

Dr. Madhu S. Nair  
Professor  
Artificial Intelligence & Computer Vision Lab  
Department of Computer Science  
Cochin University of Science and Technology (CUSAT)  
Kochi - 682022, Kerala, India.



## PERSONAL DATA

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TEL: 0484-2862302, 9447364158  
E-MAIL: msn@cusat.ac.in  
m.s.nair@ieee.org  
madhu\_s\_nair2001@yahoo.com  
URL: <https://sites.google.com/site/msnair1979>  
DATE OF BIRTH: 31st May, 1979

## EDUCATIONAL QUALIFICATIONS

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- **Doctor of Philosophy (Ph.D.)** in Computer Science from Mahatma Gandhi University (2013).  
*Thesis Title:* “Soft Computing Approaches for Image Restoration and Enhancement”.  
*Supervisor:* Prof. Dr. G. Raju, Dept. of Information Technology, Kannur University.  
*Centre:* School of Computer Sciences, Mahatma Gandhi University, Kottayam.
- **Master of Technology (M.Tech.)** in Computer Science (with specialization in Digital Image Computing) from University of Kerala with **FIRST RANK** (2008).  
*Dissertation Title:* “Restoration and Enhancement of Color Images Using Fuzzy Approach”.  
*Supervisor:* Prof. Dr. M. Wilscy, Dept. of Computer Science, University of Kerala.  
*Institute:* Department of Computer Science, University of Kerala, Thiruvananthapuram.
- **Master of Computer Applications (M.C.A.)** from Mahatma Gandhi University with **FIRST RANK** (2003).  
*Institute:* School of Technology and Applied Sciences (STAS), Mahatma Gandhi University Regional Centre, Kochi.
- **Bachelor of Computer Applications (B.C.A.)** from Mahatma Gandhi University with **FIRST RANK** (2000).  
*Institute:* M.E.S. College, Marampally, Aluva, Ernakulam.
- **Pre-Degree (Science Group)** from Mahatma Gandhi University (1996).  
*Institute:* Maharaja’s College, Ernakulam.
- **S. S. L. C.** (1994).  
*Institute:* Sree Rama Varma (S. R. V.) High School, Ernakulam.
- **UGC NET** qualified in Computer Science and Applications (2004).
- **GATE** qualified in Computer Science and Engineering (2006).
- Post Graduate Diploma in Client Server Computing (**PGDCSC**) from Amrita Institute of Computer Technology (2000).

## TEACHING EXPERIENCE

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- **Professor**, Department of Computer Science, Cochin University of Science and Technology (CUSAT), Kochi. (03.05.2021 to till date)
- **Associate Professor**, Department of Computer Science, Cochin University of Science and Technology (CUSAT), Kochi. (03.05.2018 to 02.05.2021)
- **Assistant Professor**, Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram. (06.09.2010 to 02.05.2018)
- **Assistant Professor**, Department of Information Technology, Rajagiri School of Engineering & Technology, Kakkanad, Kochi. (28.06.2010 to 02.09.2010)
- **Assistant Professor**, Department of Computer Science, Rajagiri College of Social Sciences, Kalamassery, Kochi. (01.04.2009 to 27.06.2010)
- **Lecturer**, Department of Computer Science, Rajagiri College of Social Sciences, Kalamassery, Kochi. (03.02.2004 to 31.03.2009)

## ACADEMIC RESPONSIBILITIES

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1. **Chairman, Board of Studies (PG)**, Cochin University of Science and Technology (CUSAT), Kochi. (03.08.2023 to 02.08.2027)
2. **Member**, Internal Quality Assurance Cell (IQAC), Cochin University of Science and Technology, Kochi. (01.06.2023 to 31.05.2025)
3. **Professor and Head**, Department of Computer Science, Cochin University of Science and Technology, Kochi. (29.04.2023 to 28.04.2026)
4. **Ranking Coordinator**, Cochin University of Science and Technology (CUSAT). (05.12.2022 to till date)
5. **Member**, Research and Development Cell (RDC), Cochin University of Science and Technology (CUSAT). (05.08.2022 to till date)
6. **Member, Governing Body**, State Level Quality Assurance Cell (SLQAC), Government of Kerala. (25.05.2022 to 24.05.2026)
7. **Director, Centre for the Development of e-Content (CDeC)**, Cochin University of Science and Technology (CUSAT), Kochi. (25.03.2022 to till date)
8. **Member**, Internal Quality Assurance Cell (IQAC), Cochin University of Science and Technology, Kochi. (04.07.2021 to 31.05.2023)
9. **Coordinator, MOOC**, Cochin University of Science and Technology (CUSAT), Kochi. (16.12.2020 to 24.03.2022)
10. **Member, Board of Studies in Engineering (PG)**, University of Calicut, Kozhikode. (10.08.2020 to 09.08.2023)
11. **Member, Board of Studies (PG)**, School of Computer Sciences, Mahatma Gandhi University, Kottayam. (06.08.2020 to 05.08.2023)
12. **Member, Board of Studies in Aeronautical Science and Technology**, Cochin University of Science and Technology (CUSAT), Kochi. (06.08.2020 to 05.08.2024)
13. **Member, Academic Council**, Cochin University of Science and Technology (CUSAT), Kochi. (07.07.2020 to 06.07.2022)
14. **Member, Faculty of Technology**, Cochin University of Science and Technology (CUSAT), Kochi. (03.08.2019 to 02.08.2023)
15. **Member, Board of Studies (PG)**, Cochin University of Science and Technology (CUSAT), Kochi. (03.08.2019 to 02.08.2023)
16. **Coordinator, Chancellor's Chair Professor Scheme**, Department of Computer Science, Cochin University of Science and Technology, Kochi. (Foreign Faculty: **Prof. Dr. Gaurav Sharma**, Department of Electrical and Computer Engineering, University of Rochester, USA). (21.01.2019 to 28.02.2019)
17. **Local Coordinator, MHRD GIAN** (Global Initiative of Academic Networks) programme, University of Kerala. (22.02.2018 to 02.05.2018)
18. **UGC SWAYAM Coordinator**, University of Kerala (Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) programme of Ministry of Human Resource Development (MHRD), Government of India and University Grants Commission (UGC)). (23.01.2018 to 02.05.2018)
19. **Course Coordinator, GIAN Course on "Advanced Digital Video Coding Standards"** during January 1-12, 2018 (Global Initiative of Academic Networks (GIAN) programme funded by the Ministry of Human Resource Development (MHRD), Government of India; Foreign Faculty: **Prof. Dr. K. R. Rao**, Department of Electrical Engineering, University of Texas at Arlington (UTA), Texas, USA).
20. **Chief Coordinator, Spoken Tutorial Project** (Developed by IIT Bombay for MHRD, Government of India), University of Kerala. (01.08.2014 to 02.05.2018)
21. **Special Invitee, Board of Studies (PG)**, Rajagiri College of Social Sciences (Autonomous), Kalamassery, Kochi. (07.11.2014 to 06.11.2016)
22. **Member, Expert Committee (PG)**, MCA Lateral Entry course and MCA Integrated Double Degree course syllabi framing, Mahatma Gandhi University, Kottayam, 2013.
23. **Member, Board of Studies (PG)**, University of Kerala, Thiruvananthapuram. (20.11.2013 to 19.11.2016)

24. **Member, Board of Studies (PG)**, University of Calicut, Kozhikode. (27.04.2013 to 26.04.2016)
25. **Member, Board of Studies (UG)**, University of Kerala, Thiruvananthapuram. (08.07.2013 to 07.07.2016)
26. **Member, Registration Committee**, National Symposium on Sustainable Management of Biodiversity using Science and Technology, organized by the University of Kerala as part of 81<sup>st</sup> Annual Session of the National Academy of Sciences, India (NASI), during November 24-26, 2011.

## AWARDS AND HONOURS

1. **Certificate of Appreciation** from the Vice-Chancellor, Cochin University of Science and Technology (CUSAT), for publishing a research paper in the reputed International Conference named British Machine Vision Conference (BMVC 2023).
2. **DRDO Academy Excellence Award 2020** from the Defence Research & Development Organisation (DRDO), Government of India, in the year 2023.
3. **Certificate of Appreciation** from the Vice-Chancellor, Cochin University of Science and Technology (CUSAT), in honour of the outstanding service and contributions during the NAAC Accreditation Process 2022 of the University.
4. **Best Paper Award** during the Second IEEE International Conference on Artificial Intelligence and Signal Processing - AISP 2022, held at School of Electronics Engineering, VIT-AP University, Amaravati, Andhra Pradesh, February 2022.
5. **AICTE Visvesvaraya Best Teacher Award 2021** from All India Council for Technical Education (AICTE), New Delhi, in the year 2021.
6. **Distinguished Young Faculty Award 2020** from Cochin University of Science and Technology (CUSAT), Kochi, in the year 2021.
7. **Kairali Gaveshana Puraskaram 2019-20** in the category of Physical Science from the Government of Kerala, in the year 2021.
8. **Best Faculty of the Year Award** (Published Research - where papers have been accepted in high ranking/indexed journals) from Computer Society of India (CSI), Mumbai, in the year 2019.
9. **Best Thesis Supervisor Award** in Ph.D. category for the year 2018 for the thesis entitled "Automatic Segmentation and Classification of Mitosis in Breast Images by Signal Processing and Machine Learning Techniques" jointly instituted by IEEE Communications Society, Kerala and Bangalore Chapters.
10. **Best Paper Award** during the Fourth International Symposium on Intelligent Systems Technologies and Applications - ISTA 2018 (Springer), held at P.E.S. Institute of Technology, Bengaluru, September 2018.
11. **Swami Vivekananda Yuva Prathibha Puraskaram 2017** in the category of Science from Kerala State Youth Welfare Board, Government of Kerala, in the year 2018.
12. **Certificate of Appreciation** from the Vice Chancellor, University of Kerala, in recognition of the Faculty Website maintained in a rich and updated manner, in the year 2018.
13. **Certificate of Appreciation** from the Vice Chancellor, University of Kerala, in recognition of innovations in teaching, in the year 2018.
14. **Paper Presenter Award at International Conference** from Computer Society of India (CSI), in the year 2017.
15. **IETE - Smt Manorama Rathore Memorial Award** from The Institution of Electronics and Telecommunication Engineers (IETE), New Delhi, in the year 2017.
16. **First Prize Winner in the PROSTATEx-2 Grand Challenge 2017** conducted by the American Association of Physicists in Medicine (AAPM), along with the SPIE (the International Society for Optics and Photonics) and the National Cancer Institute (NCI), on the development of quantitative multi-parametric Magnetic Resonance Imaging (MRI) biomarkers for the determination of Gleason Grade Group in prostate cancer.
17. **Distinguished Assistant Professor Award** from Computer Society of India (CSI), Mumbai, in the year 2017.
18. **Associate Editor**, IEEE Access Journal (November 2016 – June 2021).
19. **Young Systems Scientist Award** from Systems Society of India (SSI), New Delhi, in the year 2015.

20. **IEI Young Engineers Award 2013-2014** in Computer Engineering discipline from The Institution of Engineers (India), Kolkata.
21. **Paper Presenter Award at International Conference** from Computer Society of India (CSI), in the year 2013.
22. **Career Award for Young Teachers (CAYT)**, from All India Council for Technical Education (AICTE), New Delhi, in the year 2013.
23. **Most Active Editorial Board Member Award** from The International Arab Journal of Information Technology (IAJIT), during the year 2013.
24. **Most Prominent Alumni Award - 2012** from M.E.S. College, Marampally, Aluva.
25. **Best Paper Award** during the First International Conference on Advances in Computing and Communications - ACC 2011 (Springer), held at Rajagiri School of Engineering and Technology, Kochi, July 2011.
26. **Editorial Board Member**, The International Arab Journal of Information Technology (IAJIT), Jordan (January 2010 – January 2018).
27. **Innovative Student Projects Award 2009** (Best Thesis Award, M.Tech Level) from Indian National Academy of Engineering (INAE), New Delhi.
28. **AICTE Travel Grant Award** for presenting a paper at IEEE International Conference on Computer Science and Information Technology - ICCSIT, Singapore, 2008.
29. **Most Active Reviewer Award** from The International Arab Journal of Information Technology (IAJIT), consecutively during the years 2008 to 2012.
30. **Computer Science Alumni Association Award** for securing First Rank in M.Tech. Computer Science Examination, 2008.
31. **Students Union Award**, for securing First Rank in MCA Examination, 2003.
32. **Gold Medal** for securing First Rank in BCA Examination, 2000.
33. **Prof. P. Achuthan Pillai Memorial Endowment Prize** for being First in II Pre-Degree Mathematics Model Examination, 1996.

## FUNDED PROJECTS

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1. Name of the Project: **Automated Validation of Aneurysm in Brain (AVAB) using Machine Learning Techniques**

Project Category:	<b>Kairali Research Award 2020</b>
Sponsoring Agency:	<b>The Kerala State Higher Education Council (KSHEC), Government of Kerala</b>
Role:	<b>Principal Investigator</b>
File No.:	<b>KSHEC-A3/352/Kairali Research Award/47/2022</b>
Sanctioned Amount:	<b>Rs.24,00,000/-</b>
Duration:	<b>2 years (2022-2024)</b>
Status:	<b>Ongoing</b>
2. Name of the Project: **International Network for Image-based Diagnosis**

Project Category:	<b>International Partnerships for Excellent Education and Research (INTPART)</b>
Sponsoring Agency:	<b>The Research Council of Norway</b>
Collaboration:	<b>Norwegian University of Science and Technology (NTNU), Norway</b>
Role:	<b>Co-Investigator</b>
File No.:	<b>ES652214/309857</b>
Sanctioned Amount:	<b>Rs. 4,50,00,000/-</b>
Duration:	<b>3 years (2021-2024)</b>
Status:	<b>Ongoing</b>
3. Name of the Project: **Design and Development of Adaptive Framework for Video Summarization**

Project Category: **Seed Money for New Research Initiatives**  
 Sponsoring Agency: **Cochin University of Science and Technology (CUSAT)**  
 Role: **Principal Investigator**  
 File No.: **PL.(UGC)1/SPG/SMNRI/2018-19**  
 Sanctioned Amount: **Rs. 2,75,000/-**  
 Duration: **2 years (2018-2020)**  
 Status: **Completed**

4. Name of the Project: **Advanced Digital Video Coding Standards**

Project Category: **MHRD - GIAN Project**  
 Sponsoring Agency: **Ministry of Human Resource Development (MHRD), Government of India**  
 Role: **Coordinator**  
 File No.: **IIT/GIAN/S-17/1089**  
 Sanctioned Amount: **Rs. 8,16,000/-**  
 Duration: **2 weeks (January 1-12, 2018)**  
 Status: **Completed**

5. Name of the Project: **Developing Soft Computing-Based Techniques for the Enhancement of Satellite/Aerial Images**

Project Category: **AICTE - CAYT Project**  
 Sponsoring Agency: **All India Council for Technical Education (AICTE)**  
 Role: **Principal Investigator**  
 File No.: **11-17/AICTE/RIFD/CAYT/POL-I/2013-14**  
 Sanctioned Amount: **Rs. 45,000/-**  
 Duration: **3 years (2013-2016)**  
 Status: **Completed**

6. Name of the Project: **Restoration & Enhancement of Noisy and Low Contrast Satellite Images**

Project Category: **Minor Research Project**  
 Sponsoring Agency: **Computer Society of India (CSI)**  
 Role: **Principal Investigator**  
 File No.: **1-14/2009-03**  
 Sanctioned Amount: **Rs. 12,000/-**  
 Duration: **1 year (2009-2010)**  
 Status: **Completed**

## CONSULTANCY

1. **Subject Expert**, Workshop for Curriculum Refinement and Revision Committee of SET Examination for Paper-I, organized by the LBS Centre for Science & Technology, Thiruvananthapuram, during October 2015.
2. **Subject Expert**, Workshop for the development of text books for Plus One/Plus Two (Computer Science/Applications), organized by the State Council of Educational Research and Training (SCERT), Government of Kerala, in the year 2014.
3. **Subject Expert**, Workshop for Undergraduate Level Computer Science / Application Course Development from 3rd to 7th March, 2009 at School of Information Science and Technology, organized by the Board of Studies in Computer Science (UG), Kannur University and funded by The Kerala State Higher Education Council, Thiruvananthapuram.
4. **Centre Coordinator**, Young Talent Search in Computer Programming Contest organized by CSI (Computer Society of India) Education Directorate, Chennai, in the year 2005.
5. **Computer Programming Assistance** to Statistical Experts (CUSAT) in the following research projects:
  - UGC Research Award 1999-2000.
  - NBHM Research Project on “Retrial in Queues, Inventory and Reliability”.
  - Research work on “Queues with Postponed Work”.

## PUBLICATIONS

### INTERNATIONAL JOURNALS

1. Preethi S. Nair and **Madhu S. Nair**, “KSVM-based Fast Intra Mode Prediction in HEVC using Statistical Features and Sparse Autoencoder”, **IEEE Access**. (in press)

2. Lijin P., Mohib Ullah, Anuja Vats, Faouzi Alaya Cheikh, Santhosh Kumar G. and **Madhu S. Nair**, “Dual Encoder-Decoder Shifted Window-Based Transformer Network for Polyp Segmentation with Self-Learning Approach”, **IEEE Transactions on Artificial Intelligence**. (in press)
3. Sheena K. S. and **Madhu S. Nair**, “GenCoder: A Novel Convolutional Neural Network based Autoencoder for Genomic Sequence Data Compression”, **IEEE/ACM Transactions on Computational Biology and Bioinformatics**. (in press)
4. Lijin P., Mohib Ullah, Anuja Vats, Faouzi Alaya Cheikh, Santhosh Kumar G. and **Madhu S. Nair**, “Efficient-PolypSeg: Efficient Polyp Segmentation in Colonoscopy Images using EfficientNet-B5 with Dilated Blocks and Attention Mechanisms”, **Biomedical Signal Processing and Control**, Elsevier, Vol.93, Article No.106210, July 2024.
5. Amritha Abdul Salam, Manjunatha Mahadevappa, Asha Das and **Madhu S. Nair**, “RDD-Net: Retinal Disease Diagnosis Network - A Computer-Aided Diagnosis Technique using Graph Learning and Feature Descriptors”, **The Visual Computer**, Springer, Vol.39, No.10, pp.4657-4670, October 2023.
6. **Madhu S. Nair** and Jesna Mohan, “VSMCNN-Dynamic Summarization of Videos using Salient Features from Multi-CNN Model”, **Journal of Ambient Intelligence and Humanized Computing**, Springer, Vol.14, No.10, pp.14071-14080, October 2023.
7. Jishnu Jeevan and **Madhu S. Nair**, “On the Performance Analysis of Solving the Rubik’s Cube using Swarm Intelligence Algorithms”, **Applied Artificial Intelligence**, Taylor & Francis, Vol.36, No.1, Article No.2138129, pp.3373-3406, October 2022.
8. Amritha Abdul Salam, Manjunatha Mahadevappa, Asha Das and **Madhu S. Nair**, “DRG-NET: A Graph Neural Network for Computer-Aided Grading of Diabetic Retinopathy”, **Signal, Image and Video Processing**, Springer, Vol.16, No.7, pp.1869-1875, October 2022.
9. Nirmal S. Nair and **Madhu S. Nair**, “Multi-View Stereo using Graph Cuts-based Depth Refinement”, **IEEE Signal Processing Letters**, Vol.29, pp.1903-1907, August 2022.
10. Asha Das, Vinod Kumar Devarampati and **Madhu S. Nair**, “NAS-SGAN: A Semi-supervised Generative Adversarial Network Model for Atypia Scoring of Breast Cancer Histopathological Images”, **IEEE Journal of Biomedical and Health Informatics**, Vol.26, No.5, pp.2276-2287, May 2022.
11. Bejoy Abraham and **Madhu S. Nair**, “Computer-Aided Detection of COVID-19 from CT Scans using an Ensemble of CNNs and KSVM Classifier”, **Signal, Image and Video Processing**, Springer, Vol.16, No.3, pp.587–594, April 2022.
12. Priya Mariam Raju and **Madhu S. Nair**, “Copy-move Forgery Detection using Binary Discriminant Features”, **Journal of King Saud University - Computer and Information Sciences**, Elsevier, Vol.34, No.2, pp.165-178, February 2022.
13. Gayathri J. L., Bejoy Abraham, Sujarani M. S. and **Madhu S. Nair**, “A Computer-Aided Diagnosis System for the Classification of COVID-19 and non-COVID-19 Pneumonia on Chest X-ray Images by Integrating CNN with Sparse Autoencoder and Feed Forward Neural Network”, **Computers in Biology and Medicine**, Elsevier, Vol.141, Article No.105134, February 2022.
14. Govind Jeevan, Geevar C. Zacharias, **Madhu S. Nair** and Jeny Rajan, “An Empirical Study of the Impact of Masks on Face Recognition”, **Pattern Recognition**, Elsevier, Vol.122, Article No.108308, February 2022.
15. Sithara Kanakaraj, **Madhu S. Nair** and Saidalavi Kalady, “Adaptive Importance Sampling Unscented Kalman Filter with Kernel Regression for SAR Image Super-Resolution”, **IEEE Geoscience and Remote Sensing Letters**, Vol.19, Article No.4004305, 2022.
16. K. P. Baby Resma and **Madhu S. Nair**, “Multilevel Thresholding for Image Segmentation using Krill Herd Optimization Algorithm”, **Journal of King Saud University - Computer and Information Sciences**, Elsevier, Vol.33, No.5, pp.528-541, June 2021.
17. **Madhu S. Nair** and Jesna Mohan, “Static Video Summarization using Multi-CNN with Sparse Autoencoder and Random Forest Classifier”, **Signal, Image and Video Processing**, Springer, Vol.15, No.4, pp.735–742, June 2021.
18. Asha Das, **Madhu S. Nair** and David Peter S., “Computer-Aided Histopathological Image Analysis Techniques for Automated Nuclear Atypia Scoring of Breast Cancer: A Review”, **Journal of Digital Imaging**, Springer, Vol.33, No.5, pp.1091-1121, October 2020.
19. Bejoy Abraham and **Madhu S. Nair**, “Computer-Aided Detection of COVID-19 from X-Ray Images using Multi-CNN and Bayesnet Classifier”, **Biocybernetics and Biomedical Engineering**, Elsevier, Vol.40, No.4, pp.1436-1445, 2020.

20. Santhu Sadasivan, T. T. Sivakumar, Anna P. Joseph, Geevar C. Zacharias and **Madhu S. Nair**, “Tongue Print Identification using Deep CNN for Forensic Analysis”, **Journal of Intelligent and Fuzzy Systems**, IOS Press, Vol.38, No.5, pp.6415-6422, May 2020.
21. Nirmal S. Nair and **Madhu S. Nair**, “On Evolutionary Computation Techniques for Multi-view Triangulation”, **Machine Vision and Applications**, Springer, Vol.31, No.4, Article No.29, May 2020.
22. Asha Das, **Madhu S. Nair** and David Peter S., “Batch Mode Active Learning on the Riemannian Manifold for Automated Scoring of Nuclear Pleomorphism in Breast Cancer”, **Artificial Intelligence in Medicine**, Elsevier, Vol.103, Article No.101805, March 2020.
23. Sithara Kanakaraj, **Madhu S. Nair** and Saidalavi Kalady, “Adaptive Importance Sampling Unscented Kalman Filter based SAR Image Super Resolution”, **Computers and Geosciences**, Elsevier, Vol.133, Article No.104310, December 2019.
24. Jesna Mohan and **Madhu S. Nair**, “Domain Independent Redundancy Elimination based on Flow Vectors for Static Video Summarization”, **Heliyon**, Elsevier, Vol.5, No.10, Article No.e02699, October 2019.
25. Bejoy Abraham and **Madhu S. Nair**, “Automated Grading of Prostate Cancer using Convolutional Neural Network and Ordinal Class Classifier”, **Informatics in Medicine Unlocked**, Elsevier, Vol.17, Article No.100256, 2019.
26. Asha Das, **Madhu S. Nair** and David Peter S., “Kernel-based Fisher Discriminant Analysis on the Riemannian Manifold for Nuclear Atypia Scoring of Breast Cancer”, **Biocybernetics and Biomedical Engineering**, Elsevier, Vol.39, No.3, pp.728-741, 2019.
27. Preethi S. Nair, K. R. Rao and **Madhu S. Nair**, “A Machine Learning Approach for Fast Mode Decision in HEVC Intra Prediction based on Statistical Features”, **Journal of Intelligent and Fuzzy Systems**, IOS Press, Vol.36, No.3, pp.2095-2106, March 2019.
28. Bejoy Abraham and **Madhu S. Nair**, “Computer-Aided Grading of Prostate Cancer from MRI images using Convolutional Neural Networks”, **Journal of Intelligent and Fuzzy Systems**, IOS Press, Vol.36, No.3, pp.2015-2024, March 2019.
29. Jesna Mohan and **Madhu S. Nair**, “Domain Independent Static Video Summarization using Sparse Autoencoders and K-means Clustering”, **Journal of Intelligent and Fuzzy Systems**, IOS Press, Vol.36, No.3, pp.1945-1955, March 2019.
30. Asha Das, **Madhu S. Nair** and David Peter S., “Sparse Representation over Learned Dictionaries on the Riemannian Manifold for Automated Grading of Nuclear Pleomorphism in Breast Cancer”, **IEEE Transactions on Image Processing**, Vol.28, No.3, pp.1248-1260, March 2019.
31. Sabeena Beevi K., **Madhu S. Nair** and Bindu G. R., “Automatic Mitosis Detection in Breast Histopathology Images Using Convolutional Neural Network based Deep Transfer Learning”, **Biocybernetics and Biomedical Engineering**, Elsevier, Vol.39, No.1, pp.214-223, 2019.
32. Binu Balakrishnan, Darsana S. H., Jayamol Mathews and **Madhu S. Nair**, “Satellite/Aerial Image Compression using Adaptive Block Truncation Coding Technique”, **Journal of the Indian Society of Remote Sensing**, Springer, Vol.46, No.11, pp.1761-1771, November 2018.
33. Jesna Mohan and **Madhu S. Nair**, “Dynamic Summarization of Videos based on Descriptors in Space-Time Video Volumes and Sparse Autoencoder”, **IEEE Access**, Vol.6, No.1, pp.59768-59778, November 2018.
34. Bejoy Abraham and **Madhu S. Nair**, “Computer-Aided Classification of Prostate Cancer Grade Groups from MRI Images using Texture Features and Stacked Sparse Autoencoder”, **Computerized Medical Imaging and Graphics**, Elsevier, Vol.69, pp.60-68, November 2018.
35. Bejoy Abraham and **Madhu S. Nair**, “Computer-Aided Diagnosis of Clinically Significant Prostate Cancer from MRI Images using Sparse Autoencoder and Random Forest Classifier”, **Biocybernetics and Biomedical Engineering**, Elsevier, Vol.38, No.3, pp.733-744, 2018.
36. T. T. Sivakumar, Shali S. Nair, Geevar C. Zacharias, **Madhu S. Nair** and Anna P. Joseph, “Identification of Tongue Print Images for Forensic Science and Biometric Authentication”, **Journal of Intelligent and Fuzzy Systems**, IOS Press, Vol.34, No.3, pp.1421-1426, March 2018.
37. Sithara Kanakaraj, **Madhu S. Nair** and Saidalavi Kalady, “SAR Image Super Resolution using Importance Sampling Unscented Kalman Filter”, **IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing**, Vol.11, No.2, pp.562-571, February 2018.
38. Jithin Gokul, **Madhu S. Nair** and Jeny Rajan, “Guided SAR Image Despeckling with Probabilistic Non Local Weights”, **Computers and Geosciences**, Elsevier, Vol.109, pp.16-24, December 2017.

39. Aneesh Raj S. S., **Madhu S. Nair** and G. R. K. S. Subrahmanyam, "Satellite Image Resolution Enhancement using Nonsubsampled Contourlet Transform and Clustering on Subbands", **Journal of the Indian Society of Remote Sensing**, Springer, Vol.45, No.6, pp.979-991, December 2017.
40. Arun D. Panicker and **Madhu S. Nair**, "Open Eye Detection using Iris-Sclera Pattern Analysis for Driver Drowsiness Detection", **Sadhana**, Indian Academy of Sciences, Springer, Vol.42, No.11, pp.1835-1849, November 2017.
41. Sujin Surendran S., Jeny Rajan and **Madhu S. Nair**, "A Computationally Efficient Non-Local Maximum Likelihood Estimation Approach for Rician Noise Reduction in MRI", **CSI Transactions on ICT**, Springer, Vol.5, No.3, pp.247-257, September 2017.
42. Dhanya Bibin, **Madhu S. Nair** and P. Punitha, "Malaria Parasite Detection from Peripheral Blood Smear Images using Deep Belief Networks", **IEEE Access**, Vol.5, No.1, pp.9099-9108, June 2017.
43. Sabeena Beevi K., **Madhu S. Nair** and Bindu G. R., "A Multi-Classifer System for Automatic Mitosis Detection in Breast Histopathology Images using Deep Belief Networks", **IEEE Journal of Translational Engineering in Health and Medicine**, Vol.5, No.1, Article No.4300211, pp.1-11, May 2017.
44. Sreedhanya L. R., Abi Varghese, **Madhu S. Nair** and M. Wilscy, "Temperature Mapping of a Rotary Kiln using Fuzzy Logic", **Journal of Intelligent and Fuzzy Systems**, IOS Press, Vol.32, No.4, pp.3059-3067, March 2017.
45. Geevar C. Zacharias, **Madhu S. Nair** and P. Sojan Lal, "Fingerprint Reference Point Identification based on Chain Encoded Discrete Curvature and Bending Energy", **Pattern Analysis and Applications**, Springer, Vol.20, No.1, pp.253-267, February 2017.
46. Sabeena Beevi K., **Madhu S. Nair** and Bindu G. R., "Automatic Segmentation of Cell Nuclei using Krill Herd Optimization based Multi-thresholding and Localized Active Contour Model", **Biocybernetics and Biomedical Engineering**, Elsevier, Vol.36, No.4, pp.584-596, 2016.
47. Susmi Jacob and **Madhu S. Nair**, "Image Reconstruction from Random Samples using Multiscale Regression Framework", **Neurocomputing**, Elsevier, Vol.189, pp.95-105, May 2016.
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## BOOK CHAPTERS

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## NATIONAL JOURNALS

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## GENERAL ARTICLES:

1. **Madhu S. Nair** and Nirmal S. Nair, “PROLE: Practice cum Research Oriented Learning Enrichment”, **Curriculum Fair 2017** organized jointly by Curriculum Development Centre, Department of Education and Internal Quality Assurance Cell (IQAC), University of Kerala, March 2017.
2. റാണികൃഷ്ണ ആർ., മധു എസ്. നായർ, "ഇമേജ് പ്രോസസിംഗ് ഗവേഷണ സാധ്യതകളും", ശാസ്ത്രദർശിനി, വാല്യം.1, നമ്പർ.1, താളുകൾ.37-47, 2016.

## CITATIONS

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Google Scholar:	Citations:	<b>2599</b>
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Scopus:	Citations:	<b>1710</b>
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Web of Science:	Citations:	<b>1157</b>
	h-index:	<b>19</b>

## PH.D. THESIS SUPERVISION

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Following candidates have successfully completed their Ph.D. Programme under my supervision:

1. **Dr. Nirmal S. Nair**, Research Fellow, Centre for Immersification, Infocomm Technology Cluster, Singapore Institute of Technology (SIT), Singapore. Title of the work: **“3D Reconstruction from Multi-View Images using Evolutionary Computation Techniques”**, Faculty of Engineering & Technology, University of Kerala. Awarded - December 2022.
2. **Dr. Sithara Kanakaraj**, Title of the work: **“Unscented Kalman Filter based SAR Image Super-Resolution”**, Department of Computer Science and Engineering, National Institute of Technology (NIT) Calicut. Awarded - May 2021.
3. **Dr. Jesna Mohan**, Department of Computer Science and Engineering, Mar Baselios College of Engineering and Technology, Thiruvananthapuram. Title of the work: **“Design and Development of Adaptive Framework for Video Abstraction using Machine Learning Techniques”**, Faculty of Engineering & Technology, University of Kerala. Awarded - February 2021.
4. **Dr. Bejoy Abraham**, Department of Computer Science and Engineering, College of Engineering Perumon, Kollam. Title of the work: **“Computer-Aided Diagnosis and Grading of Prostate Cancer from MRI using Machine Intelligence Techniques”**, Faculty of Engineering & Technology, University of Kerala. Awarded - October 2020. (Shortlisted for the final round of the Best Ph.D. Thesis Award 2020, jointly instituted by the IEEE Communications Society, Kerala, Bangalore and Kolkata Chapters.)
5. **Dr. Asha Das**, Department of Computer Science, Union Christian College, Aluva, Kochi. Title of the work: **“Automated Nuclear Pleomorphism Scoring in Histopathological Breast Cancer Images”**, Faculty of Technology, Cochin University of Science and Technology. Awarded - February 2020. (Recipient of the Innovative Student Projects Award 2020 for the Best Ph.D. Thesis, instituted by the Indian National Academy of Engineering (INAE), New Delhi.)
6. **Dr. Sabeena Beevi K.**, Department of Electrical and Electronics Engineering, TKM College of Engineering, Kollam. Title of the work: **“Automatic Segmentation and Classification of Mitosis in Breast Images by Signal Processing and Machine Learning Techniques”**, Faculty of Engineering & Technology, University of Kerala. Awarded - July 2018. (Recipient of the Best Ph.D. Thesis Award 2018, jointly instituted by the IEEE Communications Society, Kerala and Bangalore Chapters.)

Following candidates are pursuing their Ph.D. Programme under my supervision:

1. **Ms. Preethi S. Nair**, Title of the work: “**Design and Development of Video Codecs based on High Efficiency Video Coding (HEVC)**”, Faculty of Applied Sciences & Technology, University of Kerala.
2. **Ms. Sheena K. S.**, Title of the work: “**An Investigation into Genomic Data Analysis and Compression**”, Faculty of Technology, Cochin University of Science and Technology.
3. **Mr. Lijin P.**, Title of the work: “**Polyp Detection with Convolutional Neural Networks in Colonoscopy Images**”, Faculty of Technology, Cochin University of Science and Technology.
4. **Ms. Keerthi A. S. Pillai**, Title of the work: “**Computer-Aided Model for Detection & Rupture Risk Estimation of Cerebral Aneurysm using Machine Learning Techniques**”, Faculty of Technology, Cochin University of Science and Technology.
5. **Ms. Preena K. P.**, Title of the work: “**Computer-Aided Detection of Cerebral Aneurysm from Medical Images**”, Faculty of Technology, Cochin University of Science and Technology.
6. **Mr. Vijay Sankar Babu P.**, Title of the work: “**Detection of Perineural Invasion in Multi-Organ Cancer**”, Faculty of Technology, Cochin University of Science and Technology.
7. **Ms. Anima V. A.**, Title of the work: “**Automated Validation of Brain Aneurysm using Machine Learning Techniques**”, Faculty of Technology, Cochin University of Science and Technology.

## PROJECT/DISSERTATION SUPERVISOR

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M.C.A. Projects guided : **30**

M.Tech. Dissertations guided : **64**

### 2021-23 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Rakesh K. P.** - “Change Detection from Bi-Temporal Multispectral Satellite Images with Self-Supervised Learning”.
- **Faseela A. A.** - “Automated Grading of Diabetic Retinopathy using Ensembled Convolutional Neural Networks”.
- **Cillah Reji Samuel** - “Kidney Tumor Segmentation using Deep Learning Techniques”.
- **Naveena P. R.** - “Lung Cancer Classification using Deep Learning”.
- **Sreelakshmi T. R.** - “Mediastinal Lesion Analysis using Stochastic-pooling based SPP Network and BiFPN”.

### 2020-22 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Ansiya Mohammed** - “Computer-Aided Classification of Skin Cancer Using Convolutional Neural Networks”.
- **Rineesh Babu P.** - “Deepfake Detection Using Multi-path CNN with Convolutional Block Attention”.
- **Sruthi S.** - “Semantic Segmentation Using Fully Convolutional Neural Networks with Atrous Convolution”.
- **Keerthana P. V.** - “MRI Brain Tumor Image Classification Using Lie Group Theory”.
- **Nazeera K. K.** - “Deep Learning Based Sign Language Translation”.

### 2019-22 M.TECH. (PART-TIME) BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Kanakambaran Nair** - “Retail Product Tagging and Categorization using Unsupervised Learning”.
- **Sanila Salim** - “FruitVegNet: A Novel CNN for Fruit Recognition”.
- **Divya Y.** - “Brain Tumor Classification and Segmentation using Deep Learning”.

### 2019-21 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Jishnu Jeevan** - “On the Performance Analysis of Solving the Rubik’s Cube Using Swarm Intelligence Algorithms”.
- **Jyothis V. James** - “Emotion Detection and Classification from Audio”.
- **Neha M. V.** - “A Twitter Spam Detection Technique by Integrating Inception Network with Attention-based LSTM”.
- **Nikhil Joson** - “Image Synthesis and Melanoma Classification using Semi-Supervised GAN”.

- **Aswini P. K.** - “Computer-aided Diagnosis of Ocular Diseases in Fundus Images using Deep Learning Techniques”.
- **Aswathy Manoj** - “Machine Learning Approaches for the Prediction of Advanced Liver Fibrosis in Chronic Hepatitis-C Patients”.

2018-20 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Negitta Nixon Karakunnel** - “Brain Tumour Detection from MRI Images using Deep Convolutional Neural Networks”.
- **Febina Yusuf** - “Data Processing, Visualisation and Tactical Decision Making Tool for Indian Ocean utilizing the 3-D Ocean Circulation Model”.
- **Keerthy Sreekumar** - “Sparse Representation based Classification using Subspace Projection”.
- **Ajay E. S.** - “Improved Video Surveillance System for a Confined Space - ATM”.

2017-20 M.TECH. (PART-TIME) BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Shajahan S.** - “Segmentation of Brain Tumor Images using Deep Neural Network”.
- **Santhosh V. T.** - “End-to-End Deep Video Compression Framework”.
- **Lakshmi Narayanan G.** - “Distance Estimation using Inverse Perspective Mapping”.

2017-19 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, CUSAT)

- **Prasanthi E. R.** - “Speaker Diarization using d-Vector Embeddings”.
- **Meenu P. Chandran** - “Object Detection from Images using Machine Learning Techniques”.
- **Binsha Benny** - “Cell Nuclei Segmentation from Histopathological Images”.
- **Ashitha Gopalakrishnan** - “Human Action Recognition from Videos”.
- **Geethu A.** - “Static Video Summarization using Superframe Segmentation”.

2014-16 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF KERALA)

- **Priya Mariam Raju** - “Copy Move Forgery Detection using Binary Discriminant Features”.
- **Vidya K.** - “Image Segmentation using Global/Local Affinity Graph”.
- **Mariya Thomas** - “Content Based Image Retrieval using Block Truncation Coding Features”.
- **Ghanasyam P. B.** - “Detection of Face Spoofing using Total Dynamic Mode Decomposition”.
- **Anila S. O.** - “Stereo Vision Based Road Surface Segmentation and Obstacle Detection”.
- **Neethu R.** - “Multi-Frame Image Super Resolution by Adaptive Diffusion Based Regularizer”.

2013-15 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF KERALA)

- **Neethu Vijayan** - “Hyperspectral Image Classification using Dynamic Multiple Classifier System”.
- **Surya Krishnan G. R.** - “Image Denoising using Non-Local Means with Monte Carlo Random Sampling”.
- **Kaushal Joshi** - “Real Time Pedestrian Detection using CENTRIST Feature with Distance Estimation”.
- **Ayswarya A. T.** - “Single Image Super Resolution using Statistical Edge Prior and Cross-Scale Similarity”.

2012-14 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF KERALA)

- **Viswajith P. Viswanath** - “ROI based Pedestrian Detection using ACM with Partial Occlusion Handling”.
- **Aneesh Raj S. S.** - “Satellite Image Resolution Enhancement using Nonsubsampled Contourlet Transform”.
- **Raji R.** - “Texture based Histogram Specification for Color Image Enhancement using Image Fusion”. (**Short-listed for the final round of the Innovative Student Projects Award 2015 for the Best M.Tech. Thesis, instituted by the Indian National Academy of Engineering (INAE), New Delhi.**)
- **Sujin Surendran S.** - “A Fast and Efficient Approach to NLML for Rician Noise Reduction in MR Images”.
- **Neethu A. S.** - “Despeckling of SAR Images using Monte Carlo Texture Likelihood Sampling”.
- **Asrar Ahmad** - “Two Phase Steganography using Error Image”.

2011-13 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF KERALA)

- **Pillai Praveen Thulasidharan** - “Copyright Protection of Digital Images Through QR Code Based Watermarking”.
- **Baby Resma K. P.** - “Optimal Multilevel Threshold Selection for Image Segmentation Using Bio-Inspired Optimization Techniques”.
- **Rema M.** - “Segmentation of Human Intestinal Parasites from Microscopy Images Using Active Contour Model”.
- **Jithin Raj** - “Forgery Detection in Ballistic Motion Videos Using Motion Estimation and Modelling”.
- **Susmi Jacob** - “Multiscale Regression Framework for Image Reconstruction from Random Samples”.
- **Sindhu S.** - “Content Based Image Retrieval Based on Multi-Feature Analysis”.

2010-12 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF KERALA)

- **Christy Jojoy** - “SAR Image De-speckling using Importance Sampling Unscented Kalman and Non Local Means Filters”. (**Recipient of the Innovative Student Projects Award 2013 for the Best M.Tech. Thesis, instituted by the Indian National Academy of Engineering (INAE), New Delhi.**)
- **Riji R.** - “Iterative Bilateral Filter for Rician Noise Removal from Magnitude MRI”.
- **Neethu V. Gopal** - “Distortion Sensitivity based Image Watermarking Scheme using Fuzzy-ART”.
- **Jisha Jose** - “Fuzzy based Fractional Anisotropic Diffusion for Edge Preserving Speckle Reduction with Contrast Enhancement”.
- **Kavitha M. R.** - “Partitioned Iterated Function based Technique for Enhancing Low Contrast Images”.
- **Lekha S. Nair** - “Random Impulse Noise Reduction from Color Video using Fuzzy Logic”.

2009-11 M.TECH. BATCH (DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF KERALA)

- **P. M. Ameera Mol** - “Image Denoising using Adaptive Weighted Switching Median Filters”.
- **Arun D. Panicker** - “Vision-Based Driver Drowsiness Detection using Iris-Sclera Pattern Analysis”. (**Short-listed for the final round of the Innovative Student Projects Award 2012 for the Best M.Tech. Thesis, instituted by the Indian National Academy of Engineering (INAE), New Delhi.**)
- **Arjun J. S.** - “An Efficient Face Recognition System based on Gabor Phase Pattern and Phase only Correlation”.
- **Viju Shankar** - “Predictive-based Adaptive Switching Median Filter for Impulse Noise Removal using Neural Network based Noise Detector”.
- **Reji J.** - “Directional Weighted Switching Median Filter for Impulse Noise Removal in Medical Images”.

## INVITED TALKS

1. **“Ethics in Research Publications”** at the Two Day National Workshop on Research Methodology and Academic Writing, organized by the Internal Quality Assurance Cell, Government College Kottayam and sponsored by the Department of Collegiate Education, Government of Kerala, during February 2024.
2. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the National Seminar on Professional Ethics & Plagiarism and Strengthening Research for Quality Publications, organized by the Department of Computer Science, Mary Matha Arts & Science College, Mananthavady, Wayanad, during March 2023.
3. **“Quantitative Analysis of Research Productivity: From Scientometrics’ Perspective”** at the KTU sponsored Three-Day Faculty Development Programme on Research Methodology, Scientific Writing and Publication Ethics, organized by the Department of Biotechnology and Biochemical Engineering and Department of Food Technology, Sree Buddha College of Engineering, Pattoor, Alappuzha, during January 2023.
4. **“Introduction to Feature Engineering”** at the AICTE Training and Learning (ATAL) Academy FDP on Machine Learning for Interdisciplinary Engineering Applications, organized by the Department of Computer Science, Cochin University of Science and Technology (CUSAT), Kochi, during September 2022.
5. **“Research Publication and Ethics”** at the Lecture Series, organized by the Department of Information Technology, Kannur University, Mangattuparamba Campus, Kannur, during September 2022.



6. **“Computer Vision: An Overview”** at the Webinar, organized by the Institution of Engineers (India) - Kochi Local Centre, during July 2022.
7. **“Journal Indexing and Scientometrics”** at the One-day Faculty Development Programme, organized by the Department of Data Science, Computer Science & Information Technology in collaboration with Internal Quality Assurance Cell (IQAC), JAIN(Deemed-to-be University), Kochi, during July 2022.
8. **“The Art of Writing Research Articles”** at the One-day Workshop on Bringing Research Focus, organized by the IEEE Kochi Subsection, during April 2022.
9. **“Journal Indexing and Scientometrics”** at the One-day Workshop for Research Scholars, organized by the Department of Psychology, University of Calicut, Kozhikode, during February 2022.
10. **“Journal Indexing and Scientometrics”** at the Summer School in Social Science, organized by the UGC-Human Resource Development Centre, Kannur University, Kannur, Kerala, during February 2022.
11. **“Role of Journal Indexing and Scientometrics in Research Productivity”** at the Webinar, organized by the Department of Information Technology, Kannur University, Mangattuparamba Campus, Kannur, during September 2021.
12. **“Ethics in Research and Publications”** at the inaugural session of the Webinar Series, organized by the AKGCT Centre for Studies and Research (ACSR), Thiruvananthapuram, during September 2021.
13. **“Productive Research - Role of Journal Indexing and Scientometrics”** at the Webinar, organized by the Research Forum, in association with the Internal Quality Assurance Cell (IQAC), Union Christian College, Aluva, Kerala, during June 2021.
14. **“The Art of Writing and Publishing Papers in International Journals”** at the Five Day Faculty Development Programme on Outcome-Based Education and Online Teaching, organized by the Faculty Development Committee, Madras School of Social Work, Chennai, Tamil Nadu, during June 2021.
15. **“From Research Finding to Publication - A Guidance”** at the Faculty Development Programme on Systemizing Research - Problem Finding to Patenting, organized by the Rajagiri School of Engineering & Technology, Kochi, Kerala, in association with the Indian Society for Technical Education (ISTE), Kerala Chapter, during March 2021.
16. **“Quantitative Analysis of Research Productivity: From Scientometrics’ Perspective”** at the Two-Day Webinar, organized by the Research Advisory Committee, St. Joseph’s College (Autonomous), Devagiri, Kozhikode, Kerala, during February 2021.
17. **“The Art of Writing Research Articles”** at the One-day Workshop on Bringing Research Focus, organized by the IEEE Kochi Subsection, during February 2021.
18. **“The Art of Writing and Publishing Research Papers in International Journals”** at the Webinar, organized by the Department of Ship Technology, Cochin University of Science and Technology (CUSAT), Kochi, Kerala, during November 2020.
19. **“Deep Learning for Computer Vision - A Brief Overview”** at the National Webinar Series 'TRIO', organized by the Department of Computer Science, School of Technology & Applied Sciences (STAS), Centre for Professional and Advanced Studies, Pullarikkunnu, Kottayam, Kerala, during October 2020.
20. **“Advanced Research Methodology and Quality Research Paper Writing”** at the Two-Day Webinar, organized by the Internal Quality Assurance Cell (IQAC), Naipunnaya Institute of Management and Information Technology (NIMIT), Angamaly, Kerala, during October 2020.
21. **“Quantitative Analysis of Research Productivity: From Scientometrics’ Perspective”** at the Two-Day Webinar, supported by UGC under Paramarsh scheme and organized by the Internal Quality Assurance Cell (IQAC), Mar Athanasius College (Autonomous), Kothamangalam, Kerala, during August 2020.
22. **“Quantitative Analysis of Research Productivity - Role of Journal Indexing and Scientometrics”** at the National Webinar, jointly organized by the Central Library & the Internal Quality Assurance Cell (IQAC), Sree Narayana College, Sivagiri, Varkala, Kerala, during August 2020.
23. **“Quantitative Analysis of Research Productivity - Role of Journal Indexing and Scientometrics”** at the Online Faculty Development Programme on Enriching Research Acumen, organized by the Department of Computer Science and Engineering, Christ College of Engineering, Irinjalakuda, Kerala, during July 2020.
24. **“Quantitative Analysis of Research Productivity - Role of Journal Indexing and Scientometrics”** at the Webinar Series on Higher Education During COVID Times and After: Challenges and Opportunities, organized by the Internal Quality Assurance Cell (IQAC), Bishop Moore College, Mavelikara, Alappuzha, in academic collaboration with the Kerala State Higher Education Council, Thiruvananthapuram, during May 2020.

25. **“Quantitative Analysis of Research Productivity - Role of Journal Indexing and Scientometrics”** at the Webinar Series on Transcending Lock-down Barriers through Academic Outreach - VIRTUOSA 2020, organized by the Internal Quality Assurance Cell (IQAC), K.S.M.D.B. College Sasthamcotta, Kollam, during May 2020.
26. **“Role of ICT: Ethical Issues and Challenges in Academics”** at the National Seminar on Cultural Confluence: Contemporaneity and Congruence, organized by the P. G. Department of English, MES Asmabi College, Kodungallur, during January 2020.
27. **“Quantitative Analysis of Research Productivity - Role of Journal Indexing and Scientometrics”** at School of Computer Sciences, Mahatma Gandhi University, Kottayam, during May 2019.
28. **“Role of ICT in Scientific Research”** at the Workshop on Research Methodology, Writing Practices, Language and Soft Skills organized by the Research Promotion Council, MES College, Marampally, Aluva, Kochi and sponsored by Kerala State Council for Science, Technology & Environment (KSCSTE) Women Scientist Division (WSD), Government of Kerala, during January 2019.
29. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the Research Workshop organized by the Department of Computer Science and Applications, St. Mary’s College, Thrissur, during September 2018.
30. **“Convolutional Neural Network for Computer Vision”** at the Workshop on Industrial Robotics: Platform, Algorithms and Techniques, organized by the Federal Institute of Science and Technology (FISAT), Angamaly, Ernakulam, during July 2018.
31. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the One-day Faculty Development Programme organized by the Department of Computer Science, Vimala College, Thrissur, during April 2018.
32. **“Art of Writing a Research Paper”** at the One-day Workshop organized by the Department of Computer Science, Vimala College, Thrissur in association with Computer Science College Teachers Association (CSCTA), Thrissur, during March 2018.
33. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at School of Computer Sciences, Mahatma Gandhi University, Kottayam, during November 2017.
34. **“Scientific Research - Role of Journal Indexing and Scientometrics”** at the Seminar on Science and Engineering Research Methods, organized by the Department of Optoelectronics, University of Kerala, Kariavattom, during October 2017.
35. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the National Workshop on Technologies and Tools for Scientific Research, organized by the Department of Computer Science, University of Kerala, Kariavattom, during September 2017.
36. **“Scientific Research - Role of Journal Indexing and Scientometrics”** at the National Seminar on Quality Research in Education: Towards a Coherent Understanding, organized by the Research Centre of Education, N. S. S. Training College, Pandalam, during July 2017.
37. **“Influence of Internet in Scientific Research”** at the National Workshop on New Technologies for Research and Innovation, organized by the Centre for Educational Technology, Department of Education, University of Kerala, during March 2017.
38. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the UGC-Human Resource Development Centre, University of Kerala, Kariavattom, during March 2017.
39. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the UGC-Human Resource Development Centre, University of Kerala, Kariavattom, during January 2017.
40. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the UGC-Human Resource Development Centre, University of Kerala, Kariavattom, during November 2016.
41. **“Journal Indexing & Scientometrics”** at Saintgits College of Engineering, Kottayam, organized by the Department of Computer Science and Engineering in association with ISTE Saintgits Chapter, during October 2016.
42. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the UGC-Human Resource Development Centre, University of Kerala, Kariavattom, during August 2016.
43. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the Faculty Development Programme (FDP) on Recent Trends in Computer Science and Engineering organized by the Department of Computer Science and Engineering, Mar Baselios College of Engineering & Technology, Thiruvananthapuram, during May 2016.

44. **“Journal Indexing & Scientometrics”** at the Department of Computational Biology & Bioinformatics, University of Kerala, Kariavattom, Thiruvananthapuram, during February 2016.
45. **“Computer Assisted Research - Disseminating Research Findings & Publications”** at the UGC Sponsored National Seminar on Research Methodology and Statistical Data Analysis organized by the Department of Commerce, Deva Matha College, Kuravilangad, Kottayam, during February 2016.
46. **“Recent Trends in Image Restoration & Enhancement”** at the Faculty Development Programme (FDP) on Recent Trends in Digital Image Processing organized by the Department of Electronics & Communication Engineering, College of Engineering, Adoor, during January 2016.
47. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the UGC-Human Resource Development Centre, University of Kerala, Kariavattom, during August 2015.
48. **“Measuring Academic Research - Role of Journal Indexing and Scientometrics”** at the Workshop on Technical Writing organized by the Department of Information Technology, Government Engineering College, Barton Hill, Thiruvananthapuram, during August 2015.
49. **“Use of Internet for Scientific Research”** at the workshop on Research Methodology in Social Sciences entitled Shaping Focused Research organized by the Department of Commerce, School of Business Management and Legal Studies, University of Kerala, Kariavattom, during August 2015.
50. **“Measuring Academic Research: Role of Journal Indexing and Scientometrics”** at Rajagiri College of Social Sciences (Autonomous), Kalamassery, Kochi, during April 2015.
51. **“Image Restoration and Enhancement”** at the Workshop on Image and Video Processing using MATLAB, organized by Indian Institute of Information Technology and Management - Kerala (IIITMK), Thiruvananthapuram, during February 2015.
52. **“Journal Indexing & Scientometrics”** at the UGC Sponsored National Conference on Computer Science and its Applications (NCCSA), organized by Prajyoti Niketan College, Thrissur, during February 2015.
53. **“Role of ICT in Scientific Research”** at the UGC Academic Staff College, University of Kerala, Kariavattom, during September 2014.
54. **“How to select a good research topic for M.Tech Dissertation?”** at School of Computer Sciences, Mahatma Gandhi University, Kottayam, during September 2014.
55. **“Role of ICT in Scientific Research”** at the UGC Academic Staff College, University of Kerala, Kariavattom, during August 2014.
56. **“Impact of ICT in Scientific Research”** at the NAAC Sponsored National Conference on Role of Information and Communication Technology in Institutional Quality Enhancement: Analyzing Current Status and Exploring New Frontiers, organized by Internal Quality Assurance Cell (IQAC), M.E.S. Asmabi College, Kodungallur, during June 2014.
57. **“Role of ICT in Scientific Research”** at the UGC Academic Staff College, University of Kerala, Kariavattom, during May 2014.
58. **“Role of ICT in Scientific Research”** at the UGC Sponsored National Conference on Information and Communication Technologies, organized by BPC College, Piravom, during March 2014.
59. **“Impact of ICT in Scientific Research”** at the UGC Academic Staff College, University of Kerala, Kariavattom, during February 2014.
60. **“Feature Extraction Techniques for CBIR - An Overview”** at the UGC Sponsored National Conference on Soft Computing Techniques for Data Mining (NCSCTDM), organized by MES College, Marampally, in association with Cochin University of Science and Technology, during January 2014.
61. **“Recent Trends in Image Restoration & Enhancement”** at the Short Term Training Programme on Digital Image Processing, organized by Government Engineering College, Thrissur, during October 2013.
62. **“Advances in Image Restoration & Enhancement”** at the Faculty Development Programme on Image Processing, organized by LBS Institute of Technology for Women, Thiruvananthapuram, during September 2013.
63. **“Current Research Trends in Image Restoration & Enhancement”** at the AICTE sponsored Faculty Development Programme on Impact of Recent Tools and Techniques in the Processing of Digital Images, organized by IHRD College of Engineering, Karunagappally, during May 2013.
64. **“Use of Internet for Scientific Research”** at the UGC Academic Staff College, University of Kerala, Kariavattom, during November 2012.

65. **“How to write a good research paper?”** at School of Computer Sciences, Mahatma Gandhi University, Kottayam, during October 2012.
66. **“Use of Internet for Scientific Research”** at School of Computer Sciences, Mahatma Gandhi University, Kottayam, during August 2012.
67. **“Journal Impact Factor and h-index”** at the Department of Computational Biology & Bioinformatics, University of Kerala, Kariavattom, Thiruvananthapuram, during March 2012.
68. **“One-day UGC NET Training Programme”** at Rajagiri College of Social Sciences, Kalamassery, Kochi, during December 2011.
69. **“Use of Internet for Scientific Research”** at the UGC Academic Staff College, University of Kerala, Kariavattom, during November 2010.
70. **“Introduction to Image Processing”** at the UGC Academic Staff College, Kannur University, Mangattuparamba, during November 2009.
71. Orientation Lecture on **“UGC NET Examination in Computer Science”** at School of Technology and Applied Sciences (STAS), Mahatma Gandhi University Regional Centre, Edapally, during November 2009.
72. **“Computer Science Academic Projects - Stages of Evaluation”** at Naipunnaya Institute of Management and Information Technology (NIMIT), Angamaly, during May 2009.
73. **“Pattern Recognition & Image Processing”** at the UGC Sponsored National Conference on Pattern Recognition, Analysis & Applications, organized by Dept. of Computer Applications, Marian College, Kuttikkanam, during March 2009.
74. **“Regeneration of Real Time Images”** at MES College, Marampally, Aluva, during February 2009.
75. **“Importance of Research in Academics”** at Federal Institute of Science and Technology (FISAT), Angamaly, during May 2008.

## SEMINARS/WORKSHOPS ORGANIZED

1. **“Two Day FDP on GPU Programming and Distributed Deep Learning with PyTorch: Scaling and Optimization”** at the Department of Computer Science, Cochin University of Science and Technology (CUSAT), during September 19-20, 2023.
2. **“CUSAT INID School on Medical Images Understanding”** jointly organized by the Department of Computer Science, Cochin University of Science and Technology (CUSAT) and the Department of Computer Science, Norwegian University of Science and Technology (NTNU), as part of the INTPART Project funded by the Research Council of Norway, during February 27 - March 03, 2023.
3. **“Public Lecture on New Horizons in IoT Workflows Provisioning in Edge and Cloud Data Centres for Fast Data: The Osmotic Computing Approach”** at the Department of Computer Science, Cochin University of Science and Technology (CUSAT), on October 21, 2019. (International Faculty: **Prof. Dr. Rajiv Ranjan**, University Chair Professor for the Internet of Things, School of Computing, Newcastle University, United Kingdom)
4. **“Public Lecture on Imaging Arithmetic:  $\text{Physics} \cup \text{Math} > \text{Physics} + \text{Math}$ ”** at the Department of Computer Science, Cochin University of Science and Technology (CUSAT), on February 20, 2019. (International Faculty: **Prof. Dr. Gaurav Sharma**, Department of Electrical and Computer Engineering, University of Rochester, USA)
5. **“Public Lecture on Large Scale Visual Data Analytics for Geospatial Applications”** at the Department of Computer Science, Cochin University of Science and Technology (CUSAT), on January 29, 2019. (International Faculty: **Prof. Dr. Gaurav Sharma**, Department of Electrical and Computer Engineering, University of Rochester, USA)
6. **“Public Lecture on Deterministic Sampling Conditions for Tensor Completion”** at the Department of Computer Science, Cochin University of Science and Technology (CUSAT), on August 3, 2018. (International Faculty: **Dr. Vaneet Aggarwal**, School of Industrial Engineering, Purdue University, USA)
7. **“National Workshop on Image Analysis in Bioscience Research”** at the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, in association with Division of Tissue Culture, Biomedical Technology Wing, Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram, during November 29 - December 1, 2017.
8. **“National Workshop on Technologies and Tools for Scientific Research”** at the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, during September 25-27, 2017.

9. **“Orientation Programme on Spoken Tutorial Project”** in partnership with Indian Institute of Technology (IIT) Bombay at Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, on July 26, 2017.
10. **“Training Programme on Spoken Tutorial Project”** in partnership with Indian Institute of Technology (IIT) Bombay at Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, on August 13, 2015.
11. **“Awareness Programme on Spoken Tutorial Project”** in partnership with Indian Institute of Technology (IIT) Bombay at Senate Chamber, University of Kerala, on August 29, 2014.
12. **“Workshop on Enhancing Research Skills for Computer Science Researchers”** at the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, during November 28-29, 2013.
13. **“Workshop on MATLAB and Image Processing”**, at the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, during July 25-29, 2011.
14. **“National Conference on Computational Science and Engineering - NCCSE 2009”**, at the Department of Computer Science, Rajagiri College of Social Sciences, Kochi, during February 6-7, 2009.
15. **“National Conference on Network Security – NetSec2005”**, at the Department of Computer Science, Rajagiri College of Social Sciences, Kochi, during February 11-12, 2005.

## SEMINARS/WORKSHOPS ATTENDED

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1. **“Online Induction Programme for Newly Recruited Teachers”**, organized by the Centre for Employee Empowerment and Skill Acquisition (CEESA), Cochin University of Science and Technology (CUSAT), during March 17, 2021 to April 16, 2021.
2. **“Two-day Faculty Development Programme on Deep Learning”**, jointly organized by the Department of Computer Science, Cochin University of Science and Technology (CUSAT) and Tata Consultancy Services (TCS), Kochi, during January 3-4, 2019.
3. **“One-day Orientation Workshop on the Roles and Responsibilities of the University and its SWAYAM Coordinators”**, organized by the University Grants Commission (UGC), New Delhi, on February 2, 2018.
4. **“National Seminar on Machine Intelligence - NSMI 2017”**, organized by the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, during March 27-28, 2017.
5. **“National Conference on Image Processing and Machine Vision - NCIPMV 2017”**, organized by the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, during March 22-24, 2017.
6. **“Multi-Disciplinary Annual Research Conference - MARC 2015”**, organized by the Internal Quality Assurance Cell, University of Kerala, on December 17, 2015.
7. **“One-day Workshop to Revamp and Streamline the Credit and Semester System (CSS) Regulations”**, organized by the University of Kerala on February 4, 2015.
8. **“Technical Seminar on Robotics-Creating Man out of Machine”**, organized by the Department of Computer Science, University of Kerala, Kariavattom, Thiruvananthapuram, on July 12, 2011.
9. **“National Seminar on Recent Trends in Computing”**, organized by the School of Computer Sciences, Mahatma Gandhi University, Kottayam, on December 11, 2009.
10. **“National Conference on Computational Science and Engineering - NCCSE 2009”**, organized by the Rajagiri School of Computer Science, Rajagiri College of Social Sciences, Kochi, during February 6-7, 2009.
11. **“IEEE International Conference on Computer Science and Information Technology - ICCSIT 2008”**, jointly organized by the Nanyang Technological University (NTU) of Singapore, Sichuan University of China and Meiji University of Japan, during August 29 – September 2, 2008 at Singapore.
12. **“National Conference on Innovations in Information and Communication Technology - NCICT 2006”**, organized by PSG College of Technology, Coimbatore, during July 7-8, 2006.
13. **“National Conference on Network Security – NetSec2005”**, organized by the Rajagiri School of Computer Science, Rajagiri College of Social Sciences, Kochi, during February 11-12, 2005.

## PROFESSIONAL MEMBERSHIP

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1. **Senior Member**, Institute of Electrical and Electronics Engineers (**IEEE**) (Membership No: **91169976**).
2. **Senior Member**, Association for Computing Machinery (**ACM**) (Membership No: **2354000**).
3. **Associate Life Member**, Computer Society of India (**CSI**) (Membership No: **I0128022**).
4. **Member**, International Association of Engineers (**IAENG**) (Membership No: **64688**).

## JOURNAL/CONFERENCE REVIEWER

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### INTERNATIONAL JOURNALS

1. IEEE Transactions on Image Processing.
2. IEEE Transactions on Medical Imaging.
3. IEEE Transactions on Fuzzy Systems.
4. IEEE Transactions on Cybernetics.
5. IEEE Transactions on Intelligent Transportation Systems.
6. IEEE Transactions on Multimedia.
7. IEEE Signal Processing Letters.
8. IEEE Geoscience and Remote Sensing Letters.
9. IEEE Journal of Biomedical and Health Informatics.
10. IEEE Access.
11. IEEE Transactions on Circuits and Systems for Video Technology.
12. IEEE Transactions on Emerging Topics in Computational Intelligence.
13. IEEE Systems Journal.
14. ACM Computing Surveys.
15. Scientific Reports, *Nature*.
16. IET Image Processing.
17. Journal of the Optical Society of America A.
18. PLOS ONE.
19. Pattern Recognition, *Elsevier*.
20. Signal Processing, *Elsevier*.
21. Applied Soft Computing, *Elsevier*.
22. Computer Vision and Image Understanding, *Elsevier*.
23. Information Fusion, *Elsevier*.
24. Medical Image Analysis, *Elsevier*.
25. Artificial Intelligence in Medicine, *Elsevier*.
26. Expert Systems with Applications, *Elsevier*.
27. Engineering Applications of Artificial Intelligence, *Elsevier*.
28. Biomedical Signal Processing & Control, *Elsevier*.
29. Biocybernetics and Biomedical Engineering, *Elsevier*.
30. International Journal of Electronics and Communications (AEÜ), *Elsevier*.
31. Journal of Information Security and Applications, *Elsevier*.
32. Multimedia Systems, *Springer*.

33. Machine Vision and Applications, *Springer*.
34. Journal of Medical Systems, *Springer*.
35. Soft Computing, *Springer*.
36. Signal, Image and Video Processing, *Springer*.
37. BMC Medical Imaging, *Springer*.
38. Sadhana, Indian Academy of Sciences, *Springer*.
39. International Journal of Imaging Systems and Technology, *Wiley*.
40. International Journal of Remote Sensing, *Taylor & Francis*.
41. European Journal of Remote Sensing, *Taylor & Francis*.
42. IETE Journal of Research, *Taylor & Francis*.
43. Instrumentation Science & Technology, *Taylor & Francis*.
44. Neural Computing and Applications, *Springer*.
45. Journal of The Institution of Engineers (India): Series B, *Springer*.
46. Digital Signal Processing, *Elsevier*.
47. Neurocomputing, *Elsevier*.
48. Computers in Biology and Medicine, *Elsevier*.
49. Computer Methods and Programs in Biomedicine, *Elsevier*.
50. Defence Science Journal (DSJ), *Defence Scientific Information & Documentation Centre (DESIDOC), DRDO*.
51. Kuwait Journal of Science (KJS), *Kuwait University*.
52. Applied Numerical Mathematics, *Elsevier*.
53. Computers and Electrical Engineering, *Elsevier*.
54. Pattern Recognition Letters, *Elsevier*.
55. Infrared Physics & Technology, *Elsevier*.
56. Informatics in Medicine - Unlocked, *Elsevier*.
57. Journal of Real-Time Image Processing (JRTIP), *Springer*.
58. Current Science, *Indian Academy of Sciences*.
59. Mathematical Problems in Engineering, *Hindawi*.
60. The Scientific World Journal, *Hindawi*.
61. International Journal of Information Technology & Decision Making (IJITDM), *World Scientific*.
62. International Journal of Communication Networks and Distributed Systems (IJCNDs), *Inderscience*.
63. International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems (IJUFKS), *World Scientific*.
64. International Journal of Modelling, Identification and Control (IJMIC), *Inderscience*.
65. International Journal of Network Security (IJNS), *Taiwan*.
66. The International Arab Journal of Information Technology (IAJIT), *Jordan*.
67. The International Journal of Technology, Knowledge and Society, *Common Ground Publisher, Australia*.

## INTERNATIONAL CONFERENCES

1. IEEE International Workshop on Information Forensics and Security - WIFS 2023, Nuremberg, Germany.
2. IEEE International Conference on Image Processing - ICIP 2023, Kuala Lumpur, Malaysia.
3. IEEE 19th India Council International Conference - INDICON 2022, Kochi, India.
4. IEEE International Conference on Image Processing - ICIP 2022, Bordeaux, France.
5. IEEE International Conference on Image Processing - ICIP 2021, Alaska, USA.
6. The 13th International Conference on Digital Image Processing - ICDIP 2021 (SPIE), Singapore, 2021.
7. IEEE International Conference on Image Processing - ICIP 2020, Abu Dhabi, United Arab Emirates (UAE).
8. Fifth International Symposium on Signal Processing and Intelligent Recognition Systems- SIRS 2019 (Springer), IIITM-K, India.
9. IEEE TENCON 2019, Kochi, India.
10. IEEE International Conference on Image Processing - ICIP 2019, Taipei, Taiwan.
11. The Sixth International Symposium on Security in Computing and Communications - SSCC 2018 (Springer), Bangalore, India.
12. IEEE International Conference on Image Processing - ICIP 2018, Athens, Greece.
13. The Second International Conference on Signal Processing, Informatics, Communication and Energy Systems - IEEE SPICES 2017, Kerala, India.
14. IEEE International Conference on Image Processing - ICIP 2017, Beijing, China.
15. Second International Symposium on Intelligent Systems Technologies and Applications – ISTA 2016 (Springer), Jaipur, India.
16. International Conference on Communication Systems and Networks – ComNet 2016 (IEEE), Thiruvananthapuram, India.
17. IEEE International Conference on Image Processing – ICIP 2016, Arizona, USA.
18. Second International Symposium on Computer Vision and the Internet - VisionNet 2015 (Elsevier), Kochi, India.
19. International Conference on Advances in Computing, Communications and Informatics - ICACCI 2015 (IEEE), Kochi, India.
20. International Conference on Mathematical and Computational Sciences - ICMACS 2015, Kannur, Kerala, India.
21. International Conference on Computational Systems and Communications - ICCSC 2014 (IEEE), Kerala, India.
22. International Conference on Information and Communication Technologies - ICICT 2014 (Elsevier), Cochin University of Science and Technology (CUSAT), Kochi, India.
23. International Conference on Advances in Computing, Communications and Informatics - ICACCI 2014 (IEEE), India.
24. International Conference on Advances in Computing, Communications and Information Science - ACCIS 2014 (Elsevier), TKM College of Engineering, Kerala, India.
25. First International Symposium on Signal Processing and Intelligent Recognition Systems (SIRS-2014), IIITM-K, India.
26. Second International Conference on Advanced Computing, Networking and Security - ADCONS 2013 (IEEE), NITK-Surathkal, India.
27. IEEE INDICON 2012 - Annual conference of the IEEE India Council.
28. International Conference on Advances in Computing, Communications and Informatics - ICACCI 2012 (ACM), India.
29. International Conference on Advances in Computing and Communications - ACC 2011 (Springer), India.
30. International Conference on Bioinformatics and Biomedical Technology - ICBBT 2010 (IEEE), China.
31. International Conference on Computer Science and Information Technology - ICCSIT 2008 (IEEE), Singapore.
32. International Conference on Computer and Communication Engineering 2008 - ICCCE 2008 (IEEE), Malaysia.



## NATIONAL CONFERENCES

1. Thirtieth National Conference on Communications - NCC 2024, Indian Institute of Technology (IIT) Madras, Chennai, India.
2. National Conference on Soft Computing Techniques for Data Mining - NCSCTDM 2014, Kochi, India.
3. National Conference on Advances in Computing and Computer Applications ADCAP 2012, Thiruvananthapuram, India.

## COMMITTEE MEMBER

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### SESSION CHAIR

1. Chaired a Technical Session on “Next Generation Computing” in IEEE INDICON 2022, organized by the IEEE Kerala Section at Cochin University of Science and Technology (CUSAT), Kochi, India.
2. Chaired a Technical Session at the International Conference on Data Science and Engineering - ICDSE 2020 (IEEE), organized by the Department of Computer Science, Cochin University of Science and Technology, Kochi, India, and technically co-sponsored by IEEE Kerala Section.
3. Chaired a Technical Session on “Signal Processing and Machine Learning Techniques” at the Raman Optoelectronics Webinar Series (ROWS) 2020: Virtual International Conference, organized by the Department of Optoelectronics, University of Kerala, Thiruvananthapuram, India, as part of the Silver Jubilee Celebration.
4. Chaired a Technical Session at the International Conference on Data Science and Engineering - ICDSE 2018 (IEEE), organized by the Department of Computer Science, Cochin University of Science and Technology, Kochi, India, and technically co-sponsored by IEEE Kerala Section.
5. Chaired a Technical Session on “Image Processing” during the International Conference on Communication Systems and Networks (ComNet 2016), organized by Mar Baselios College of Engineering and Technology, Thiruvananthapuram, India, jointly with University of Dayton, USA.
6. Chaired a Technical Session on “Image Processing” during the First International Conference on Computational Systems and Communications (ICCSC 2014), organized by the LBS Institute of Technology for Women, Thiruvananthapuram, India.
7. Chaired a Technical Session on “Image and Video Processing” during the First International Symposium on Signal Processing and Intelligent Recognition Systems (SIRS-2014), organized by the Indian Institute of Information Technology and Management-Kerala (IIITM-K), Thiruvananthapuram, India.

### PUBLICATION CHAIR

1. Fifth International Conference on Data Science and Engineering - ICDSE 2019 (IEEE), Indian Institute of Technology (IIT), Patna, India.

### TRACK CHAIR

1. Ninth International Conference on Advances in Computing and Communications - ICACC 2019 (Elsevier), Rajagiri School of Engineering and Technology, Kochi, India.

### PUBLICITY COMMITTEE MEMBER

1. Eleventh European Workshop on Visual Information Processing - EUVIP 2023 (IEEE), Norwegian University of Science and Technology (NTNU), Gjøvik, Norway.

### ADVISORY COMMITTEE MEMBER

1. Third International Conference on Innovative Trends in Information Technology - ICITIIT 2022 (IEEE), Indian Institute of Information Technology (IIIT) Kottayam, Kerala, India.
2. Annual International Conference on Emerging Research Areas - AICERA 2020, Amal Jyothi College of Engineering, Kanjirapally and Marian College, Kuttikanam (Autonomous), India.

### TECHNICAL PROGRAM COMMITTEE MEMBER

1. IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems - IEEE SPICES 2022, Mar Baselios College of Engineering and Technology, Thiruvananthapuram, India.
2. International Conference on Data Science, Computation and Security - IDSCS 2021 (Springer), CHRIST (Deemed to be University), Pune Lavasa Campus, India.
3. Sixth International Symposium on Intelligent Systems Technologies and Applications - ISTA 2020, Chennai, India.

4. International Conference on Data Science for Computational Security - IDSCS 2020 (Springer), CHRIST (Deemed to be University), Pune Lavasa Campus, India.
5. International Conference on Data Science and Engineering - ICDSE 2020 (IEEE), CUSAT, Kochi, India.
6. Fifth International Symposium on Intelligent Systems Technologies and Applications - ISTA 2019, Thiruvananthapuram, India.
7. Second International Conference on Networks and Advances in Computational Technologies - NetACT19 (Springer), Mar Baselios College of Engineering & Technology, Thiruvananthapuram, India.
8. International Conference on Intelligent Computing and Signal Processing – IntelliSig 2019, Central University of Kerala, Kasaragod, India.
9. Fourth International Symposium on Intelligent Systems Technologies and Applications - ISTA 2018 (Springer), Bengaluru, India.
10. International Conference on Data Science and Engineering - ICDSE 2018 (IEEE), CUSAT, Kochi, India.
11. First International Conference on Computer Networks, Security and Computing - ICCSC 2018, Bengaluru, India.
12. International Conference on Internet of Things & Challenges - ICITC 2017, Chennai, India.
13. Third International Symposium on Intelligent Systems Technologies and Applications - ISTA 2017, Manipal University, Karnataka, India.
14. First International Conference on Data Engineering and Applications - IDEA 2017 (Springer), Bhopal, India.
15. Sixth International Conference on Advances in Computing & Communications - ICACC 2016 (IEEE, Elsevier), Kochi, India.
16. International Conference on Data Science and Engineering - ICDSE 2016 (IEEE), CUSAT, Kochi, India.
17. National Conference on Recent Trends in Computational Intelligence and Image Processing - RCIP 2016, University of Calicut, Kerala.
18. International Conference on Knowledge Engineering-Theory and Practices - KETP 2015, Rajagiri College of Social Sciences (Autonomous), Kochi, India.
19. International Conference on Data Science and Engineering - ICDSE 2014 (IEEE), CUSAT, Kochi, India.
20. Fifth International Conference on Electronics Computer Technology - ICECT 2013, India.
21. Fourth International Conference on Electronics Computer Technology - ICECT 2012 (IEEE), India.
22. Third International Conference on Electronics Computer Technology - ICECT 2011 (IEEE), India.
23. International Conference on Network and Computer Science - ICNCS 2011 (IEEE), India.
24. Third International Conference on Signal Acquisition and Processing - ICSAP 2011 (IEEE), Singapore.
25. Third International Conference on Future Computer and Communication - ICFCC 2011 (ASME), Iasi, Romania.
26. Second International Conference on Computer Research and Development - ICCRD 2010 (IEEE), Malaysia.
27. Second International Conference on Signal Acquisition and Processing - ICSAP 2010 (IEEE), Bangalore.
28. Second International Conference on Electronic Computer Technology - ICECT 2010 (IEEE), Malaysia.
29. International Conference on Computer Design and Applications - ICCDA 2010 (IEEE), China.
30. International Conference on Information Management and Engineering - ICIME 2009 (IEEE), Kuala Lumpur, Malaysia.
31. International Conference on Future Computer and Communication - ICFCC 2009 (IEEE), Kuala Lumpur, Malaysia.
32. International Conference on Signal Acquisition and Processing - ICSAP 2009 (IEEE), Malaysia.
33. International Conference on Computer Modeling and Simulation - ICCMS 2009 (IEEE), Macau, China.
34. International Conference on Electronic Computer Technology - ICECT 2009 (IEEE), Macau, China.

## INTERNATIONAL ADVISORY BOARD MEMBER

1. Third International Conference on Computer Engineering and Technology - ICCET 2011 (ASME), Malaysia.
2. Third International Conference on Information Management and Engineering - ICIME 2011 (IEEE), China.
3. Third International Conference on Digital Image Processing- ICDIP 2011 (SPIE), China.
4. Second International Conference on Computer Engineering and Technology - ICCET 2010 (IEEE), China.
5. Second International Conference on Digital Image Processing - ICDIP 2010 (SPIE), Singapore.
6. International Conference on Graphics and Image Processing - ICGIP 2009 (World Academic Press), Malaysia.

## CONFERENCE STEERING COMMITTEE MEMBER

1. International Conference on Information and Digital Engineering - ICIDE 2011, Singapore.
2. International Conference on Graphic and Image Processing - ICGIP 2011 (SPIE), Cairo, Egypt.
3. Second International Conference on Advanced Computer Theory and Engineering - ICACTE 2009 (IEEE), Cairo, Egypt.
4. Second International Conference on Computer and Electrical Engineering - ICCEE 2009 (IEEE), Dubai, UAE.
5. International Conference on Knowledge Discovery - ICKD 2009 (IEEE), Manila, Philippines.
6. International Conference on Computer Engineering and Applications - ICCEA 2009 (IEEE), Manila, Philippines.
7. International Conference on Future Networks - ICFN 2009 (IEEE), Thailand.
8. International Conference on Computer and Automation Engineering - ICCAE 2009 (IEEE), Thailand.
9. International Conference on Digital Image Processing - ICDIP 2009 (IEEE), Thailand.
10. International Conference on Computer and Electrical Engineering - ICCEE 2008 (IEEE), Thailand.
11. International Conference on Advanced Computer Theory and Engineering - ICACTE 2008 (IEEE), Thailand.

## INTERNATIONAL SCIENTIFIC COMMITTEE MEMBER

1. Seventh WSEAS International Conference on Circuits, Systems, Electronics, Control and Signal Processing - CSECS'08, Spain.
2. Thirteenth WSEAS International Conference on Applied Mathematics - MATH'08, Spain.

## RESEARCH INTERESTS

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- Digital Image Processing
- Computer Vision
- Machine Learning
- Soft Computing
- Pattern Recognition
- Data Compression
- Scientometrics

## REFERENCES

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- **Dr. Sabu M. K.**  
Professor  
Department of Computer Applications  
Cochin University of Science and Technology (CUSAT)  
Kochi - 682022, Kerala, India.  
Ph: +91-9446128197, E-mail: sabu.mes@gmail.com

- **Dr. Deepak T. G.**  
Professor  
Department of Mathematics  
Indian Institute of Space Science and Technology (IIST)  
Valiamala, Thiruvananthapuram - 695547, Kerala, India.  
Ph: +91-9446020440, E-mail: deepak@iist.ac.in
- **Dr. Zakkariya K.A.**  
Professor, School of Management Studies  
Director, DDU Kaushal Kendra  
Cochin University of Science and Technology (CUSAT)  
Kochi - 682022, Kerala, India.  
Ph: +91-9846554444, E-mail: zakkariya@gmail.com

Sd/-  
Dr. Madhu S. Nair