL 2024), 19-21 April, 2024, Zhuhai, China.
9. Publication Chair, 2024 3rd International Conference on Image, Signal Processing and Pattern Recognition (ISPP2024), 01-03 March, 2024, Kunming, China.
10. General Chair, 2024 International Conference on Remote Sensing, Mapping and Image Processing (RSMIP 2024), 19-21 January, 2024, Xiamen, China.
11. TPC Chair, Track III: Applications Using Intelligent Techniques in Electronics & Communication, Springer Nature's International Conference SIGMAA-2023, 15-16 December, 2023, Delhi, India.
12. Session Chair, Mind, Brain, and Consciousness Conference (MBCC 2023), 14-16 December, 2023, IIT Mandi, India.
13. General Chair, 21st International Conference on Information Technology (OCIT 2023), 14-16 December, 2023, Organized by the Orissa Information Technology Society and Department of Computer Science & Engineering, National Institute of Technology Raipur, India, Bhubaneswar, India.
14. Technical Chair, WADLA 3.0 - International Research Workshop on Advances in Deep Learning and Applications, 11-16 December, 2023, Indian Institute of Information Technology, Sri City, India.
15. Track Chair, Signal Processing Track, 2023 9th International Conference on Signal Processing and Communication (ICSC 2023), 07-09 December, 2023, Noida, India.
16. Program Chair, 4th International Conference on Computational Intelligence & Internet of Things (ICCIoT), 2023, 04-06 December, 2023, The Faculty of ICT, University of Malta, Msida, Malta.
17. Honorary General Chair, International Conference on Innovations in Data Analytics (ICIDA 2023), 29-30 November, 2023, Kolkata, India.
18. Honorary Chair, International Conference on Blockchain and Machine Intelligence Applications (ICBMIA) 2023, 16-17 August, 2023, Kolkata, India.
19. General Chair, 2023 3rd International Conference on Signal Image Processing and Communication (ICSIPC 2023), 26-28 May, 2023, Kunming, China.
20. Track Chair, 11<sup>th</sup> IEEE International Conference on Embedded Systems, Devices and Computing (ESDC-2023), 04-06 May, 2023, IIIT Sri City, India.
21. Session Chair, IEEE 2023 International Conference on Artificial Intelligence and Applications (ICAIA) Alliance Technology Conference (ATCON-1), 21-22 April, 2023, Bengaluru, India.
22. Conference Chair, 2023 2nd International Conference on Image, Signal Processing and Pattern Recognition, 24-26 February, 2023, Changsha, China.



23. General Chair, International Conference on Next Generation Communication and Information Processing (INCIP 2023), 10-11 February, 2023, Dehradun, India.
24. Honorary General Chair, International Conference on Innovations in Data Analytics (ICIDA 2022), 29-30 November, 2022, Kolkata, India.
25. Program Chair, 5th International Conference on Information Systems and Management Science (ISMS 2022), 24-27 November, 2022, University of Malta and NIT Raipur, India.
26. Financial Chair, 29th International Conference on Neural Information Processing (ICONIP 2022), 22-26 November, 2022, Indore, India.
27. Publicity co-Chair, National Conference on Communications (NCC 2022), 24-27 May, 2022, IIT Bombay, IIT Dharwad, IIT Gandhinagar, IIT Goa, and IIT Indore, India.
28. General Chair, 2022 2nd International Conference on Signal Image Processing and Communication (ICSIPC 2022), 20-22 May, 2022, Qingdao, China.
29. Convener, Conference on under Madhya Pradesh Vigyan Sammelan & Expo (MPVS -2021), 22-25 December, 2021, IIT Indore, MPCST Bhopal, and Vigyan Bharati, India.
30. Co-General Chair, International Conference on Technology, Research, and Innovation for Betterment of Society (TRIBES-2021), 17-19 December, 2021, IIIT Naya Raipur, India.
31. Program Chair, The 4th International Conference on Recent Trends in Image Processing & Pattern Recognition (RTIP2R), 08-10 December, 2021, University of Malta, Malta.
32. Founding Chair, 3rd International Conference on Machine Intelligence and Signal Processing, 23-25 September, 2021, NIT Arunachal Pradesh, India.
33. Track Chair, Brain Computer Interface session, International Conference on Machine Vision and Augmented Intelligence (MAI-2021), 11-14 February, 2021, IIITDM Jabalpur, India.
34. Session Chair, 10th International Conference on Soft Computing for Problem Solving (SocPros 2020), IIT Indore, India, 18-20 December, 2020.
35. Tutorial Chair, 23rd International Symposium on VLSI Design and Test (VDAT-2019), 04-06 July, 2019, IIT Indore, India.
36. Session Chair, International Conference on Recent Advances in Mathematics and Their Applications, 10-12 July, 2016, University of Rajasthan, Jaipur, India.
37. Session Chair, Special session on EEG and ECG signal processing, International Conference on Medical Biometrics (ICMB-2014), 30 May-01 June, 2014, Shenzhen, China.
38. Session Chair, Special session on Non-stationary signal analysis methods and applications, 5th Indian International Conference on Artificial Intelligence (IICAI-11), 14-16 December, 2011, Tumkur, India.

#### Advisory Committee Member:

1. IEEE conference on Computation Intelligence and Sustainable Engineering Systems, 12-15 March, 2025, PSG College of Technology, Coimbatore, India.
2. International Conference on Artificial Intelligence, Device Computing, Communication, and Signal Processing (AIDCCSP-2024), 20-22 December, 2024, NIT Hamirpur, Hamirpur, India.
3. International Conference on Advancements in Biomedical Systems & Healthcare Technology (ICABSHT 2024), 20-21 December, 2024, PSG College of Technology, Coimbatore, India.
4. 9th International Conference on Computer Vision and Image Processing (CVIP) Conference, 06-08 December, 2024, IIITDM Kancheepuram, Chennai, India.
5. IEEE Conference on Sustainable Power and Energy. 28-30 November, 2024, O P Jindal University Raigarh, CG, India.
6. IEEE Silchar Subsection Conference 2024 (SILCON 2024), 15-17 November, 2024, Department of Electrical Engineering, NIT Agartala, India & NIT Silchar, India in association with IEEE Kolkata Section & Silchar Subsection.
7. 3rd International Conference on the Paradigm Shifts in Communication, Embedded Systems, Machine Learning and Signal Processing (PCEMS 2024), 23-24 October, 2024, VNIT Nagpur, India.
8. 3rd International Conference on Computer Vision & Machine Intelligence (CVMI-2024), 19-20 October, 2024, IIIT Allahabad, Prayagraj, India.

9. International Conference on Electrical Systems and Energy Technologies (ESET-2024), 24-25 August, 2024, NIT Hamirpur, India.
10. 3rd International Conference on Control, Computing, Communication and Materials 2024 (ICCCCM 2024), 10-11 August, 2024, United College of Engineering & Research, Prayagraj, India.
11. International Conference on Computational Intelligence for Information, Security, and Communication Applications (CIISCA-2024), 19-20 July, 2024, Global Academy of Technology, Bengaluru, India in association with Indian Institute of Information Technology, Allahabad, India.
12. 2nd International Conference on Recent Advances in Applied Mathematics (RAAM 2024), 03-05 July, 2024, IIT(BHU), Varanasi, India.
13. International Conference on Computational Intelligence, Cyber Security and Computational Models (ICC3), 14-16 December, 2023, Department of Applied Mathematics and Computational Sciences, SG College of Technology, Coimbatore, India.
14. 1<sup>st</sup> International Conference on Role of AI in Bio-Medical Translations' Research for the Health Care Industry (ICRAIBTR-2023), 22-23 September, 2023, G.H. Rasoni College of Engineering, Nagpur, India.
15. International Conference on Communication, Circuits and Systems (IC3S 2023), KIIT University, Odisha, India, 26-28 May, 2023.
16. ThinkAI 2023 Conference on Recent Trends in AI Enabled Technologies, 26-27 May, 2023, Hyderabad, India.
17. International conference on Advances in Communication, Electronics & Computing, 21-23 March, 2023, UIT, RGPV Bhopal, India.
18. 1st International Conference on Intelligent Electrical, Electronics and Communication Systems (IE2CS-2023), 28-29 January, 2023, Department of Electronics Engineering, NIT Uttarakhand in association with the Faculty of Electronic Engineering Technology, University of Malaysia Perlis, Malaysia.
19. International Conference on Innovations in High-Speed Communication and Signal Processing (IH CSP 2022), 10-11 December, 2022, Department of Electronics and Communication Engineering, MANIT Bhopal, India.
20. 8th International Conference on Signal Processing and Communication (ICSC 2022), 01-03 December, 2022, Department of Electronics and Communication Engineering, Jaypee Institute of Information Technology, Noida, India.
21. International Conference on Recent Trends in Smart Electronics System and Manufacturing (SEISMIC-2022), 01-03 December, 2022, Symbiosis Institute of Technology, Symbiosis International (Deemed University), Pune, India.
22. 2022 IEEE Silchar Subsection Conference (IEEE SILCON-2022), 4-6 November 2022, NIT Silchar, India.
23. 7th International Conference on Computer Vision & Image Processing (CVIP 2022), 04-06 November, 2022, VNIT Nagpur, India.
24. International Conference on Intelligent Computing Systems and Applications (ICICSA-2022), 30-31 August, 2022, NIT Silchar, India.
25. International Conference on International Conference on Signal Processing and Computer Vision (SPCV-2022), Department of Electronics and Communication Engineering, 27-28 August, 2022, National institute of Technology Silchar, India.
26. Second International Conference on Signal & Data Processing (ICS DP 2022), 10-11 June, 2022, VIT Bhopal University, Bhopal, India.
27. 10th International Conference on Emerging Trends in Engineering & Technology Signal and Information Processing (ICETET SIP-22), 29-30 April, 2022, Department of Electronics Engineering and Electronics & Telecommunication Engineering, G.H. Rasoni College of Engineering, Nagpur, India.
28. International Conference on Machine learning in Medical Image and Signal Processing (ICMMISP'22), 21-25 March, 2022, College of Engineering and Technology, SRMIST Kattankulathur, India.
29. International Conference on Biomedical Engineering and Computing Technologies (ICBECT-22), 21-25 March, 2022, Department of Biomedical Engineering, SRMIST Kattankulathur, India.

30. International Conference on Applied Mechanics, Machine Learning, and Advanced Computation (AMMLAC 2022), 11-12 March, 2022, NIT Raipur, India.
31. International Conference on "Advances in Signal Processing and Power Quality (ISSPQ-2022)", 11-12 February, 2022, Oriental Institute of Science & Technology (OIST), Bhopal, India.
32. 7th International Conference on Signal Processing and Communication (ICSC 2021), 25-27 November, 2021, Department of Electronics and Communication Engineering, Jaypee Institute of Information Technology, Noida, India.
33. International Workshop on "Fractional Derivatives: Theory & Computations with Applications (FDTCA 2021)", 12-14 November, 2021, Department of Mathematical Sciences, Indian Institute of Technology (BHU) Varanasi, India.
34. International Conference on Technology, Research, and Innovation for Betterment of Society (TRIBES-2021), 25-27 June, 2021, IIIT Naya Raipur, India.
35. 3rd IEEE International Conference on Signal Processing and Communication Engineering Systems (SPACES 2021), 11-12 June, 2021, KL University, Guntur, India.
36. International Conference on Biomedical Engineering and Software Technology (BEST 2021), 28-29 January, 2021, NIT Raipur, India.
37. International Conference on Advanced Communication Technologies and Signal Processing (ACTS 2020), 04-06 December, 2020, Silchar, India.
38. National Conference on Advances in Communication, Devices and Signal Processing (ACDSP 2020), 16 - 18 October, 2020, School of Electronics Engineering, KIIT University, Odisha, India.
39. International Conference on Innovative Engineering Design (ICIED-2020), 18-19 January, 2020, the Institutions of Engineers (India), Uttarakhand State Centre, Dehradun, India.
40. 4th IEEE International Conference on Electrical, Electronics, Communication, Computer Technologies and Optimization Techniques (ICEECCOT-2019), 13-14 December, 2019, Mysuru, India.
41. International Conference on Biomedical Engineering (ICoBE 2019), 26-27 August, 2019, Penang, Malaysia.
42. International Conference on Power, Control and Communication Infrastructure (ICPCCI 2019), 4-5 July, 2019, IITRAM, Ahmedabad, India.
43. International Conference on Advances and Challenges in Biomedical and Health Informatics research (ICOBHIR-2019), 28-29 March, 2019, SRM Institute of Science and Technology (Kattankulathur Campus), Tamil Nadu, India.
44. IEEE International Conference on Innovations in Electronics, Signal Processing and Communication, 01-02 March, 2019, NIT Meghalaya, Shilong, India.
45. International Conference on Recent Advances in Interdisciplinary Trends in Engineering and Applications, 14-16 February, 2019, Indore, India.
46. International Conference on Computational Mathematics in Nanoelectronics and Astrophysics, 01-03 November, 2018, IIT Indore, Indore, India.
47. IEEE International Conference on Recent Advances in Engineering, Technology and Computational Sciences- 2018 (RAETCS-2018), 06-08 February, 2018, Allahabad, India.
48. Symposium on Emerging Areas in Biosciences and Biomedical Technologies (eBBT-2018), 05-06 January, 2018, Indore, India.
49. National Conference on Soft Computing and Intelligent Techniques in Science and Engineering (SCITSE-2017), 25 November, 2017, NIT Raipur, Raipur, India.
50. National Conference on Recent Trends in Biomedical Engineering (NCRTBME 2017), Department of Biomedical Engineering, 24-25 August, 2017, SRM University, Chennai, India.
51. 3rd International Conference on Biomedical Engineering (ICoBE 2017), 21-22 August, 2017, Kuala Lumpur, Malaysia.
52. International Conference on Mechanical, Electronic Systems and Computer Engineering (MESCoE 2017), 29-30 June, 2017, Pune, India.

### Technical Program Committee Member:

1. 2nd International Conference on Computer Vision and Virtual Reality (CVVR2024), 22-24 November, 2024, Haikou, China.
2. First International Conference on the Role of AI in Bio-Medical Translation Research for the Health Care Industry (AIBTR-2024), 22-23 November, 2024, G H Raisonni College of Engineering, Nagpur India.
3. International Conference on Computational Intelligence for Information, Security, and Communication Applications (CIISCA-2024), 19-20 July, 2024, Global Academy of Technology, Bengaluru, India in association with Indian Institute of Information Technology, Allahabad, India.
4. The International Joint Conference on Neural Networks (IJCNN), 30 June-05 July, 2024, Yokohama, Japan.
5. Thirtieth National Conference on Communications (NCC-2024) 28 February-2 March, 2024, jointly organized by IIT Madras, and IIT Tirupati.
6. First International Conference on Big Data & machine learning (ICBDML\_2024) (IEEE MP Section), 24-25 February, 2024, IES College of Technology, Bhopal, India.
7. Seventeenth International Conference on Bio-inspired Systems and Signal Processing (BIOSIGNALS 2024), 21-23 February 2024, Rome, Italy.
8. Twenty Nineteenth National Conference on Communications (NCC), 23-26 February 2023, IIT Guwahati, IIT Patna, and IIT Ropar, India.
9. Fourteenth IEEE International Conference on Signal Processing and Communications (SPCOM 2022), 11-15 July, 2022, Indian Institute of Science, Bengaluru, India.
10. Ninth International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO 2022), 27-30 June, 2022, Gran Canaria, Spain.
11. Twenty Eighth National Conference on Communications (NCC), 24-27 May, 2022, IIT Bombay, IIT Dharwad, IIT Gandhinagar, IIT Goa, and IIT Indore, India.
12. Eleventh IEEE International Conference on Communication Systems and Network Technologies (CSNT 2022), 23-24 April, 2022, SGSITS, Indore, India.
13. Fourth International Conference on Machine Intelligence and Signal Processing (MISP2022), 12-14 March, 2022, NIT Raipur, India.
14. International Conference on Applied Mechanics, Machine Learning, and Advanced Computation (AMMLAC 2022), 11-12 March, 2022, NIT Raipur, India.
15. Ninth International Conference on Artificial Intelligence and Applications (AIAP 2022), 26-27 February, 2022, Vancouver, Canada.
16. Third International Conference on Machine Learning, Image Processing, Networks and Data Sciences (MIND-2021), 11-12 December, 2021, NIT Raipur, India.
17. Sixth International Conference on Image Information Processing (ICIIP), 26-28 November, 2021, Jaypee University of Information Technology, Shimla, India.
18. Seventh International Conference on Signal Processing and Communication (ICSC 2021), 25-27 November, 2021, Department of Electronics and Communication Engineering, Jaypee Institute of Information Technology, Noida, India.
19. Fourth International Conference on VLSI, Communication, and Signal Processing (VCAS 2021), 24-26 September, 2021, MNNIT Allahabad, Prayagraj, India.
20. Twenty Seventh National Conference on Communications (NCC), 27-30 May, 2021, IIT Kanpur and IIT Roorkee, India.
21. International Conference on Biomedical Engineering and Software Technology (BEST 2021), 28-29 January, 2021, NIT Raipur, India.
22. Ninth IEEE International Conference on Communication, Networks and Satellite (IEEE COMNETSAT 2020), 17-18 December, 2020, Batam, Indonesia.

23. Third International Conference on VLSI, Communication, and Signal Processing (VCAS 2020), 09-11 October, 2020, MNNIT Allahabad, Prayagraj, India.
24. Tenth International Conference on Soft Computing for Problem Solving (SocPros 2020), 29-31 July, 2020, IIT Indore, Indore, India.
25. International Conference on Signal Processing and Communications (SPCOM 2020), 20-23 June, 2020, Indian Institute of Science, Bengaluru, India.
26. International Conference on Computer Vision, High Performance Computing, Smart Devices and Networks (CHSN2020), 09-10 May, 2020, Jawaharlal Nehru Technological University Kakinada (JNTUK), Andhra Pradesh, India.
27. International Conference on Data Science and Business Informatics (ICDSBI 2020), 17-19 April, 2020, Bangalore, India.
28. Ninth International Conference on Communication Systems and Network Technologies 2020 (CSNT 2020), 10-12 April, 2020, Gwalior, India.
29. Twenty Sixth National Conference on Communications (NCC), 21-23 February, 2020, IIT Kharagpur, India.
30. International Conference on Contemporary Computing and Applications (ICCCA 2020), 05-07 February, 2020, Lucknow, India.
31. Seventh Symposium on Control, Automation, Industrial Informatics and Smart Grid (ICAIS'19), 18-21 December, 2019, Trivandrum, Kerala, India.
32. Third International Conference on Computing and Network Communications (CoCoNet'19), 18-21 December, 2019, Trivandrum, Kerala, India.
33. Fifth International Conference on Image Information Processing (ICIIP), 15-17 November, 2019, Jaypee University of Information Technology, Shimla, India.
34. Second International Conference on VLSI, Communication, and Signal Processing (VCAS 2019), 21-23 October, 2019, MNNIT Allahabad, Prayagraj, India.
35. International Conference on Biomedical Engineering (ICoBE 2019), 26-27 August, 2019, Penang, Malaysia.
36. International Conference on Artificial Intelligence and Computer Science (AICS 2019), 12-13 July, 2019, Wuhan, Hubei, China.
37. First International Conference on Machine Learning, Image Processing, Networks and Data Sciences (MIND 2019), 03-04 March, 2019, NIT Kurukshetra, India.
38. IEEE International Conference on Innovations in Electronics, Signal Processing and Communication (IESC 2019), 01-02 March, 2019, NIT Meghalaya, Shilong, India.
39. Twenty fifth National Conference on Communications (NCC 2020), 20-23 February, 2019, Bangalore, India.
40. Third IEEE International Conference on Electrical, Electronics, Communication, Computer Technologies and Optimization Techniques (ICEECCOT-2018), 14-15 December, 2018, Mysuru, India.
41. International Conference on VLSI, Communication and Signal Processing (VCAS 2018), 29 November-01 December, 2018, Allahabad, India.
42. Twenty fourth National Conference on Communications (NCC 2018), 25-28 February, 2018, Hyderabad, India.
43. Second International Conference on Data Management, Analytics and Innovation (ICDAMI-2018), 19-21 January, 2018, IEEE Computer Society, Pune, India.
44. Recent Innovation in Signal Processing & Embedded Systems-RISE 2017, 27-29 October, 2017, MANIT Bhopal, India.
45. National Conference on Recent Research Trends in Electronics and Communication Engineering (RRTECE 2017), 03-05 March, 2017, Varanasi, India.
46. Twenty third National Conference on Communications (NCC), 02-04 March, 2017, IIT Madras, Chennai, India.

47. National Conference on Emerging Trends in Signal Processing and VLSI Design (NCSPVD'16), 28 December, 2016, Punalkulam, India.
48. Twenty second National Conference on Communications (NCC), 04-06 March, 2016, IIT Guwahati, India.
49. Twenty first National Conference on Communications (NCC), 27 February-01 March, 2015, IIT Bombay, India.
50. IEEE International Conference on Medical Biometrics, 30 May-01 June, 2014, Shenzhen, China.
51. Twentieth National Conference on Communications (NCC), 28 February-02 March, 2014, IIT Kanpur, India.
52. Indian International Conference on Artificial Intelligence (IICAI), 14-16 December, 2011, Tumkur, India.

#### **Invited Talks in Conferences/Symposiums/Workshops/Schools/IEEE Lecture Series:**

1. Expert speaker, Research Paper Writing Workshop, 27 April, 2024, Institute of Engineering and Science, IPS Academy, Indore, India. (Topic: Paper writing and publication process)
2. Keynote speaker, 2024 International Conference on Machine learning and Intelligent Computing (MLIC 2024), 26-28 April, 2024, Wuhan, China. (Topic: Machine learning based automated classification of multichannel EEG)
3. Invited talk on Nonstationary signal processing based medical image classification, SERB & CSIR-funded Distinguished Series Third Five Day National Workshop on Medical Image Analysis using Artificial Intelligence, 22-26 April, 2024, Centre for Medical Imaging Studies (CMIS), Department of ECE, Gayatri Vidya Parishad College of Engineering (A) Visakhapatnam, Andhra Pradesh, and Simadri Surya Eye Hospital of Susheela Public Charitable Trust Nabarangapur, Odisha, India.
4. Keynote speech on Multichannel nonstationary bio-signal processing, Tenth International Conference on Bio signals, Images, and Instrumentation (ICBSII 2024), 20-22 March, 2024, Department of Biomedical Engineering, Sri Sivasubramaniya Nadar College of Engineering, Chennai, India along with Drexel University, Philadelphia, USA.
5. Keynote speech on AI for multichannel EEG signal classification, 2nd International Conference on Artificial Intelligence and Applications (ICAIA 2024), 19-20 March, 2024, Maharaja Surajmal Institute of Technology, New Delhi, India in association with Wentworth Institute of Technology, Boston-USA & Springer.
6. Invited talks (02) on Research, research methodology, and publication process; Multichannel EEG signal processing for BCI applications, SERB High-End Workshop on Artificial Intelligence for Human Brain Computer Interaction: Innovations in Machine Learning and Signal Processing for emergence of Health 5.0, 18-24 March, 2024, Department of Electronics and Communication Engineering, IIT Roorkee, Roorkee, India.
7. Keynote speech on Automated multivariate computing framework for medical applications, IEEE International Conference on Distributed Computing and Optimization Techniques (ICDCOT-2024), 15-16 March 2024, IEEE Bangalore Section and SJB Institute of Technology, Bengaluru, India. (Also Guest of Honor during the inaugural ceremony)
8. Keynote speech on Multivariate signal processing and machine learning based methods for medical applications, 2nd IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation – IATMSI-2024, 14-16 March, 2024, ABV-IIITM Gwalior, India.
9. Keynote speech on Multichannel signal processing and machine learning, 2024 3rd International Conference on Image, Signal Processing and Pattern Recognition (ISPP 2024), 08-10 March, 2024, Kunming, China.
10. Keynote speech on Multichannel EEG processing for epilepsy and schizophrenia detection, IEEE International Conference on Cognitive, Green, and Ubiquitous Computing (IC-CGU-2024), 01-02 March, 2024, C.V. Raman Global University, Bhubaneswar, India.
11. Expert lectures (02), Automated EEG classification and multivariate signal processing techniques, Advanced Entrepreneurship and Skill Development Programme (A-ESDP), One Week MSME funded Workshop on Smart Healthcare System using IoT and AI/ML, 27 February-2 March, 2024, Department of Computer Science and Engineering, NIT Sikkim, India.



12. Keynote speech on Multichannel signal processing and AI for medical applications, SERB Sponsored KARYASHALA on Artificial Intelligence (AI) for Smart Sensing and Internet of Everything (IoE), 10-14 February, 2024, Department of Electrical and Electronics, Rajiv Gandhi Institute of Petroleum Technology Jais, Amethi, India.
13. Invited talk on Research methodology, writing, and publication process of manuscripts and funding proposals, 29 January, 2024, IEEE Student Branch, Department of Electronics and Communication Engineering, Nitte Meenakshi Institute of Technology, Bangalore, India.
14. Speaker, Vigyan Bhaav session, BHAAV-The Expressions Summit 2024, 25-28 January, 2024, Sri Sri Institute for Advanced Research (SSiAR), Bangalore, India.
15. Keynote speech on Automated glaucoma diagnosis methods based on signal processing and machine learning, 2024 International Conference on Remote Sensing, Mapping and Image Processing (RSMIP2024), 19-21 January, 2024, Xiamen, China.
16. Distinguish Speaker, SERB Sponsored High-End Workshop on Recent Trends on Applied Machine Learning for Speech and Bio-Signal Processing, 02-07 January, 2024, Department of Electronics and Communication, IIIT Dharwad, India. (Topics (02): Adaptive multichannel signal processing for biomedical applications and Automated frameworks for glaucoma diagnosis using fundus images) (Also delivered speech in valedictory function)
17. Keynote speech on Multivariate adaptive signal decomposition for EEG signal processing, IEEE 9<sup>th</sup> International Conference on Signal Processing and Communication (ICSC 2023), 21-23 December, 2023, JIIT, Noida, India.
18. Keynote speech on Study on the effects of Mantras using signal processing, Mind, Brain, and Consciousness Conference (MBCC 2023), 14-16 December, 2023, IIT Mandi, India.
19. Keynote speech on AI-driven signal processing based intelligent systems for diagnosis of brain and heart diseases, IEEE 21<sup>st</sup> OCIT International Conference on Information Technology, 13-15 December, 2023, NIT Raipur, India.
20. Expert talk on multi-channel multi-component signal processing for EEG processing, National Symposium on Intelligent Computing and Communication Systems, Sponsored by DST SERB, 07-09 December, 2023, Gyan Ganga Institute of Technology and Sciences, Jabalpur, India.
21. Distinguish Speaker, SERB Sponsored High-End Workshop on AI and Machine Learning Applications in Healthcare, 08-14 September, 2023, Department of Electronics and Communication, DSPM IIIT Naya Raipur, India. (Topics (02): Fourier-Bessel series expansion based medical signal processing and Automated glaucoma diagnosis based on non-stationary signal decomposition techniques) (Also delivered inaugural speech)
22. Keynote speech on Univariate and multivariate EEG analysis and machine learning for brain disease diagnosis, International Conference on Machine intelligence for Research & Innovations (MAITRI-2023 Summit), 01-03 September, 2023, NIT Jalandhar, India.
23. Webinar on Multivariate EEG signal processing, 14 August, 2023, IEEE Biometrics Council, IEEE Student Chapter, MNIT Jaipur, India.
24. Expert talk on Multi-channel signal processing and applications, 14 August, 2023, IEEE Rajasthan Subsection, Signal Processing Society Student Chapter, MNIT Jaipur, India.
25. Expert speaker, 1<sup>st</sup> Research Symposium, 10-11 August, 2023, IIIT Nagpur, India. (Topic: Research and publication process)
26. Invited speaker, International Workshop on Computational Intelligence 2023 (IWCI'23), 07-11 August, 2023, Amrita School of Artificial Intelligence, Amrita Vishwa Vidyapeetham, Coimbatore, India. (Topic: Signal processing and machine learning based frameworks for medical applications)
27. Keynote speaker, 2023 3<sup>rd</sup> International Conference on Signal Image Processing and Communication, 26-28 May, 2023, Kunming, China. (Topic: Automated AI driven systems for diagnosis of brain and heart diseases)
28. Keynote speaker, International Congress on Artificial Intelligence in Medical Sciences (AIMS 2023), 17-19 May, 2023, Kish Island, Iran. (Topic: Multichannel signal processing enabled artificial intelligence for diagnosis of brain disorders)

29. Keynote speaker, 3<sup>rd</sup> International Conference on Emergent Converging Technologies and Biomedical Systems (ETBS 2023), 15-17 May, 2023, Jaypee University of Information Technology, Wagnaghat, Solan, India. (Topic: Multivariate signal processing and machine learning for computer-aided medical diagnosis)
30. Invited talk on Signal processing driven machine learning for medical image processing, A Second Five Day National E-Workshop on Medical Image Analysis using Artificial Intelligence, 24-28 April, 2023, Centre for Medical Imaging Studies (CMIS), Department of ECE, Gayatri Vidya Parishad College of Engineering (A), Visakhapatnam, India and Sankar Foundation Eye Hospital & Institute, Visakhapatnam, India.
31. Keynote speech on Multivariate brain signal processing, 2023 2nd International Conference on Image, Signal Processing and Pattern Recognition (ISPP2023), 24-26 February, 2023, Changsha, China.
32. Invited talk on Bio-sensors and intelligent signal processing, Hands-on Workshop on Bio-Sensors: Research and Practical Prospects, 19 January, 2023, Department of Electronics and Communication Engineering, Manipal Institute of Technology, Manipal, India. (Also Guest of Honor during the inaugural ceremony)
33. Expert speaker, SERB sponsored High-End Workshop on Deep Learning Based Biomedical Systems: Design Challenges and Future Directions, 12-18 December, 2022, Department of Electrical Engineering, IIT Patna, India. (Topic: Multichannel EEG signals classification frameworks)
34. Keynote speech on 6G technology for computer-aided medical diagnosis through telemedicine, Virtual National Conference on Recent Development of 6G Wireless Communication (RDWC 2022), Sponsored by AICTE, 13-15 December, 2022, IES College of Technology, Bhopal, India.
35. Invited speech on Multichannel signal processing for medical applications, IDP-OHEPEE Sponsored International Conference on Biotechnology and Bioinformatics: Perspectives and Challenge, 8-9 December, 2022, Maharaja Sriram Chandra Bhanja Deo University, Sriram Chandan Bihar, Takatpur, India.
36. Keynote speech on Importance of multichannel signal processing for health applications, IEEE Student Chapter, 04 October, 2022, Symbiosis University of Applied Sciences, Indore, India. (Also Chief Guest during the inaugural function on the occasion of IEEE day)
37. Expert talk on Multivariate EEG data analytics for brain disease diagnosis in SERB co-sponsored "3-Day International Research Workshop on Advances in Statistical Data Analysis and Modeling (WASDAM)", 25-27 July, 2022, IIIT Sri City, Chittoor, India.
38. Keynote speaker, the International Conference on Bio-Neuro Informatics and Algorithms (ICBNA 2022), 21-22 June, 2022, Symbiosis Institute of Digital and Telecom Management, Pune, India. (Topic: Multi-channel EEG signal processing for brain disease diagnosis)
39. Invited talk on Multivariate EEG signal processing for diagnostic robotics application, Workshop on Healthcare Robotics and Drone Applications, 27-29 May, 2022, IIT Mandi, India.
40. Keynote speaker, 2022 2nd International Conference on Signal Image Processing and Communication (ICSIPC2022), 20-22 May, 2022, Qingdao, China. (Topic: Multivariate signal processing with biomedical applications)
41. Invited talk on Glaucoma diagnosis based on non-stationary signal processing approaches, SERB Funded Five Day National E-Workshop on "Medical Image Analysis using Artificial Intelligence" (MIAAI-2022), 25-29 April, 2022, Centre for Medical Imaging Studies, Department of Electronics and Communication Engineering, Gayatri Vidya Parishad College of Engineering (A) and Sankar Foundation Eye Hospital & Institute, Visakhapatnam, India. (Also Chief Guest during the inaugural function)
42. Invited lecture on Machine learning and signal processing based methods for automated classification of EEG signals, SERB sponsored workshop titled "Machine Learning Techniques for Signal & Image Processing Applications", 18-22 April, 2022, Department of Electronics and Communication Engineering, NIT Rourkela, India.
43. IEEE ComSoc Distinguished Lecture on Multi-channel non-stationary signal analysis and applications, IEEE ComSoc student Chapter of IEEE SBM, 21 March, 2022, Manipal Institute of Technology, Manipal, India.
44. Keynote speaker, 4th International Conference on Machine Intelligence and Signal Processing (MISP2022), 12-14 March, 2022, NIT Raipur, India. (Topic: Biomedical images classification based on 2D Fourier-Bessel series expansion)

45. Speaker, Fourth International Conference on Engineering, Science, and Technology (ICEST2022), 16-17 February, 2022, Luxor, Egypt. (Topic: Multivariate EEG signal processing)
46. Guest lecture, International Workshop on Fractional Calculus and Computational Intelligence, 06-07 January, 2022, Govt. Mahatma Gandhi Memorial Post Graduate College, Itarsi, India (Topic: Computer-aided medical diagnosis system for epilepsy based on fractional linear prediction method)
47. Keynote speaker, IEEE International Symposium on Smart Electronic Systems, 2021, 20-22 December, 2021, MNIT Jaipur, India. (Topic: AI driven intelligent systems for medical diagnosis of brain and heart diseases)
48. Plenary talk on Signal processing and machine learning for healthcare applications, 11th International Advanced Computing Conference (IACC 2021), 18-19 December, 2021, University of Malta, Malta.
49. Keynote speaker, IEEE International Conference on Technology, Research, and Innovation for Betterment of Society (TRIBES – 2021), 17-19 December, 2021, IIIT Naya Raipur, India. (Topic: Multi-channel signal processing for biomedical applications)
50. Keynote speaker, National Conference on Emerging Trends in Automation, Data Engineering, and Communication (NCETinADC2021) 17-18 December, 2021, MANIT Bhopal, India. (Topic: Signal processing for epilepsy and schizophrenia diagnosis)
51. Keynote speaker, 4th International Conference on Information Systems and Management Science (ISMS 2021), 14-15 December, 2021, University of Malta, Malta and NIT Raipur, India. (Topic: Multi-channel EEG signal processing for brain diseases diagnosis)
52. Speaker, Workshop on Computational Intelligence in Digital Data Processing and Evidence Analysis, IEEE International Conference on Advanced Networks and Telecommunications Systems, 13-16 December, 2021, IDRBT, Hyderabad, India. (Topic: Speech signal processing for forensic applications)
53. Speaker, An International Workshop on Wavelets and its Applications: Image Processing, Data Science and PDEs, 06-10 December, 2021, Department of Mathematics, Manav Rachna University and Department of Mathematics, IIT Indore, India. (Topic: Wavelet transform fundamentals with signal processing applications)
54. Keynote speaker, National Conference on Research Methodology: A Birds' Eye View, 30 November, 2021, Fakir Mohan University (State Government University), Vyasa Vihar, Balasore, Odisha, India. (Topic: Research and publication process) (Also delivered inaugural speech)
55. Keynote speaker, 7th International Conference on Signal Processing and Communication (ICSC 2021), 25-27 November, 2021, Jaypee Institute of Information Technology, Noida, India. (Topic: Adaptive signal decompositions for EEG signal processing)
56. Plenary speaker, 2021 IEEE CIS Summer School on Emerging Research Trends in Artificial Intelligence and Computational Intelligence, 15-19 November, 2021, NIT Arunachal Pradesh, India. (Topic: Applications of AI for brain disease diagnosis)
57. Invited speaker, International Workshop on Fractional Derivatives: Theory & Computations with Applications (FDTCA 2021), 12-14 November, 2021, Department of Mathematical Sciences, IIT (BHU), Varanasi, India. (Also delivered valedictory speech) (Topic: Automated classification of epileptic seizure EEG signals based on fractional linear prediction method)
58. Invited talk on Machine learning and brain signal classification, 2nd Training School/Workshop on Environmental Cyber Physical systems, Indo-South Korea Joint Network Center for Environmental Cyber Physical Systems, 25-29 October, 2021, IIT (BHU), Varanasi, India.
59. Resource person, IBRO Global Engagement Workshop on Neurodegenerative Diseases, 01-05 October, 2021, NEHU Shillong, India. (Topic: Automated classification of MRI and EEG signals for computer-aided medical diagnosis)
60. Expert speaker, Two-day Online National Conference on Emerging Technologies in Intelligent Electronic system design, sponsored by IETE, 18-19 September, 2021, Department of Electronics & Communication Engineering, MANIT Bhopal, India. (Topic: FBSE-EWT method based signal processing)
61. Invited talk on Fundamentals and applications of signal analysis, 1st Training School/Workshop on Environmental Cyber-Physical Systems, Indo-South Korea Joint Network Center for Environmental Cyber-Physical Systems, 23-27 August, 2021, IIT Indore, India.

62. Invited speaker, Third International Conference on Engineering, Science, and Technology (ICEST2021), 28-29 July, 2021, Luxor, Egypt. (Topic: Fourier-Bessel series expansion based empirical wavelet transform and applications)
63. Keynote speech on Fourier-Bessel series expansion based empirical wavelet transform for non-stationary signals, 7th National Conference on Advancements in Communication, Computing and Electronics Technology (ACCET-2021), 19 June, 2021, MES College of Engineering, Pune, India.
64. Guest lecture on FBSE-EWT technique: A new tool for biomedical signal analysis, Scheme for Promotion and Research Collaboration (SPARC) International Workshop on Recent Trends in Biomedical Instrumentation and Assistive Technology, 26-28 May, 2021, Department of Instrumentation and Control Engineering, NIT Trichy, India.
65. Invited talk on Automated diagnosis of glaucoma based on fundus images, One Week International Research Workshop on Advances in Deep Learning and Applications (WADLA 2021), 22-26 February, 2021, IIIT Sri City, Chittoor, India.
66. Keynote speech on Fourier-Bessel series expansion based empirical wavelet transform for signal processing, International e-Conference on Intelligent Systems and Signal Processing (e-ISSP 2020), 28-30 December, 2020, Department of Electronics & Communication Engineering, G.H. Patel College of Engineering & Technology, Vallabh Vidyanagar, India. (Also delivered valedictory speech)
67. Keynote speech on FBSE-EWT method: A new domain for signal and image analysis, International Conference on Advanced Communication Technologies and Signal Processing (IEEE ACTS-2020), 04-06 December, 2020, NIT Silchar, India.
68. Expert talk on Detection of human brain disorders using novel machine learning approaches, National Seminar on Computer Vision and Image Processing (NaSCoVIP 2020), 09-11 October, 2020, IEEE Gujarat Section, India.
69. Keynote speech on Biomedical data analysis and classification, International Symposium/Summit on Data Science: A trending Technology in today's World, 16-17 July, 2020, Department of Computer Science & Engineering/IT, SAGE University, Indore, India.
70. Online talk (Webinar) on Signal processing based on time-frequency domain, IEEE Signal Processing Society, 14 July, 2020, MES's College of Engineering, Pune, India.
71. Online talk (Webinar) on Signal processing tools and techniques, IEEE Signal Processing Society, 04 July, 2020, IIIT Allahabad, India.
72. Keynote speech on Detection of epilepsy from EEG signals, 2020 4th International Conference on Advances in Computing and Data Sciences (ICACDS-2020), 24-25 April, 2020, Faculty of Information & Communication Technology, University of Malta, Malta.
73. Lecture on Machine learning and signal processing based methods for computer-aided medical diagnosis, IEEE Lecture Series, IEEE Kharagpur Section, 27 Januray, 2020, IIT Kharagpur, India.
74. Keynote speech on Analysis and classification of EEG signals for medical applications, International Conference on Recent Advances in Communication, Energy and Sensors (RACES 2019), 13-15 November, 2019, Sathyabama Institute of Science and Technology (Deemed to be University), Chennai, India.
75. Invited talk on Computer-aided diagnosis for epilepsy, International Conference on Computational Mathematics and its Applications (CMA 2019), 12-14 November, 2019, IIT Indore, India.
76. Keynote speech on Signal processing and machine learning for biomedical applications, Lumini'19, Tech Symposium, 14-15 September, 2019, BITS Pilani, Goa, India.
77. Keynote speech on Automated systems for classification of non-stationary biomedical signals, International Conference on Machine Intelligence and Signal Processing (MISP-2019), 07-10 September, 2019, IIIT Allahabad, Prayagraj, India.
78. Keynote speech on Time-frequency domain based signal processing, National Conference on Emerging Trends and Research in Electronics & Communication Engineering-2018 (NCETRECE), 26-27 November, 2018, Department of Electronics and Communication Engineering, Lakshmi Narain College of Technology, Indore, India.

79. Keynote speech on Automated classification of electroencephalogram signals, National Conference on Soft Computing and Intelligent Techniques in Science and Engineering (SCITSE), 25 November, 2017, Department of Computer Science & Engineering, NIT Raipur, India.
80. Keynote speech on Empirical wavelet transform based techniques for epilepsy diagnosis, 2017 International Conference on Current Trends in Computer, Electrical, Electronics and Communication (ICTCEEC), 08-09 September, 2017, Mysore, India.
81. Invited talk on Computer-aided diagnosis of epilepsy from EEG signals using empirical wavelet transform, International Symposium on Computational Mathematics, Optimization, and Computational Intelligence (CMOCI 2017), 17-19 July, 2017, IIT Indore, India.
82. Lectures (02) on Automated classification of EEG signals for computer-assisted diagnosis and automated diagnosis of diabetic and coronary artery diseases using heart signals, National Workshop on Recent Advances in Biomedical Signal Processing: Applications to Rehabilitation and Therapeutic Solution (BSP:RTS16), 21-23 August, 2016, Department of Biomedical Engineering, NIT Raipur, India.
83. Seminar on Detection of epileptic seizures from EEG signals, International Conference on Recent Advances in Mathematics and Their Applications (ICRAMTA-2016), 10-12 July, 2016, Department of Mathematics, University of Rajasthan, Jaipur, India.
84. Keynote speech on Automated classification of EEG signals for computer-aided medical diagnosis, National Conference on Advances in Neuroimaging and Applications in Cognitive Disorders (ANACOD), 03-04 May, 2016, National Brain Research Center, Manesar, India.
85. Seminar on Modern computing methods for adaptive interfaces in aBCI, Two Days National level Workshop on Modern computing technologies for Affective Brain Computer Interface (ABCI), 08 January, 2016, Kovilpatti, India.
86. Seminar on Computer-aided diagnosis of coronary artery disease from heart rate signals based on nonstationary signal processing, First Finnish-Indian Joint Symposium on Future Opportunities in Health, Drug Development and Diagnostics, 27 October, 2015, University of Turku, Turku, Finland.
87. Keynote speech on Detection of epileptic seizures from EEG signals, Third National Seminar on Advance Techniques in Signal Processing and Communication, 28 November, 2014, Lakshmi Narain College of Technology, Indore, India.
88. Keynote speech on Time-frequency methods, Technosummit 2013, 02-07 September, 2013, Sathyabama University, Chennai, India.

#### **Invited Talks in Short Term Courses/ Faculty Development Programs, Academic Institutes, and Other Programs:**

1. Invited lecture on Multi-channel signal processing and various applications, 30 October, 2023, Department of Avionics, Indian Institute of Space Science and Technology Trivandrum, Kerala, India.
2. Invited talk on Advanced signal processing for smart health monitoring, 18 October, 2023, Department of Instrumentation and Control Engineering, National Institute of Technology Tiruchirappalli, India.
3. Invited talks (02) on Signal analysis based machine learning for ECG data processing and Signal analysis based machine learning for EEG data processing, 16-21 August, 2023, International One-Week Faculty Development Program (FDP) on "Advances in Machine Learning, Image Processing and Natural Language Processing", Department of Information Technology, School of Engineering and Technology, Nagaland University, Dimapur, India.
4. Invited talk on Machine learning enabled signal processing for medical applications, Research Seminar Series #7, 14 August, 2023, Department of Computer Science and Engineering, MNIT Jaipur, India.
5. Invited talk on Multivariate signal processing: An important direction for biomedical research, SERB Sponsored High-End Workshop on Advanced Hands-On Training on Biomedical Signal Acquisition and Analysis (under the KARYASHALA scheme), 01-07 August, 2023, Department of Biomedical Engineering, NIT Raipur, India.
6. Invited talk on Multichannel signal processing for health applications, 26 July, 2023, Department of Computer Engineering, Modeling, Electronics and Systems Engineering, University of Calabria, Rende, Italy.

7. Invited talk on Multivariate signal processing: A useful framework for medical applications, Workshop on NICE-Healthcare (Novel Intelligent Computing mEthods for healthcare requirements forecasting, allocation and management), 11 July, 2023, University of Malta, Malta.
8. Keynote speech on Matlab implementation of time-frequency analysis techniques, One-week Training Program on Advanced Approaches in Modelling and Simulation for Cutting-Edge Electronic Systems, 12-18 June, 2023, Department of Electronics & Instrumentation Engineering, SGSITS Indore and Banasthali Vidyapith Rajasthan, Indore, India.
9. Invited talk on Time-frequency analysis methods, CEP course on Signal Processing for RF and other domains of Communication, 1 May, 2023, Defence Electronics Applications Laboratory, Dehradun, India.
10. Invited talk on Multichannel signal processing for medical applications, Faculty Development Programme on Advancements in Computational Biology and Healthcare, 17-21 April, 2023, Department of Electronics and Communication Engineering, SRM University-AP, Andhra Pradesh, India.
11. Invited talk on Effect of chanting on brain: A scientific study (in Hindi), 29 March, 2023, Sur Sandhya program, Varishth Nagrik Vichar Manch, Indore, India.
12. Resource person, One-Week Online Faculty Development Programme on "Machine Learning: Concepts and Applications", 14-20 March, 2023, Department of Computer Science & IT, Katua Campus, University of Jammu, Jammu & Kashmir, India. (Topic: Machine learning and multivariate signal processing for medical applications).
13. Inaugural talk, Poornima Hackathon 2.0, 03 March, 2023, Poornima Institute of Engineering and Technology, Jaipur, India. (Also Chief Guest during the inaugural ceremony)
14. Lecture on Signal processing (Time-domain and frequency-domain to joint time-frequency domain) and applications, 22 February, 2023, Department of Electrical Engineering, Medi-Caps University, Indore, India.
15. Lecture on Research methodology and publication measures, Two Days International Faculty Development Program on "Publishing Research Paper in High Impact Journals", 10-11 February, 2023, School of Computer Science and Information Technology, Symbiosis University of Applied Sciences, Indore, India.
16. Invited talk on Brain Signal Processing, Department of Electronics & Communication, 13 January, 2023, Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur, India.
17. Resource person, ATAL sponsored FDP on Emerging Trends and Applications in Speech Processing with Machine & Deep Learning, 09-20 January, 2023, Department of Computer Science and Engineering, Central University of Haryana, India. (Topic: Time-frequency domain for speech signal classification)
18. Resource person, Two-week Online STTP on Signal Processing using Machine Learning Algorithms (SPML-2023), 02-07 January, 2023, Department of Electronics and Telecommunication Engineering, Ramrao Adik Institute of Technology, Navi Mumbai, India. (Topic: Multichannel signal processing for biomedical applications)
19. Expert lecture on AI applications for biomedical signal processing, Two-week AICTE ATAL FDP on Artificial Intelligence in Biomedical Signal & Image Analysis, 19-30 December, 2022, Department of Electronics and Communication Engineering, IIIT Bhagalpur, India.
20. Invited talk on Medical data analysis and classification, ATAL Hybrid Faculty Development Program on Diverse Applications of Research Paradigms in AI, 05-16 December, 2022, Department of Electronics and Communication Engineering, St. Joseph's College of Engineering, Chennai, India.
21. Expert talk on Processing of non-stationary signal using machine learning, 2nd One-Week International Workshop on Signal Processing Using Machine Learning: Applications & Hands-On (Online), 31 August, 2022 to 6 September, 2022, VIT-AP University, Vijayawada, India.
22. Invited talk on Modern trends in Physics research in an international webinar, 16 August, 2022, Ambah Post Graduate College, Ambah, Morena, India.
23. Invited talk on Multivariate signal processing for EEG analysis and classification, 01 August, 2022, Center for Cognitive Neuroscience Berlin, Free University of Berlin, Germany.
24. Expert talks (02) on Multivariate EEG signal processing and automated detection of ECG signals, in the academy training Programme on Smart Healthcare Technologies: Opportunities and Challenges, 25 July 2022 to 05 August, 2022, Electronics & ICT Academy, MNIT Jaipur, India.



25. Key speaker in one week Faculty Development Program on the topic Recent trends in Signal Processing and Machine Learning With Their Applications, 25-29 July, 2022, Department of Electronics and Communication Engineering, Geetanjali Institute of Technical Studies, Udaipur, India. (Topic: Machine learning and signal processing for medical data processing)
26. Expert lecture on Automated identification of EEG signals for brain disease diagnosis Faculty Development Programme on Application of Machine Learning in Post Pandemic Era, 04-08 July, 2022, VIT Vellore, India.
27. Invited talk on Analysis and classification methods for EEG signals, Online Faculty Development Program on AI & Machine Learning for Biomedical signal and Image Analysis, Electronics & ICT Academy, Sponsored by Ministry of Electronics and Information Technology (MeitY), Government of India, 27 June-06 July 2022, NIT Warangal in association with Kakatiya Institute of Technology and Science, Warangal, Telangana, India.
28. Expert lecture on ML and signal processing for EEG signal classification in Faculty Development Program on Applications of AI & ML in Signal Processing and Communications, 23-30 June, 2022, Electronics & ICT Academy, NIT Warangal in association with the Department of Electronics and Communication Engineering, GITAM School of Technology, GITAM Deemed to be University, Vizag, India.
29. Expert talk on Advanced signal processing for ECG data analysis and classification, Online Short Term Course on Biomedical Signal and Image Processing, 20-24 June, 2022, Department of Electronics & Communication Engineering, NITTTR, Chandigarh, India.
30. Expert talk on Machine learning based frameworks for biomedical applications, SERB sponsored High-End Workshop on Cultural Heritage Preservation using Machine Learning, 13-26 June, 2022, Department of Computer Science and Engineering, NIT Meghalaya, India.
31. Invited talk on Multi-variate signal processing for medical data analysis, SERB-sponsored Five day online short-term program on Recent Advances in Biomedical Signal and Image Processing, 30 May-03 June, 2022, Department of Biotechnology & Medical Engineering, NIT Rourkela, India.
32. Resource person, Faculty Development Program Sponsored by DST-SERB (under Scientific Social Responsibility) on Applications of Artificial Intelligence in Brain Computer Interfaces, 09-13 May, 2022, SR University, Warangal, Telangana, India. (Topic: Automated systems based on signal processing and machine learning for identification of EEG signals)
33. Expert talk on Multivariate signal processing for medical applications, SERB-sponsored five-day online short-term course on Advances in Signal Processing and VLSI Technologies, 02-06 May, 2022, Department of Electronics & Communication Engineering, NIT Rourkela, India.
34. Expert talk on Research, writing manuscript, and publication process, 5-Days Faculty Development Programme on Enhancing the Quality Indicators of Academic research, Academic Research office and Center for Teaching and Learning, 19-23 April, 2022, VIT-AP University, Amaravati, India.
35. Expert talk on ML and signal processing for EEG signal classification, Ten-day online Faculty Development Programme on Role of AI in Communication and Signal Processing Applications, 08–17 April, 2022, Electronics & ICT Academy, NIT Warangal, India in association with Department of Electronics and Communication Engineering, Chalapathi Institute of Engineering and Technology, Guntur, India.
36. Speaker in Five-Days Online Faculty Development Program on Recent Trends in Biomedical Technology, 04-08 April, 2022, Biomedical Department, Bharat Ratna Indira Gandhi College of Engineering, Solapur, India. (Topic: Machine learning for biomedical signal processing)
37. Guest lecture on Machine learning and signal processing for medical applications, 28 March, 2022, Department of Computer Science and Engineering, CMR College of Engineering and Technology, Hyderabad, India.
38. Speaker, International Faculty Development Program on Embedded System Design and Bioelectronic Interfaces, 21-23 March, 2022, Pimpri Chinchwad College of Engineering Pune, India and University of Malaya, Malaysia. (Topic: Multi-channel EEG data processing: New techniques)
39. Invited talk on AI for biomedical signal classification, Short-Term Course on IoT with AI and Data Science, 11-16 March, 2022, Department of Electrical Engineering, IIT Patna, India.
40. Invited talk on AI and signal processing for telemedicine, AICTE-QIP Faculty Development Program on AI and IoT in Nanoelectronics, Agriculture and Communication in the Unravelling of Aatmanirbhar Bharat, 07-12 March, 2022, IIT Indore, India.

41. Invited talk on Machine learning for biomedical signal processing, AICTE-ISTE Induction Programme, 22-28 February, 2022, Shree Rayeshwar Institute of Engineering and Information Technology, Shiroda, India.
42. Invited talk on Time-frequency analysis for speech signal processing, Faculty Development Programme on Machine Learning in Speech and Audio Processing, 21-25 February, 2022, Department of Electronics and Communication Engineering, BIT Mesra, Ranchi, India.
43. Keynote speech on ML applications for EEG signal classification, AICTE-ISTE Sponsored Induction/ Refresher program on Artificial Intelligence and Machine Learning: Applications, Challenges and Opportunities, 09-15 February, 2022, PES's, Modern College of Engineering, Pune, India. (Also Guest of Honor during the inaugural ceremony)
44. Invited talk on Machine learning and signal processing for classification of electroencephalogram signals, Ten-Day Online Faculty Development Programme on AI for Communication and Signal Processing Applications, Sponsored by Ministry of Electronics and Information Technology (MeitY), Government of India, 05-14 February, 2022, Department of Electronics and Communication Engineering, VR Siddhartha Engineering College, Kanuru, India, Electronics & ICT Academy, NIT Warangal, India.
45. Invited talk on Introduction to ML techniques and brain-signal classification, AICTE-ATAL Faculty Development Program on Part-2 Robust AI: Building through data exploration, pre-processing and representation, 04-08 February, 2022, Department of Data Science & AI, IIIT Naya Raipur, India.
46. Invited talk on Multi-channel EEG signal processing, The online short-term course on 'Biomedical Image and Signal Processing', Online National-level Programme for Teachers/Staff/Research Scholars of Indian Universities/Institutes/Colleges/Polytechnic Institutes and Individuals from Industries, 17-21 January, 2022, Department of Electronics and Communication Engineering, NITTTR, Chandigarh, India.
47. Expert talks (02) on Time-frequency domain based automated classification of EEG signals and time-frequency domain based automated classification of ECG signals, AICTE-ISTE Faculty Orientation/Refresher Program on Artificial Intelligence based Physiological Signals, their Learning and Analysis, 12-18 January, 2022, Prestige Institute of Engineering Management and Research, Indore, India.
48. Invited talk on ML and its application in biomedical signal classification, Cynaptics Club, 12 January, 2022, IIT Indore, India.
49. Expert talk on Data science, 29 December, 2021, Department of Computer Science & Engineering, IES College of Technology, Bhopal, India.
50. Inaugural speech (Chief guest) in International Conference on Information Management and Machine Intelligence (ICIMMI 2021), 23-24 December, 2021, Poornima Institute of Engineering & Technology, Jaipur, India.
51. Invited talk on Fourier-Bessel series expansion based signal processing, 6-days Short Term Training Programme on Mathematical Methods in Signal & Image Processing, 13-18 December, 2021, Department of Electronics Engineering, Ramrao Adik Institute of Technology, Nerul, India.
52. Invited talk on Artificial intelligence for automated diagnosis of brain diseases with telemedicine application, AICTE-ATAL Faculty Development Program entitled Artificial Intelligence and Internet of Things in Nanotechnology, Sensors, and Communication in the making of Aatmanirbhar Bharat, 06-10 December, 2021, Department of Electrical Engineering and Centre for Advanced Electronics at IIT Indore, India.
53. Invited talk on Iterative filtering based EEG signal processing, Webinar series on Signal Processing and Machine Learning Approaches for Biomedical Signals (SPMLB-2021), 25-29 October 2021, Department of Electrical Engineering, NIT Rourkela, India.
54. Invited talk on Applications of ML algorithms for the heart diseases diagnosis under IETE-Prof. SVC Aiya Memorial Award (2021) Lecture, 25 October, 2021, IETE-Sub center and Oriental University, Indore, India.
55. Invited talk on AI based computer-aided medical diagnosis of brain diseases under Prof. L.A. Zadeh Memorial Lecture Series, 20 October, 2021, Guru Ghasidas Vishwavidyalaya (Central University), Bilaspur, India.
56. Invited talk on Introduction to AI, ML and Application, AICTE-ATAL Academy Sponsored One Week Online Faculty Development Program on Artificial Intelligence & Machine Learning, 04-08 October, 2021, NIT Raipur, India.

57. Expert talk on Artificial intelligence and signal processing for EEG signal analysis and classification, Faculty Development Programme under AICTE-ATAL Academy in the Thrust Area of Life Skill Management, with sub thrust area Artificial Intelligence in Healthcare, 27 September-01 October, 2021, Department of Electronics and Communication Engineering, Gauhati University, India.
58. Expert talk on Intelligent computing for brain health: Some applications, One Week AICTE-ATAL Sponsored Faculty Development Programme on Intelligent Computing in Health Care, 20-24 September, 2021, Department of Information Technology and Department of Biomedical Engineering, NIT Raipur, India.
59. Expert talk on AI for EEG signal processing and analysis, AICTE-ATAL sponsored Online Faculty Development Programme on Artificial Intelligence for Speech and Bio-Signal Processing, 20-24 September, 2021, IIIT Dharwad, India.
60. Expert lecture on Non-stationary signal processing based methods for automated classification of EEG signals, The short-term course on Engineering Applications of Artificial Intelligence and Machine Learning, 13-17 September, 2021, Department of Electronics and Communication Engineering, NITTTR, Chandigarh, India.
61. Invited talk on Computer-aided medical diagnosis for brain diseases using signal processing and machine learning techniques, AICTE-ATAL Faculty Development Program (Online) on Signal Processing and Machine Learning Techniques: Emerging Trends, 06-10 September, 2021, Department of Electrical and Instrumentation Engineering, Sant Longowal Institute of Engineering & Technology, Longowal, India.
62. Invited talk on Telemedicine software-solutions for brain disease diagnosis, Faculty Development Program on Telemedicine, 09-13 August, 2021, Department of Electronics and Communication Engineering, NIT Jamshedpur, India in collaboration with ATAL Academy, Kolkata, India.
63. Invited talk on Machine learning for EEG signal classification, One week Faculty Development Program on Machine Learning: Techniques, Applications and Challenges, 03-07 August, 2021, Department of Computer Science & Engineering, Oriental Institute of Science & Technology, Bhopal, India.
64. Expert talk on Signal processing methods for medical data analysis for healthcare, AICTE-ATAL Faculty Development Program on Bio-Medical Signal Processing for Smarter Mobile Healthcare, 19-23 July, 2021, Department of Electronics and Communication Engineering, GIET University, Gunupur, India.
65. Expert talk on Fourier-Bessel series expansion based empirical wavelet transform for medical signal analysis and classification, One-week Online Short Term Course on Advanced Applications in Signal Processing and Artificial Intelligence, Under QIP scheme of AICTE, 06-10 July, 2021, School of Electrical Sciences, IIT Bhubaneswar, India.
66. Expert talk on Computer-aided EEG signal analysis and classification for telemedicine, QIP Short Term Course on Artificial Intelligence, Blockchain Security and Internet of Things for beyond 5G Communications, 05-09 July, 2021, IIT Indore, India.
67. Expert talk on Advanced time-frequency techniques for biomedical signal and image analysis, Signal Processing and ML for automated diagnosis of medical images, Faculty Development Program sponsored by AICTE-ATAL in "Signal processing and machine learning for AI-driven healthcare systems", 23-27 June, 2021, Department of Electrical Engineering, IIT Patna, India.
68. Invited talks (05) on Introduction to neural network and back propagation, tutorial on neural network and back propagation, tutorial on convolutional neural networks, speech data and feature engineering, speech data-speaker recognition and speech to text, Future Skilled Program on Artificial Intelligence and Machine Learning, 16-26 June, 2021, IIT Indore, India.
69. Resource person, The online short-term course on Neural Networks and Deep Learning, 14-18, June, 2021, Department of Electronics and Communication Engineering, NITTTR, Chandigarh, India. (Topic: FBSE-EWT based methods for automated classification of biomedical signals and images)
70. Expert talk on Applications of wireless communication in telemedicine for diagnosis of brain diseases one-week online ATAL Faculty Development Program on Modern Techniques for Wireless Communication, 17-21 May, 2021, Department of Electronics Engineering, MITS Gwalior, India.
71. Invited talk on Machine learning for automated diagnosis of glaucoma from fundus images, AICTE sponsored two-week Faculty Development Programme on Machine Learning in Image Processing Applications, 15-27 March, 2021, Department of Electronics and Communication Engineering, Potti Sriramulu Chalavadi Mallikarjuna Rao College of Engineering and Technology, Vijayawada, India.

72. Invited talk on Brain signal analysis and classification, Recent trends in Signal Processing and Machine Learning with their Applications, 08-12 March, 2021, Department of Electronics and Communication Engineering, NIT Hamirpur, India.
73. Invited talk on Sound and waves (in Hindi), Rashtriya Avishkar Abhiyan, 10 March, 2021, IIT Indore, India.
74. Invited talk on Time-frequency transforms and classification of EEG signals, Online Short Term Course on Basic2Advance of Signal Processing for Engineering Applications, 15-19 February, 2021, MNIT Jaipur, India.
75. Invited talk on 5G Technology applications in AI and signal processing based medical diagnosis using tele-medicine, Online Faculty Development Program on Emerging Trends in VLSI and Nanoelectronics for Building Atmanirbhar Bharat, 15-20 February, 2021, Centre for Advanced Electronics, IIT Indore, India.
76. Invited talk on Research, research methodology and publication, TEQIP-III, BPUT Odisha Sponsored Three Days Online Short Term Training Program On Essential Tools and Techniques in Research Methodology ETTRM-2021, 11-13 February, 2021, Department of Electronics & Communication Engineering, Silicon Institute of Technology, Sambalpur, India.
77. Invited talk on EEG signal classification techniques for brain disease diagnosis, AICTE sponsored Two Week Faculty Development Program on "Hands-on project based approach for Biomedical Signal Analysis using MATLAB, 01-13 February, 2021, Faculty Development Program Phase-2, Kakatiya Institute of Technology and Science, Warangal, India.
78. Invited online talk on Brain signal processing: Analysis and classification of EEG signals, 14 January, 2021, MILE Laboratory, Department of Electrical Engineering, IISc Bangalore, India.
79. Invited online talk on Research directions in the area of brain signal processing, Short Term Course on Research Opportunities in Biomedical Engineering: Theory to Device (ROBiE), 08-12 January, 2021, Department of Electronics and Communication Engineering, IIITDM Kancheepuram, India. (Also delivered Felicitiation Address)
80. Expert talk on Research and article writing process, AICTE Sponsored Six Days Short Term Training Program on Technical Writing & Research Methodology, 28 December, 2020-03 January, 2021 (Slot 3), Department of Electrical & Electronics Engineering, Chaitanya Bharathi Institute of Technology, Proddatur, India. (Also delivered inaugural ceremony speech)
81. Invited talk on Artificial intelligence applications to EEG signal classification, Online Faculty Development Programme in Artificial Intelligence and Machine Learning–Basics and Applications organized by Centre for Academic Leadership and Education Management under the Aegis of Pandit Madan Mohan Malviya National Mission on Teachers and Teaching, Ministry of Education, Government of India in collaboration with Department of Computer Science and Applications, 22-28 December, 2020, Panjab University, Chandigarh, India.
82. Invited talks (03) on Basics of signal processing, time-frequency representation, and advanced signal processing, TEQIP-III Sponsored Online Short Term Course on Condition Monitoring of Rotating Machines using Advanced Signal Processing Techniques, 21-23 December, 2020, Department of Mechanical Engineering, IIT Indore, India.
83. Resource person, UGC-HRDC Short-term Course in Bio-medical Technology with focus on Stress and its Remedies, 14-21 December, 2020, Department of Biomedical Engineering, NEHU Shillong, India. (Topic: Automated classification system for brain signals)
84. Guest speaker in one week Faculty Development Program under AICTE-ATAL academy on Applications of Signal and Image Processing, 15-19 December, 2020, Department of Electronics & Communication Engineering, Lakshmi Narain College of Technology, Bhopal, India. (Topic: Applications of signal processing methods for classification of brain signals)
85. Expert talk on Research and technical communication, AICTE Sponsored Six Days Short Term Training Program on Technical Writing & Research Methodology, 14-19 December, 2020 (Slot 2), Department of Electrical & Electronics Engineering, Chaitanya Bharathi Institute of Technology, Proddatur, Kadapa, India. (Also delivered valedictory speech)
86. Expert talk on Signal processing and machine learning based EEG signal classification techniques, AICTE Sponsored Online Short Term Training Programme under AQIS on Advance & Emerging Trends in Signal Processing using Machine Learning, Phase II: 7-12 December, 2020, GIET University, Gunupur, India.

87. Expert talk on Time-frequency approaches for signal representation, TEQIP-III Sponsored Short Term Course on Signal and Image Compression: From Fundamentals to Standards, 07-09 December, 2020, Department of Electrical Engineering, IIT Indore, India.
88. Webinar on Wavelet analysis for signal processing, 04 December, 2020, Department of Electronics and Communication Engineering, Mangalore Institute of Technology and Engineering, Moodabidri, India.
89. Expert talk on 6G Technology applications in AI based computer-aided medical diagnosis using tele-medicine, TEQIP Sponsored Online Short-Term Course on Artificial Intelligence, Blockchain and Internet of Things for 6G Communications, 03-05 December, 2020, Department of Electrical Engineering, IIT Indore, India.
90. Expert talk on Research methodology, writing, and publication process of the manuscripts, TEQIP sponsored Faculty Development Program on Fundamentals of Effective Manuscript Writing, 02-04 December, 2020, Centre for Advanced Electronics, IIT Indore, India.
91. Expert talk on Research and publication processes, AICTE Sponsored Six Days Short Term Training Program on Technical Writing & Research Methodology, 30 November-05 December, 2020 (Slot 1), Department of Electrical & Electronics Engineering, Chaitanya Bharathi Institute of Technology, Proddatur, India.
92. Expert talks (02) on EEG and ECG signals analysis and classification, AICTE-ATAL Academy Sponsored Five Days Faculty Development Program on AI for Healthcare, 23-27 November, 2020, Department of Electronics and Communication Engineering, Sarvajanic College of Engineering and Technology, Surat, India.
93. Expert talk on Automated diagnosis techniques for heart diseases, TEQIP III Sponsored One-Week Online Short Term Course On Technological Innovations and Challenges in Biomedical Instrumentation, 23-27 November, 2020, Department of Electrical Engineering and Biotechnology, G.B. Pant Institute of Engineering and Technology, Pauri-Garhwal, India.
94. Webinar on Automated classification techniques based on signal processing and machine learning for computer-aided medical diagnosis, 27 November, 2020, Department of Electronics and Communication Engineering, Vignan's Foundation for Science, Technology & Research (Deemed to be University), Vadlamudi, Guntur, India.
95. Inaugural talk on Wavelet based time-frequency analysis, QIP sponsored short term course on Wavelet via Matrices and its Applications in signals and image processing, 16-21 November, 2020, Department of Mathematics, IIT Indore, India.
96. Research talk on Research and Publication, 12 November, 2020, Students' Gymkhana, IIT Indore, India.
97. Expert talks (02) on Applications of artificial intelligence techniques in EEG and ECG signals classification, AICTE-ATAL Sponsored Five Days Faculty Development Program on Artificial Intelligence: Algorithms and Applications, 09-13 November, 2020, Department of Electronics & Communication Engineering, H.K.E. Society's Poojya Dodda Appa College of Engineering, Kalaburagi, India.
98. Expert lecture on Signal Processing (Time-dependent spectral representation) in Short Term Training Program on Industry-Academia Convergence in Electronics & Communication Engineering under TEQIP-III, 28 October-1 November, 2020, Department of Electronics Engineering, NIT Uttarakhand, India.
99. Expert talk on Signal processing and machine learning algorithms for EEG analysis and classification, AICTE Online STTP on Emerging Trends in Advanced Medical Systems, Applications & System Design Methodologies, 12-17 October, 2020, G.H. Rasoni College of Engineering, Nagpur, India.
100. Expert talk on Advanced machine learning methods for EEG and ECG classification, One Week Virtual/ Online Short Term Training Program on Advanced Machine Learning for Biomedical Data, 08-12 October, 2020, Electrical Engineering Department & Information Technology Department, NIT Raipur, India. (Also Guest of Honor during the inaugural ceremony)
101. Expert talk on Fundamentals of time-frequency analysis, QIP Sponsored (Online) Short Term Course on Computational Techniques in Image and Signal Processing, 28 September-03 October, 2020, Department of Electrical and Instrumentation Engineering & Electronics and Communication Engineering, Sant Longowal Institute of Engineering & Technology, Longowal, India. (Also Guest of Honor during the inaugural ceremony)

102. Expert talk on 5G technology applications in computer-aided medical diagnosis through tele-medicine, One week online Short Term Course on 5G: Devices & Key Enable Technologies under TEQIP-III, 19-23 September, 2020, Department of Electronics Engineering, MITS Gwalior, India.
103. Expert talk on Computational techniques for classification of electroencephalogram (EEG) signals, TEQIP-III sponsored Faculty Development Program on Recent Advances in Computational Techniques, 19-23 September, 2020, Department of Information Technology, College of Engineering and Technology, Bhubaneswar, India.
104. Online expert lectures (02) on Applications of machine learning algorithms for heart disease diagnosis and Applications of machine learning algorithms for brain disease diagnosis, TEQIP-III Sponsored Online Workshop on Artificial Intelligence and Machine Learning Applications in Healthcare, 03-07 September, 2020, Department of Computer Science Engineering & Electronics and Communication Engineering, NIT Meghalaya, India.
105. Online expert lecture on Intelligent systems for diagnosis of brain disorders, Online Short-Term Training Program on Intelligent Systems and Networks (ISN-2020), Under Twinning Program TEQIP-III, 31 August–04 September, 2020, Department of Electronics & Communication Engineering, Sant Longowal Institute of Engineering & Technology, Longowal & Department of Electronics Engineering, NIT Uttarakhand, India.
106. Online expert lecture on Time-frequency domain based signal analysis, Research Talk Series 2020, 26 August, 2020, Department of Electronics and Communication Engineering, IIITDM Kancheepuram, India.
107. Online expert talk on Signal processing and machine learning based automated methods for heart disease diagnosis, Two weeks online Faculty Development Program on Recent Trends in Electronics and Communication Engineering, 18-28 August, 2020, Department of Electronics and Communication Engineering, G. B. Pant Institute of Engineering & Technology, Puri Garhwal, India.
108. Online expert talk on Automated analysis and classification of EEG signals for computer-aided medical diagnosis, Faculty Development Program on Recent Advances in Electronics and Communication Engineering, 17-21 August, 2020, Department of Electrical Engineering, Government College of Engineering, Kalahandi, Bhawanipatna, India.
109. Online talk (Webinar) on Time-frequency analysis techniques, 01 August, 2020, Kalinga Institute of Industrial Technology, formerly KIIT University, Bhubaneshwar, India.
110. Online talk (Webinar) on Research-ethics & methodology in modern education, 30 July, 2020, Department of Basic Sciences and Department of Computer Science, TRUBA College of Science & Technology, Bhopal, India.
111. Online talk (Webinar) on 5G Technology application for automated classification of EEG signals based on tele-medicine, Faculty Development Program on Recent Developments & Limitations of 5G Technology under TEQIP-III, 29 July, 2020, IES College of Technology, Bhopal, India.
112. Expert talk on Time-frequency analysis of signals, 24 July, 2020, Department of Electronics, G H Rasoni College of Engineering, Nagpur, India.
113. Online talk (Webinar) on Research methodology and peer reviewed journal publication process, 20 July, 2020, Shiv Kumar Singh Institute of Technology and Science, Indore, India.
114. Online talk (Webinar) on Automated methods for classification of brain signals, 15 July, 2020, Rishi M.S. Institute of Engineering & Technology for Women, Hyderabad, India.
115. Keynote speech on MATLAB based time-frequency analysis, TEQIP-III assisted online comprehensive training program on MATLAB for Engineering Graduates, 05-18 June, 2020, Department of Electronics and Communication Engineering, Bundelkhand Institute of Engineering & Technology, Jhansi, India.
116. Online talk (Webinar) on Evolution prospects of technical education during COVID 19, 09 June, 2020, Sri Satya Sai University of Technology and Medical Sciences, Sehore, India.
117. Online talk (Webinar) on Time-frequency analysis, 18 May, 2020, Department of Electronics Engineering, G.H. Rasoni College of Engineering, Nagpur, India.
118. Online talk (Webinar) on Peer-reviewed publications, impact factor, H and I Index, and citations, 06 May, 2020, School of Electrical and Electronics Engineering, Sathyabama Institute of Science and Technology (Deemed to be university), Chennai, India.



119. Lecture on Signal analysis techniques, QIP Short Term Course on Recent Advancement in Signal and Image Processing with Hands-on Sessions, 02-06 March, 2020, Department of Electrical Engineering, IIT Indore, India.
120. Lecture on EEG-ECG signal processing for health care technology, TEQIP Short term course on Application of MATLAB in Bioengineering, 27-31 January, 2020, Department of Mechanical Engineering and Department of Biosciences & Biomedical Engineering at IIT Indore, India.
121. Valedictory speech on Database and algorithms (Information Technology), One Week Faculty Development Programme, 26-30 December, 2019, Department of Information Technology, SGSITS Indore, India.
122. Expert talk on Machine learning for heart and brain diseases in Faculty Development Program on Machine Learning, 23 December, 2019-04 January, 2020, Department of Computer Science & Engineering, Institute of Engineering & Science, IPS Academy, Indore, India.
123. Expert talk on Machine learning for classification of EEG signals in Department of Science and Technology Funded Short Term Training Program on Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning, 17-26 December, 2019, MANIT Bhopal, India.
124. Expert talk on Time-frequency analysis and applications in communications in Faculty Development Program on Signal Processing Perspectives in Wireless Communication, 19-28 December, 2019, Department of Electronics & Telecommunication Engineering, Babasaheb Naik College of Engineering, Pusad, India.
125. Expert talk on Biomedical signal processing (EEG, ECG, and HRV signals) in AICTE sponsored two week Faculty Development Programme on Pedagogy of Signal Processing and its Application, 09-20 December, 2019, Department of Electronics and Telecommunication Engineering, Ramrao Adik Institute of Technology, Nerul, India.
126. Expert talk on Time-frequency analysis for communications, AICTE Sponsored Two Week Faculty Development Programme on Recent Advances in Microwave and Communication, 03-13 December, 2019, Department of Electronics & Telecommunication Engineering, SGSITS Indore, India.
127. Lectures (02) on Variational mode decomposition based methods for speech signal analysis and time-frequency analysis, AICTE Sponsored Two Weeks Faculty Development Program on Emerging Trends in Speech, Image & Video Processing Techniques, 25 November-07 December, 2019, Department of Electronics and Telecommunication Engineering, Sanjivani College of Engineering, Kopargaon, India.
128. Expert talk on Machine learning and signal processing for computer-aided medical diagnosis, Short Term Training Program on Design and Development of System on chip using Low Power VLSI, Sponsored by AICTE, 25-30 November, 2019, Department of Electronics & Instrumentation Engineering, SGSITS Indore, India.
129. Invited talk on Automated analysis and classification of brain waves (EEG signals) for BCI applications, Faculty Development Program on Recent Trends in Robotics Control & Instrumentation, 18-22 November, 2019, Department of Electronics & Instrumentation Engineering, Institute of Engineering & Technology, Bundelkhand University, Jhansi, India.
130. Keynote speech on Analysis and classification of EEG signals for medical applications, International Conference on Recent Advances in Communication, Energy and Sensors (RACES 2019), 13-15 November, 2019, Sathyabama Institute of Science and Technology (Deemed to be University), Chennai, India.
131. Lecture on Time-frequency domain based signal analysis, 16 September, 2019, BITS Pilani, Goa, India.
132. Lecture on Research Methodology, TEQIP Sponsored Two Days Workshop on Research Methodology & R programming, 31 August-01 September, 2019, MITS Gwalior, India.
133. Lecture on Research for UG and PG students, 30 August, 2019, Sri Ram College of Engineering and Management, Banmore, India.
134. Lecture on Time-Frequency analysis using MATLAB, TEQIP Short term course on Programming for Research Application using MATLAB, 29 June-01 July, 2019, Department of Mechanical Engineering, IIT Indore, India.

135. Lectures (02) on Research Methodology and Technical Communication to develop skills which will strengthen their endeavours in the pursuit of PhD level projects, R&D and supervision of graduate students in the Masters' and PhD Programmes, Faculty Induction Program 2019 on Advanced Pedagogy and Digital Tool, Phase I, 17-21 June, 2019 and Phase II, 24-28 June, 2019, IIT Indore, India.
136. Guest lectures (02) on Time-frequency methods and automated classification of EEG signals, Faculty Development Program entitled Recent Trends in Signal Processing, 23 April, 2019, Department of Electronics and Communication Engineering, Aditya Engineering College, Surampalem, India.
137. Lecture on Implementation of signal processing algorithms for health care systems, TEQIP III Sponsored Short Term Course on Advancements in Microelectronics and VLSI Design, 11-15 March, 2019, Department of Electronics and Instrumentation Engineering, SGSITS Indore, India.
138. Lectures (02) on EEG and ECG signal processing for medical applications, TEQIP III Sponsored Short Term Course on Signal and Image Processing for Medical Applications, 20-24 February, 2019, Department of Electronics and Communication Engineering, VNIT Nagpur, India.
139. Lectures (03) on Automated analysis and classification of electroencephalogram (EEG) signals, automated systems for diagnosis of heart diseases based on flexible analytic wavelet transform, and implementation of time-frequency analysis techniques in MATLAB, 28 January, 2019, School of Medicine, Taylor's University, Subang Jaya, Malaysia.
140. Lecture on Application of machine learning for classification of EEG signals, Short-Term Course on Advanced Data Analytics using Machine Learning, 17 January, 2019, Acropolis Institute of Technology and Research, Indore, India.
141. Lectures (02) on MATLAB and time-frequency analysis methods, Faculty Development Programme (FDP) under TEQIP-III (RGPV) on MATLAB and Its Applications, 27-31 December, 2018, Oriental College of Technology, Bhopal, India.
142. Lectures (04) on Signals and systems, 27-29 September, 2018, Department of Electronics Engineering, Yeshwantrao Chavan College of Engineering, Nagpur, India.
143. Lectures (02) on How to get research proposals and funding: Innovation, entrepreneurship, and interdisciplinary research, Summer Faculty Training Program on Active Learning (under TEQIP-III), Phase 3, 25-29 June, 2018; Phase 4, 02-06 July, 2018, IIT Indore, India.
144. Lecture on Implementation of time-frequency analysis methods in MATLAB, One Week Faculty Development Programme on Programming and GUI Development using MATLAB, 11-15 June, 2018, Acropolis Institute of Technology and Research, Indore, India and IIITDM Jabalpur, India.
145. Lectures (02) on Time-frequency analysis and biomedical signal processing, Faculty Development Program under TEQIP-III, Research Avenues and Trends on Digital Signal Processing, Computational Algorithms and Architectures-2018, 04-09 June, 2018, Hindustan College of Science and Technology, Mathura, India.
146. Lecture on Time-frequency domain representation, TEQIP sponsored six-day short term course on Sustainable Water Resources Management under Changing Climate, 28 May-02 June, 2018, Department of Civil Engineering, IIT Indore, India.
147. Lectures (02) on Basics of signal analysis, Two-Days Short Term Course on Bearing and Gear Fault Diagnosis under TEQIP-III, 26-27 March, 2018, Department of Mechanical Engineering, IIT Indore, India.
148. Lectures (04) on Digital signal processing, 01-03 February, 2018, Department of Electronics Engineering, Yeshwantrao Chavan College of Engineering, Nagpur, India.
149. Lectures (03) on Peer-reviewed publications (Impact factor, H & I index, citation), Faculty Induction Workshops under TEQIP-III, Phase A: 17-21 January, 2018, Phase B: 23-27 January, 2018, and Phase C: 29 January–02 February, 2018, IIT Indore, India.
150. Inaugural lecture on Time-frequency analysis, TEQIP Two-day seminar on Mathematical Techniques in Wireless Networks, 27-28 October, 2017, SGSITS Indore, India.
151. Guest lecture on Problems in biomedical signal processing, 24 August, 2017, Department of Electronics and Electrical Engineering, IIT Guwahati, India.

152. Invited talk on Speech signal processing based on variational mode decomposition, 04 July, 2017, National Technical Research Organization, Government of India, New Delhi, India.
153. Invited talk on Empirical wavelet transform based methods for analysis and classification of epileptic seizure EEG signals, 08 April, 2017, Department of Electronics and Electrical Engineering, IIT Guwahati, India.
154. Lecture on Joint time-frequency analysis and applications to MEMS signal analysis, Short Term Course on Mechatronics, MEMS, and Micro Fabrication, 19-23 December, 2016, School of Engineering, IIT Indore, India.
155. Lecture on Fourier transform to tunable-Q wavelet transform (TQWT), National Workshop on Wavelet Transform and its applications in Signal Processing sponsored by M. P. Council of Science and Technology, 04-05 November, 2016, Department of Electronics and Communication Engineering, IES, IPS Academy, Indore, India.
156. Seminar on Automated classification of EEG signals using non-stationary signal models, Faculty Development Programme on Theory and Applications of Signals and Systems, 18-23 March, 2016, MANIT Bhopal, India.
157. Seminar on Features for automatic diagnosis of epilepsy from EEG signals, 29 October, 2015, Aalto University, Helsinki, Finland.
158. Lecture on Empirical mode decomposition based methodologies for analysis and classification of epileptic seizure EEG signals, R&D lecture on Path towards Effective Research, 20 June, 2015, Kongu Engineering College, Perundurai, Erode, India.
159. Lecture on Features based on the non-stationary signal models for analysis and classification of brain signals (EEG and MRI), DBT sponsored seminar on Advances in Bio-inspired Computing for Medical Image Diagnostics, 19 June, 2015, Kongu Engineering College, Perundurai, Erode, India.
160. Seminar on Features based on the non-stationary signal models for analysis and classification of EEG signals, 12 December, 2014, School of Computing and Intelligent Systems, University of Ulster, Magee Campus, Northern Ireland, UK.
161. Lecture on Classification of EEG signals based on empirical mode decomposition, Three Day Workshop on Recent Trends in Biomedical Engineering and Healthcare Services, 20-22 February, 2014, Department of Biomedical Engineering, SGSITS Indore, India.
162. Lecture on Time-frequency analysis with application to wireless communications, One week Short Term Training Program on Fundamentals and Applications of Wireless Communications, 27-31 January, 2014, Department of Electronics and Telecommunication, SGSITS Indore, India.
163. Lecture on Simulation and its applications in electronics and communication engineering, Short Term training Program on "Simulation and its Applications in Electronics and Communication Engineering" under TEQIP II, University Institute of Technology, 20-24 January, 2014, RGPV Bhopal, India.
164. Lecture on Empirical mode decomposition and its applications in EEG signal analysis, National Workshop on Latest Trends in Digital Signal Processing, 05 October, 2013, Department of Electronics, MITS Gwalior, India.
165. Lecture on Time-frequency analysis, 16 August, 2013, Military College of Telecommunication Engineering, Mhow, Indore, India.
166. Lecture on Non-stationary signal analysis techniques, Short Term Training Program on Digital Image and Signal Processing, 28 November-02 December, 2011, MANIT Bhopal, India.
167. Lecture on Time-frequency analysis, AICTE Sponsored Staff Development Programme on Current Trends in Signal Processing, 16-28 September, 2011, Department of Electronics and Instrumentation Engineering, Samrat Ashok Technological Institute, Vidisha, India.

#### Reviewer in Conferences and journals:

- Reviewer in national and international conferences: **34**

- Reviewer in national and international journals: **105**

#### Thesis Examiner:

- Ph.D.: **190**
- M.S.: **03**

#### Research Project Proposal Reviewer:

- Council of Scientific and Industrial Research (CSIR)
- Department of Biotechnology (DBT)
- Science and Engineering Research Board (SERB)
- Swiss National Science Foundation, Bern
- Italy- Singapore Science & Technology Call for Joint Research Projects

#### Administrative Experience:

1. **Special Invitee**, Program Advisory Committee (PAC) of Anusandhan National Research Foundation (ANRF)-Scientific and Useful Profound Research Advancement (SUPRA), IISER, Pune, India, 08-09 April, 2024.
2. **Co-opted Member**, Board of Awards, The Institution of Electronics and Telecommunication Engineers (IETE), New Delhi, India, Session: 2023-2024, 16 January, 2024 to present.
3. **Expert Member**, Expert committee for evaluation/examination of CRG proposals, Science and Engineering Research Board (SERB), Indian Association for the Cultivation of Science (IACS) Kolkata, India, 12-13 October, 2023.
4. **Member**, Board of Studies (BoS), Department of Information Technology, Nagaland University, Lumami, India, Three years, 04<sup>th</sup> October, 2023 to present.
5. **Member**, Advisory Committee for the Center of Data Science and AI, University of Petroleum and Energy Studies, Dehradun, India, 26 September, 2023 to present.
6. **Special Invitee**, Program Advisory Committee (PAC) of Science and Engineering Research Board (SERB)-Scientific and Useful Profound Research Advancement (SUPRA), GITAM (Deemed be University), Vishakhapatnam, India, 08-09 June, 2023.
7. **Board of Studies Member**, Information and Communication Technology, FEST, Adani University, Ahmedabad, India, 21 April, 2023 to present.
8. **Distinguished Expert**, DQAC Meeting, Department of Electronics and Communication Engineering, Prestige Institute of Engineering, Management & Research, Indore, India, 18 January, 2023.
9. **Expert Member**, Electrical, Electronics and Computer Engineering, Search-cum-Selection Committee for SERB-POWER grant, SERB, New Delhi, Three years, 17 January, 2023 to present.
10. **Research Advisory Committee (RAC) Member**, G.H. Rasoni Institute of Engineering and Business Management, Jalgaon, India, 02 January, 2023 to present.
11. **Expert Member**, Board of Studies Meeting, Department of Electronics and Instrumentation, Shri G.S. Institute of Technology & Science, Indore, India, 27 December, 2023.
12. **Expert Member**, Board of Studies Meeting, School of Computer Science and Information Technology, Symbiosis University of Applied Sciences, Indore, India, 27 December, 2022.
13. **Special Invitee**, Program Advisory Committee (PAC) of Science and Engineering Research Board (SERB)-Scientific and Useful Profound Research Advancement (SUPRA), SERB, IISER Pune, India, 22-23 December, 2022.
14. **Expert Member**, Board of Studies Meeting, Department of Electronics, Madhav Institute of Technology & Science, Gwalior, India, 14 December, 2022, 31 May, 2023, 29 November, 2023.
15. **Research Advisory Board Member**, IES College of Technology, Bhopal, India, 08 November, 2022 to present.

16. **Member**, Teach 1000 Teachers Program, Committee for Ujjain Campus. IIT Indore, Two years, 07 October, 2022 to 06 October, 2024.
17. **Member**, Departmental Consultative Committee (DCC), Department of Electrical Engineering, IIT Indore, Three years, 13 October, 2022 to present.
18. **Coordinator**, Review of Prime Minister's Research Fellowship (PMRF) scholars in image processing and biomedical signal processing area, Department of Electrical Engineering, IIT Madras, India, 22 September, 2022.
19. **Special Invitee**, Program Advisory Committee (PAC) of Science and Engineering Research Board (SERB)-Scientific and Useful Profound Research Advancement (SUPRA), SERB, New Delhi, India, 5 September, 2022.
20. **Expert Member (Special Invitee)**, Board of Studies, School of Electrical & Electronics Engineering (SEEE), VIT Bhopal University, Bhopal, 24 August, 2022.
21. **Coordinator**, Review of Prime Minister's Research Fellowship (PMRF) scholars in signal processing area, Department of Electrical Engineering, IIT Madras, India, 12 June, 2022.
22. **Member**, Expert committee for the monitoring/evaluation of project proposals under Science and Engineering Research Board (SERB) special call on Wearable Electronics for Biomedical Applications, SERB, New Delhi, 30 May, 2022.
23. **Convener**, Committee for effective implementation of National Education Policy (NEP) 2020 in the academic curriculum of IIT Indore, 04 February, 2022.
24. **Expert Member**, Board of Studies, Department of Electronics Engineering and Department of Electronics & Telecommunication Engineering of G H Raisonni College of Engineering, Nagpur, India, Three years, February, 2022 to present.
25. **Special Invitee**, Science and Engineering Research Board (SERB)-promoting opportunities for women in exploratory research (POWER) screening committee for engineering science scheme (Electrical, Electronics & Computer Science Engineering domain), SERB, New Delhi, India, 21-22 January, 2022.
26. **External Expert**, Departmental academic committee (DAC) and the departmental visiting committee (DVC), Department of Electrical Engineering, NIT Raipur, India, Three years, 06 July, 2021 to present.
27. **External Member**, Board of Studies, Electronics and Communication Engineering Department, Jaypee University of Engineering and Technology, Guna, India, 5 July, 2021.
28. **Expert Member**, Board of Studies, Department of Electronics & Telecommunication Engineering, G.H. Raisonni Institute of Business Management, Jalgaon, India, 8 June, 2021, 16 January, 2023.
29. **Senate Member**, IIITDM Kancheepuram, India, Two years, 01 April, 2021 to 31 March, 2023.
30. **Nodal Officer**, Common database of Research Scholars in IITs, 6 March, 2021 to present.
31. **Academic Expert Member**, Board of Studies of Electronics & Communication Engineering Department, IES University, Bhopal, India, 10 February, 2021, 04 December, 2021.
32. **Expert Member**, NBA advisory committees namely Department Advisory Board (DAB) and Program Assessment Committee (PAC), Department of Electronics & Communication, Poojya Doddappa Appa College of Engineering, Kalaburagi (Gulbarga), India, 16 January, 2021 to present.
33. **Subject Expert**, Board of Studies, Department of Electronics & Communication Engineering, IPS Academy, Institute of Engineering and Science, Indore, India, 06 October, 2020, 18 June, 2021, 12 March, 2022.
34. **Expert Member**, Board of Studies Meeting, Department of Information Technology, Shri G.S. Institute of Technology & Science, Indore, India, 16 July, 2020, 06 February, 2021, 17 August, 2021.
35. **Special Invitee (Expert Member)**, Review meeting of Engineering Science scheme (Electrical, Electronics & Computer Science Engineering domain), Science and Engineering Research Board (SERB), IIT Madras, India, 06-07 March, 2020.
36. **Expert Member**, "The Faculty" Faculty of Engineering, Medi-Caps University, Indore, India, Three years, 01 February, 2020 to 31 January, 2023.
37. **Associate Dean of Academic Affairs (UG Programs)**, IIT Indore, India, 01 January, 2020 to 20 July, 2023.
38. **Member (Academic)**, Board of Studies, Electronics & Communication, Electronics and Instrumentation and Electrical Engineering, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, India, 14 March, 2019 to 26 February, 2022.
39. **Faculty Advisor**, Electronics Club, Science and Technology Club activities of the students, IIT Indore, India, Three years, 15 October, 2018 to 15 October, 2021.

40. **Member**, State Level Steering Committee, Department of School Education, Government of Madhya Pradesh from 29 August, 2018 to 12 January, 2020.
41. **Expert Member**, Board of Studies, Department of Biomedical Engineering, Shri G.S. Institute of Technology & Science, Indore, India, 28 May, 2018, 30 May, 2019, 20 July, 2020, 06 February, 2021.
42. **Senate Member**, IIT Indore, India, from 18 December, 2017 to present.
43. **Member**, Department Seminar Committee, Department of Electrical Engineering, IIT Indore, India, from 02 February, 2017 to 31 October, 2018.
44. **Time Table Coordinator**, Department of Electrical Engineering, IIT Indore, India, from 01 December, 2016 to 03 January, 2020.
45. **Expert from Academics**, Academic audit, Department of Electronics and Communication Engineering, MANIT, Bhopal, India, 16 November, 2016.
46. **External Expert Member**, Board of Studies, Electronics and Communication Engineering Department, Maulana Azad National Institute of Technology, Bhopal, India, 20 October, 2016, 14 February, 2020.
47. **Nodal Officer**, Rashtriya Avishkar Abhiyan, Scheme of MHRD, from 30 June, 2015 to 12 January, 2020.
48. **Convener**, Department Seminar Committee, Department of Electrical Engineering, IIT Indore, India, from 01 November, 2018 to 03 October, 2019.
49. **Expert** for selection committee of Prime Minister's Research Fellowship (PMRF), Department of Electrical Engineering, IIT Kanpur, India, 23 May, 2018.
50. **Member** of Department Post-Graduate Committee (DPGC), IIT Indore, India from 01 July, 2017 to 30 June, 2019.
51. **Distinguished Member** of Board of Studies for the Faculty of Electrical and Electronics, Sathyabama University, Chennai, India, 18 December, 2014.
52. **Convener** of Department Under-Graduate Committee, IIT Indore, India from 12 July, 2013 to 30 June, 2017.
53. **Course Coordinator** of M. Tech. in Communications and Signal Processing, IIT Indore, India from July, 2013 to June, 2015.
54. **Convener** of Scholarship-cum-Eligibility Committee, IIT Indore, India from 08 August, 2012 to 07 August, 2017.
55. **Chairman** of GATE, IIT Indore, India from 25 November, 2011 to 31 July, 2013.
56. **Convener** of Scholarship Committee, IIT Indore, India from 11 August, 2011 to 31 July, 2012.
57. **Chairman** of Rajbhasha Hindi Karyanbayan Samati, IIT Indore, India, 13 April, 2010 to 08 December, 2011.

#### Subject Expert for Faculty Selection Committee:

1. Department of Electronics and Communication Engineering, National Institute of Technology, Rourkela, India, 04-05 March, 2024.
2. Department of Electronics and Instrumentation Engineering, Shri Govindram Seksaria Institute of Technology and Science, Indore, India, 01 February, 2024.
3. Department of Electronics and Instrumentation Engineering, National Institute of Technology, Agartala, India, 18 January, 2024.
4. Department of Electronics Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, India, 18 December, 2023.
5. Department of Computer Science and Engineering/Information Technology/Electronics and Communication Engineering, Indian Institute of Information Technology, Kottayam, India, 07-08 November, 2023.
6. Department of Biomedical Engineering, National Institute of Technology, Raipur, India, 26 October, 2023.
7. Centre of Artificial Intelligence, Maulana Azad National Institute of Technology, Bhopal, India, 14 October, 2023.
8. School of Instrumentation, Devi Ahilya University, Indore, India, 20 September, 2023.
9. Department of Computer Science and Information Technology, Shri Guru Gobind Singhji Institute of Engineering and Technology Vishnupuri, Nanded, India, 30-31 August, 2023.
10. Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, India, 19 June, 2023.



11. Department of Information Technology, Atal Bihari Vajpayee-Indian Institute of Information Technology and Management, Gwalior, India, 25-26 May, 2023.
12. Technology Information Forecasting and Assessment Council (TIFAC), Vellore Institute of Technology, Vellore, India, 06 March, 2023.
13. Faculty of Communication and Engineering, Military College of Telecommunication Engineering, Mhow, Indore, India, 14-17 November, 2022.
14. Department of Electronics Engineering, Medi-Caps University, Indore, India, 11 June, 2022.
15. School of Electrical & Electronics Engineering, VIT Bhopal University, Bhopal, India, 05 February, 2022.
16. Department of Electronics and Communication Engineering, Indian Institute of Information Technology, Dharwad, India, 07 and 17 December, 2021.
17. Faculty of Communication and Engineering, Military College of Telecommunication Engineering, Mhow, Indore, India, 02-03 November, 2021.
18. Department of Biomedical Engineering, Shri Govindram Seksaria Institute of Technology and Science, Indore, India, 07 August, 2021.
19. Department of Computer Science and Engineering, National Institute of Technology, Raipur, India, 02-04 June, 2021.
20. Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India, 31 March, 2021.
21. Department of Electronics and Communication Engineering, Indian Institute of Information Technology, Dharwad, India, 21-22 December, 2020.
22. Department of Electronics and Communication Engineering, Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram, India, 15 and 23 December, 2020.
23. Faculty of Communication and Engineering, Military College of Telecommunication Engineering, Mhow, Indore, India, 02-05 November, 2020.
24. Department of Electronics & Communication Engineering, Sant Longowal Institute of Engineering and Technology, Longowal, India, 23 February, 2020.
25. Faculty of Communication and Engineering, Military College of Telecommunication Engineering, Mhow, Indore, India, 05-06 November, 2019.
26. Department of Electronics & Instrumentation/Biomedical Engineering, Shri Govindram Seksaria Institute of Technology and Science, Indore, India, 04 July, 2019.
27. Department of Electrical Engineering/Electronics Engineering, Medi-Caps University, Indore, India, 04 July, 2018.
28. Department of Electronics & Communication Engineering, Indian Institute of Information Technology Bhopal, India, 08 June, 2018.
29. Department of Electrical Engineering/Electronics & Communication Engineering/Center for VLSI & Nanotechnology, Visvesvaraya National Institute of Technology, Nagpur, India, 01-03 March, 2018.
30. Department of Electronics & Communication, Shri Vaishnav Institute of Technology and Science, SVVV Indore, India, 26 February, 2018.

### Awards & Honors:

1. **Top Cited Article 2022-2023**, WIREs Data Mining and Knowledge Discovery, Wiley, April, 2024.
2. **Ranked #13** in India among Top Scientists for 2024 in the field of Computer Science by Research.com website, April, 2024.
3. **Best Research Paper Award**, IIT Indore, India, 2024.
4. **Best Paper Award**, The 9th IEEE International Conference on Smart Instrumentation, Measurement and Application (IEEE ICSIMA 2023), 17-18 October, 2023, Kuala Lumpur, Malaysia.
5. **Listed in the Worlds Top 2% Scientists** in the study carried out by Prof. John Loannidis at Stanford University, USA, October, 2023.
6. **Ranked #4** in India in the field of Electrical and Electronic Engineering by AD Scientific Index, Rankings for Scientist, August, 2023.
7. **Visiting Professor** at the Department of Computer Engineering, Modeling, Electronics and System Engineering, University of Calabria, Rende, Italy in July, 2023. (Invited by Prof. Ester Zumpano)

8. **Visiting Professor** at Faculty of Information & Communication Technology, University of Malta, Malta, June-July, 2023. (Invited by Prof. Lalit Garg)
9. **Ranked #19** in India among Top Scientists for 2023 in the field of Computer Science by Research.com website, March, 2023.
10. **Listed in the World's Top 2% Scientists** in the study carried out by Prof. John Loannidis at Stanford University, USA, October, 2022.
11. **Visiting Professor** at Neural Dynamics of Visual Cognition Lab, Free University of Berlin, Germany, July-September, 2022. (Invited by Prof. Radoslaw Martin Cichy)
12. **DAAD Scholarship** at Free University of Berlin, Germany, for a period of two months (July-September, 2022), under Bilateral Exchange of Academics, 2022, May, 2022. (Awarded by DAAD German Academic Exchange Service)
13. **Best Paper Award**, XXIV International Conference on Digital Signal Processing and Its Applications (DSPA 2022), 30 March-01 April, 2022, Moscow, Russia.
14. **Ranked #22** in India among Top Scientists for 2022 in the field of Computer Science by Research.com website, 01 March, 2022.
15. **Listed in the World's Top 2% Scientists** in the study carried out by J. Bass and others at Elsevier BV and Stanford University, USA, October, 2021.
16. **IETE - Prof SVC Aiya Memorial Award**, September, 2021.
17. **2020 Premium Award** for Best Paper in IET Science, Measurement & Technology journal, December, 2020.
18. **Listed in the World's Top 2% Scientists** in the study carried out by Prof. John Loannidis and others at Stanford University, USA, October, 2020.
19. **Inclusion in the List of Top Scientists in the Area of Computer Science and Electronics** at the Guide2Research.com website, April, 2020.
20. **2019 Premium Award** for Best Paper in IET Science, Measurement & Technology journal, November, 2019.
21. **Visiting Professor** at School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, Subang Jaya, Malaysia, from December, 2018 to November, 2019.
22. **Top Social Media Article in the List of 2017 Articles** (Knowledge-Based Systems Journal).
23. **Best Research Paper Award**, IIT Indore, India, 2016.
24. **Selection of Research Paper as Featured Paper**, Entropy Journal, 2015.
25. **Inclusion of Research Paper in Best Research Papers of Year 2014**, Computer Methods and Programs in Biomedicine Journal (Elsevier), 2015.
26. **Best Research Paper Award**, IIT Indore, India, 2015.
27. **Excellent Grade**, Department of Science and Technology (DST) Expert Committee in the review of the DST sponsored project, May, 2014.
28. **Visiting Scholar** at Ulster University, Northern Ireland, UK, December, 2014. (Invited by Prof. Girijesh Prasad)
29. **Best Paper Award**, International Conference on Convergence and Hybrid Information Technology, Daejeon, South Korea, 23-25 August, 2012.
30. **Inclusion in Marquis Who's Who Publications** for the year 2012.
31. **Achievement Award**, 5th Indian International Conference on Artificial Intelligence (IICAI-11), December, 2011.
32. **Post-Doctoral Fellowship** at Charles Delaunay Institute, University of Technology of Troyes, Troyes, France, for a period of one year (2007-2008). (Awarded by Champagne-Ardenne Regional Council, France).
33. **Cash Award** for the paper published in Digital Signal Processing (Journal of Elsevier Science), from Dean Resources Planning and Generation, Indian Institute of Technology Kanpur, Kanpur, India, 2007.

### Abroad visits:

1. University of Malta, Malta, 26 June-29 July, 2023, Visiting Professor.
2. University of Calabria, Rende, Italy, 25-27 July, 2023, Visiting Professor.
3. Kish Island, Iran, 17-19 May, 2023, International Congress on Artificial Intelligence in Medical Sciences (AIMS 2023), Keynote speaker.

4. Free University of Berlin, Germany, 15 July, 2022-14 September, 2022, Visiting Professor.
5. Taylor's University, Subang Jaya, Malaysia, 26 January-01 February, 2019, Visiting Professor.
6. Madrid, Spain, 03-06 December, 2018, IEEE International Conference on Bioinformatics and Biomedicine, Research paper presentation.
7. Singapore, 22-25 November, 2016, IEEE Tencon Conference, Research paper presentation.
8. Helsinki and Turku, Finland, 24 October-01 November, 2015, First Finnish-Indian Joint Symposium on Future Opportunities in Health, Drug Development and Diagnostics, Research work presentation (Representative from IIT Indore).
9. Utah, USA, 09-12 August, 2015, IEEE Signal Processing and Signal Processing Education Workshop, Research paper presentation.
10. Ulster University, Londonderry, UK, 01-31 December, 2014, Visiting Scholar.
11. Shenzhen, China, 30 May-01 June 2014, IEEE International Conference on Medical Biometrics, Session Chair and research paper presentation.
12. Daejeon, South Korea, 23-25 August, 2012, International Conference on Convergence and Hybrid Information Technology, Research paper presentation.
13. Lausanne, Switzerland, 25-29 August, 2008, 16th European Signal Processing Conference, Research paper presentation.
14. University of Technology of Troyes, Troyes, France, 01 April, 2007-31 March, 2008, Post-Doctoral Fellow.

#### **Personal Information:**

Father's Name : Shri Shiv Ram Pachori  
Date of Birth : 8 January, 1979  
Marital Status : Married  
Language known : Hindi and English  
Nationality : Indian  
Permanent Address : Village-Haveli, Post-Rithona, Tehsil-Ambah, District-Morena, 476111, Madhya Pradesh, India

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