Mahesh Raveendranatha Panicker *PhD*
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Websites: Personal, Lab, GitHub, YouTube

Brief Biography

Mahesh Raveendranatha Panicker received his B. Tech. degree in Electrical and Electronics Engineering from Rajiv Gandhi Institute of Technology (Govt. Engineering College, Kottayam) in 2003 (First rank in the Mahatma Gandhi University, India) and Ph.D. degree from School of Computer Engineering, Nanyang Technological University (NTU), Singapore in 2009. From August 2003 to July 2005, he was a lecturer with Saintgits College of Engineering (Mahatma Gandhi University), Kerala. From August 2008 to July 2010, he was a post-doctoral fellow with centre for high performance embedded systems, NTU, Singapore. In August 2010, he started his career in industry with General Electric (GE) Global Research Centre, Bangalore. He was lead research engineer with GE till April 2017. From May 2017 till May 2018, he was senior chief engineer with Samsung Research Institute, Bangalore. He was an Assistant Professor of Electrical Engineering at IIT Palakkad from June 2018 to November 2021 and subsequently Associate Professor from November 2021 till December 2023. Currently, he is an Associate Professor with the Infocomm Technology Cluster at the Singapore Institute of Technology.

Mahesh is a Senior Member of IEEE, Six Sigma Green Belt certified and a TRIZ practitioner. He is a recipient of the Early Career Research Award from Science and Engineering Research Board, Government of India in 2019. He has won GE wide technical excellence awards in 2013 and 2015. He has also won silver award for ten or more patents with GE. During his stay in GE, Mahesh has worked on a range of projects, which include portable foetal ECG platform, compressor blade health monitoring program, real-time detection of rotor imbalance in GE transportation locomotive engines, detection of corrosion under insulation in oil/gas pipelines in refineries, nuclear reactor rebar corrosion detection, fMRI-based neuro analytics, GE's software beamforming platform for diagnostic ultrasound imaging and low-cost portable 3D ultrasound.

Mahesh's research interests include signal/image/video processing, machine learning and accelerated and embedded computing with applications in diagnostic ultrasound imaging, acoustic imaging, biomedical systems, multi-standard wireless communications and industrial prognostics. Mahesh has published his research findings in 33 international journals, 79 international conferences and 12 patents. Highlights of major research and translational projects are available at `https://www.pulseecho.in/`. He was an Associate Editor for Springer Circuits Systems and Signal Processing, Guest Associate Editor for Frontiers in Signal Processing, Review Editor for Frontiers in Neurorobotics. He is also a regular Reviewer for many of IEEE, Elsevier, Springer, Wiley and Frontiers Journals. He was also a consultant to GE Healthcare Bangalore, Samsung Research Institute Bangalore, VisiConsult Inc. He was the Vice Chair, IEEE Engineering in Medicine and Biology Society (EMBS) Kerala Chapter in 2020-2021, the Chair - Sponsorship Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2022 and Program Chair, IEEE South Asian Ultrasonics Symposium (SAUS) 2024.

At IIT Palakkad, Mahesh served as the founding Head of the Department of Electrical Engineering from October 2021 till August 2023. Mahesh has also served as a member of the Senate, Board of Academic Studies and Board of Industry Collaboration and Sponsored Research.

1 EDUCATION

Ph.D., 2009
School of Computer Engineering, Nanyang Technological University, Singapore
Dissertation topic: Reconfigurable low complexity digital filter banks for software radio receivers
Link: `https://www.doi.org/10.32657/10356/47469`
Advisor: Professor Vinod Achutavarrier Prasad

Bachelor of Technology - B.Tech., 2003 *(First Rank in the University)*
Department of Electrical and Electronics Engineering, Rajiv Gandhi Institute of Technology (Govt. Engineering College), Mahatma Gandhi University, Kerala, India
Project topic: Microprocessor based Autonomous Robot
Advisor: Professor Dinesh Gopinath

2 SUMMARY OF WORKING EXPERIENCE

Total Work Experience – 19 years (Teaching: 9 years, Industry: 8 years, Post Doctoral: 2 years)

Dec 2023 - Till Now Associate Professor, Infocomm Technology Cluster, Singapore Institute of Technology (SIT).
Instructor for courses in UG specializations involving Computer Engineering and Applied Artificial Intelligence. Involved in research and development of advanced signal processing, analytics, and imaging techniques for diagnostic ultrasound systems. Highlights of major research and translational projects are available at `https://www.pulseecho.in/`.

Nov 2021 – Dec 2023 Associate Professor and Head of the Department, Electrical Engineering, Indian Institute of Technology, Palakkad.
Instructor for courses in B. Tech Electrical Engineering and M. Tech System on Chip Design. Involved in research and development of advanced signal processing, analytics, and imaging techniques for diagnostic ultrasound systems.

June 2018 – Nov 2021: Assistant Professor in Electrical Engineering, Indian Institute of Technology, Palakkad.
Instructor for courses in B. Tech Electrical Engineering and M. Tech System on Chip Design. Involved in research and development of advanced signal processing, analytics, and imaging techniques for diagnostic ultrasound systems.

May 2017 – May 2018: Senior Chief Engineer at Ultrasound Systems, Healthcare and Medical Equipments (HME), Samsung Research Institute, Bangalore, India.
Involved in research, development and productization of advanced signal processing, analytics, and

imaging techniques for diagnostic ultrasound systems and battery management systems.

Aug 2010 – April 2017: Lead Engineer at Software Sciences and Analytics Research, GE Global Research, John F Welch Technology Centre, Bangalore, India.
Helped in establishing diagnostic ultrasound imaging lab in GE Global Research, Bangalore and in establishing collaboration with General Imaging business, GE Healthcare, Milwaukee. Involved in development of advanced analytics, signal processing algorithms/systems for applications in health care, energy, oil and gas and transportation domains. Filed 10 patents and involved in many of the popular GE products such as diagnostic ultrasound systems, non-invasive neonatal/foetal heart rate monitoring, compressor blade health monitoring (BHM) and Tier4 locomotive prognostics.

Aug 2008 – Jul 2010: Research Fellow at Centre for High Performance Embedded Systems (CHiPES), NTU, Singapore.
Involved in development of novel reconfigurable low complexity spectrum sensing algorithms and architectures for military and cognitive radios.

Nov 2007 – Dec 2007: Sponsored Internship at SUPELEC in the Signal, Communication et Electronique Embarquee (SCEE) team as part of Merlion Project Grant (Dossier No. 9.03.07), France-Singapore Cooperation Platform in Science and Technology.
Involved in development of novel spectrum sensing architectures for cognitive radio.

Aug 2005 – Jul 2008: Teaching Assistant at School of Computer Engineering, NTU, Singapore.
Handled sessions in Instrumentation and Data Acquisition Lab and Digital Systems Lab.

Aug 2003 – Jul 2005: Lecturer at SAINTGITS College of Engineering, Mahatma Gandhi University, Kerala, India.
Taught basic and advanced courses in Electrical and Electronics Engineering.

3 RESEARCH

3.1 Technology Interests:

- Signal/Image/Video Processing
- Machine/Deep Learning for Imaging/Reconstruction
- Embedded and Accelerated Computing

3.2 Domain Interests:

- Diagnostic Ultrasound Imaging and Image Processing
- Underwater Acoustic Imaging and Image Processing
- Industrial Prognostics and Health Monitoring

3.3 Publications: *Please refer Section 5 for detailed list of publications*

- Published **112 papers** in international refereed journals and international conferences.
- Number of International Journal Papers: 33, Number of International Conference Papers: 79

3.4 Patents: *Please refer Section 6 for detailed list of patents*

- Number of Patents: **12** (7 US patents granted and 5 Indian patents filed)

3.5 Research Grants:

On-going (Active) Research Grants:

No.	Title	Funding Organization	Amount	Duration	Role
1	High Performance Medical Ultrasound Enabled by Advanced Piezoelectric Materials and Transducers	RIE 2025 Manufacturing, Trade and Connectivity (MTC) Industry Alignment Fund – Pre-Positioning Programme (IAF-PP)	SGD 1,500,200 (Total Fund: SGD 9,997,000)	Jul 2026 – Jun 2029	PI
2	Portable Non-contact Breast Ultrasound Imaging	MOE Translational R&D and Innovation Fund (TIF) Grant	SGD 550,420	Jun 2026 – May 2028	PI
3	Intelligent Multi-modal Fire Watcher System	Ministry of Education (MoE) Ignition Grant (STEM)	SGD 148,400	Oct 2025 - Oct 2027	PI
4	A flexible array ultrasound imaging system for hands free automatic and continuous assessment of the blood flow and tissue dynamics	Ministry of Education (MoE) Singapore Academic Research Fund (AcRF) Tier 1	SGD 149,950	Dec 2024 - Dec 2026	PI

Past (Completed) Research Grants:

No.	Title	Funding Organization	Amount	Duration	Role
1	Intelligent Agent for ultrasound image analysis using Deep Reinforcement Learning	MITACS Global Link Research Award	CAD 6000	Jan 2024-June 2024	PI
2	Learning based Beamformer for Point of Care Ultrasound Systems	Samsung Research India Bangalore	INR 12,17,760	Aug 2023 – Mar 2023	PI
3	Automatic Target Detection using Simulated Side Scan and Multi-beam Echo Sounder Images	Defense Research Development Organization (DRDO)	INR 19,65,408	Aug 2022-May 2024	PI
4	Robust receive beamforming algorithm for underwater sonar imaging system for Mine Like Object Detection in the presence of reverberation	Defense Research Development Organization (DRDO)	INR 9,89,218	July 2022 – June 2023	PI
5	Cognitive Ultrasound Imaging	NVIDIA Corporation	Developer board worth USD 10,000	NA	PI
6	Aberration Correction for Diagnostic Ultrasound Imaging	GE Healthcare	Internship Student Funding (3 students / year), ML350 Compute	June 2022 – July 2023	PI
7	Investigation of a portable, affordable, and self-guided bedside ultrasound system for tissue and blood velocity imaging	Early Career Research (ECR) award, Science and Engineering Research Board (SERB), India	INR 49,01,830	March 2019 - June 2022	PI
8	An automated lung ultrasound workflow for diagnostic assistance in COVID-19 and beyond	COVID19 Special Core Research Grant, Science and Engineering Research Board (SERB), India	INR 12,02,960	Aug 2020 - Aug 2021	PI
9	Automated Lung Ultrasound for COVID-19 Screening and Monitoring	CSR Fund - Federal Bank Limited, India	INR 6,00,000	May 2020 - October 2020	PI
10	Development of a Real Time Spectral Analysis and Filtering System Based on Lyrtech SFF	Temasek Laboratories/DSO National Labs, Defence Science and Technology Agency (DSTA), Singapore	SGD 64,000	Sep 2008 - Sep 2009	Co-PI

3.6 Supervision of Post-Doctoral Research Fellows (Sole Supervisor):

Post-Doctoral Research Fellow Supervision (Past Projects): 1

No.	Name	Duration	Project Title and Grant Amount	Funding Organization
1	Dr. Sreehari V. R.	Aug 2022 - Present	Automatic Target Detection using Simulated Side Scan and Multi-beam Echo Sounder Images (INR 19,65,408)	Defense Research Development Organization (DRDO)

3.7 Graduate Research Student Supervision:

Number of Graduated Ph.D. Students: 3

No.	Name	Year of graduation	Thesis Title	Current Employment
1	Gayathri M.	2022	Tissue Adaptive Beamforming Algorithms for Realizing Cognitive Ultrasound Imaging Systems	Lead Design Engineer – Ultrasound Probes, GE Healthcare
2	Madhavanunni A. N.	2025	Ultrafast Ultrasound System for Flow Dynamics and Imaging	Postdoctoral Fellow, University of Lyon
3	Mimisha M Menakath	2025	Signal Processing for Underwater 3D Acoustical Imaging System	Post Doctoral Fellow, Luleå University of Technology

Number of Graduated Master of Science (By Research) Students: 1

No.	Name	Year of graduation	Thesis Title	Current Employment
1	Madhavanunni A. N.	2020 (PhD Upgradation)	Portable Vector Flow Imaging for Ambulatory Scenarios	Converted to PhD in June 2020

Ph.D./D.Engg Students Presently Supervising: 3

No.	Name	Start Year	Thesis Title	Current Status
1	Pisharody Harikrishnan Gopalkrishnan	2019	Novel Transducer Array Designs for High Frame Rate Ultrasound Imaging	Thesis Submitted (2 Patents, 2 Journals, 3 International Conferences)
2	Gopika Gopikrishnan	2025	Resilient Ultrasound Imaging: A Framework for On-board, Continual, and Distributed Deep Beamforming	In progress
3	Somashekhar Dehury	2025	Towards a Wearable Multi-view Echocardiography Patch: Signal Processing and System Integration	In progress

3.8 Achievements of PhD Students and Undergraduate Final Year Project Students:

- Ph.D. Student, Madhavanunni A N, has won the second prize for the **best paper award Award** in 2024 IEEE South Asian Ultrasonics Symposium [SAUS 2024] *Paper: Madhavanunni A N, Niya M Benoy, Mahesh Raveendranatha Panicker and Himanshu Sekhar, "A Performance Evaluation of Filtered Delay Multiply and Sum Beamforming for Ultrasound Localization Microscopy: Preliminary Results," in Proc. of IEEE South Asian Ultrasonics Symposium (SAUS) 2024, IIT Gandhinagar, India March. 2024.*

- Ph.D. Student, Harikrishnan Pisharody, elected as a **Finalist in the Student Paper Competition** for the International Symposium on Biomedical Imaging (IEEE ISBI 2022). *Paper: Harikrishnan Pisharody and Mahesh Raveendranatha Panicker, "Extending The Capability Of Linear Array Ultrasound Probe To Concave Array Using Low-Cost Acoustic Lens For High Frame Rate Focused Imaging", in Proc. of IEEE ISBI 2022, Kolkata, Mar. 2022.*

- Ph.D. Student, Madhavanunni A N, elected as a **Finalist in the Student Paper Competition** for the 43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2021). *Paper: Madhavanunni A.N. and Mahesh Raveendranatha Panicker, "An Angle Independent Depth Aware Fusion Beamforming Approach for Ultrafast Ultrasound Flow Imaging", in Proc. of 43rd IEEE EMBC 2021, Nov. 2021.*

- Ph.D. Student, Madhavanunni A N, has won **the 2020 Robert F. Wagner All Conference Best Student Paper Finalist Award** at the SPIE Medical Imaging Conference at Houston, USA, September 2020. *Paper: Madhavanunni A.N. and Mahesh Raveendranatha Panicker, "Triangulation based vector flow imaging with non-steered plane waves for transverse flows", in Proc. of SPIE Medical Imaging 2020, Houston, Feb 2020.*

- Ph.D. Student, Gayathri M, was one of **10 Finalists of the 3 Minute Thesis competition** organized as part of IEEE's flagship symposium in Medical Imaging-IEEE ISBI 2021. *Paper: Gayathri M and Mahesh Raveendranatha Panicker, "Towards diffuse beamforming for specular reflectors: A pixel level reflection tuned apodization scheme for ultrasound imaging," in Proc. of IEEE ISBI 2021, Nice, France, April 2021.*
- Ph.D. Student, Gayathri M won the **Excellence in Research Award** as part of the IIT Palakkad Research Scholars Day 2023.
- B. Tech project student, Antony Jerald, won **Undergraduate Research and Innovation Awards 2023** at IIT Palakkad for excellence in undergraduate research.
- Internship students, Arjun and Aniket Singh Rajput, won **Undergraduate Research and Innovation Awards 2022** at IIT Palakkad for excellence in undergraduate research.
- B. Tech project student, Roshan P Mathews, won **Undergraduate Research and Innovation Awards 2021** at IIT Palakkad for excellence in undergraduate research.

3.9 Translational Research:

- Recent work employing lung ultrasound as a continuous monitoring tool to help clinicians in COVID19 which is deployed and available at `http://www.pulseecho.in/alus/`. The work was covered in detail by the national daily The Hindu, the national magazine The Week and in the Doordarshan News. The work was also presented in the first all IIT R&D festival.
- An automated multi-scale image contrast enhancement algorithm for industrial CT scans has been developed and under evaluation by experts from `https://vcxrayindia.com/`.
- MOUs signed with University of Alberta, GE Healthcare Bangalore and Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum (SCTIMST) for automated image analysis for ultrasound systems.

4 PROFESSIONAL SERVICE

4.1 Administrative Appointments:

- Head, Research group on "Smart Healthcare", Singapore Institute of Technology (Jan 2025 - Now)
- Head, Department of Electrical Engineering, Indian Institute of Technology Palakkad (Oct 2021 – Aug 2023)
- Member, Board of Industry Collaboration and Sponsored Research, Indian Institute of Technology Palakkad (July 2018 – July 2021)
- Member, Board of Academic Studies, Indian Institute of Technology Palakkad (June 2019 – July 2020)
- Stream Co-ordinator, Electrical Engineering, Indian Institute of Technology Palakkad (June 2019 – July 2020)

- Institute Coordinator DRDO-MoE PhD Fellowship (May 2020 – May 2023)
- Convenor, Centre for Computational Imaging, Indian Institute of Technology Palakkad

4.2 Professional Activities:

- Six Sigma Green Belt Certification
- MATRIZ TRIZ Level 2 Certification (TRIZ Practitioner)
- Senior Member, IEEE
- Associate Editor, Springer Circuits, Systems and Signal Processing
- Review Editor, Frontiers in Neurorobotics
- Associate Editor (Guest) and Review Editor, Frontiers in Signal processing
- Vice Chair, IEEE Engineering in Medicine and Biology Society (EMBS) Kerala Chapter, 2020-2021
- Program Chair, IEEE South Asian Ultrasonics Symposium (SAUS) 2024
- Chair - Sponsorship Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2022
- Executive Committee Member, National Institute of Electronics, and Information Technology (NIELIT) Calicut
- Review Board Member, NPOL Kochi
- Regular mentor for internship students funded by Indian Academy of Sciences (1 student in 2019, 1 student in 2020, 3 students in 2021)
- Department Advisory Committee member for
  - Electrical Engineering, Rajiv Gandhi Institute of Technology Kottayam
  - Electrical Engineering, Government Engineering College Idukki
  - Instrumentation and Control Engineering, NSS College of Engineering Palakkad
  - Biomedical Engineering, Sahrudaya College of Engineering Thrissur
- Member, Technical Committee on Brain-Machine Interface Systems, IEEE Systems, Man and Cybernetics Society
- Member, IEEE Signal Processing Society
- Member, IEEE Circuits and Systems Society
- Member, IEEE Engineering in Medicine and Biology Society
- Member, IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society
- Session Chair, Biomedical Systems, IEEE Region-10 Conference, TENCON 2020 and TENCON 2019

- Program Committees of International Symposium on Electronic System Design (ISED) 2011-2014, International Conference on Eco-friendly Computing and Communication Systems (ICECCS 2013), International Conference on Advances in Computing and Communications (ACC 2013)
- Track Chair, IEEE International Conference on Information, Communications and Signal Processing (ICICS 2009)
- Reviewer of IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Industrial Informatics, IEEE Transactions on Multimedia, IEEE Transactions on Human-Machine Systems, IEEE Sensors, IEEE Transactions on Biomedical Circuits and Systems, IEEE Access, IEEE Transactions on Signal Processing, IEEE Transactions on Circuits and Systems - I and II, IEEE Transactions on Vehicular Technology, IEEE Transactions on VLSI Systems, IET Transactions on Signal Processing, Elsevier Pattern Recognition, Springer Journal of Signal Processing Systems for Signal, Image and Video Technology and International conferences such as BioCAS, EMBC, ISCAS, ICCS, ICICS, TENCON, SPCOM.

4.3 Invited Talks:

- "Cognitive Ultrasound: Towards adaptation of artificial intelligence techniques in diagnostic ultrasound imaging", International conference on cognitive, green and ubiquitous computing (IC-CGU 2025), 11 October 2025.
- "Cognitive Ultrasound: Towards adaptation of artificial intelligence techniques in diagnostic ultrasound imaging", HEAL Friday, National Healthcare Group (NHG), 10 October 2025.
- "Enhanced Needle Tracking in Biopsy through High Framerate Ultrasound Imaging", Moscow Cancer Forum, 18-20 June 2025.
- "Cognitive Ultrasound: Towards adaptation of artificial intelligence techniques in diagnostic ultrasound imaging", SITxUoG AI-Healthcare Forum, Singapore Institute of Technology Punggol Campus, 7th February 2025.
- "Ultrasound Beamforming: Imaging the Medium from the Ultrasound Echoes", Workshop on Inverse Problems and Applications, NIT Surathkal, 7th March 2023.
- "Automated Lung Ultrasound - Inspired by Physics and Driven by Neural Networks", CUSAT-INID (NTNU) School on Medical Images Understanding, CUSAT, 27th Feb 2023.
- "Neural Networks for Accelerating Image Reconstruction in Ultrasound Imaging", FDP on Advancements in Image Processing Applications, SCMS School of Engineering and Technology, Karukutty, 31st Aug 2022.
- "Video Summarization", CapsNetwork Training School-2, NTNU Norway, 29th April 2022
- "Learning based beamforming algorithms for ultrasound imaging", Forum on "Trends in Multi Scale Signal and Image Processing for Biomedical Instrumentation", IEEE SPS Kerala Section, 17th Dec 2021.
- "Automated lung ultrasound for Covid19 and beyond", FDP on Advancements of Digital Health and Medical Innovations during Pandemic, Model Engineering College Kochi, 7th Dec 2021.

- "Transmit Receive Beamforming in Ultrasound Imaging", Virtual Workshop on Instrumentation and Signal Processing in Biomedical Imaging and Rehabilitation, IIT Gandhinagar - 25th Oct 2021.
- "Diagnostic Ultrasound– The Journey from Imaging to Therapy and Beyond," IEEE Malabar Hub Webinar Series #62 - 05th Aug 2021.
- "Introduction to Convolutional Neural Networks and Applications in Image Processing," 3-day Workshop on Generative Adversarial Networks (GANArt 2021) @ NIT Calicut, 20 - 22, May 2021.
- "Diagnostic Ultrasound Imaging Systems Overview and Advances", 7th National Seminar on ADVANCES IN SCIENTIFIC AND INDUSTRIAL INSTRUMENTATION (ASCII), CUSAT, 24th March 2021.
- "Neural Networks for Diagnostic Ultrasonic Imaging", ATAL FDP on Applications of AI in Healthcare", Model Engineering College Kochi, 25th Feb 2021.
- "Introduction to Convolutional Neural Networks and Applications in Image Processing", ATAL FDP on Machine Learning and Deep Learning: A Hands -On Approach, CUSAT, 9th December 2020.
- "IoT for Biomedical (Imaging)", ATAL FDP on Secure Internet of Things (IoT), IIT Palakkad, 19th October 2020
- "Lung Ultrasound Imaging for COVID19, From Physics to Neural Networks", IEEE Computer Society and IEEE Student Chapter Webinar, NIT Trichy, 15th August 2020.
- "Deep learning and Biomedical Applications", Faculty Development Program on Artificial Intelligence and Machine Learning for Biomedical Applications", Sahrudaya College of Engineering, 17th July 2020.
- "Digital Signal Processing -Journey from Physical Models to Statistical Models", Workshop on Implementation of Signal Processing Algorithms on DSP Processors", PSG Coimbatore, 16th December 2019.
- "From the physical world to the digital world: enabling machine learning driven by domain knowledge", IEEE SPS Kerala Section - Colloquium on ML with Signal Processing for Data Analytics", CUSAT, Kochi, 28th September 2019.
- "Signal Processing in The Era of Big Data", National Conference on Communication, Computing and System Design (NC33SD'19), PSGiTech, Coimbatore, 19th March 2019.
- "Compressive Sampling - A Paradigm Shift in Digital Signal Processing", Workshop on Advances in Signal and Image Processing, GITAM University, Visakhapatnam, Feb 2014.
- "Advances in Industrial Digital Signal Processing", Technical Quality Improvement Program (TQIP) for Faculty on Advances in Digital Systems, Cochin University of Science and Technology (CUSAT), Kochi, June 2011.
- "Reconfigurable Low Complexity Digital Filters", Military Radio Lecture Series, NTU, Singapore, Feb 2009.

- "Reconfigurable Low Complexity Spectrum Sensing", Visitor Lecture Series, SUPELEC, Rennes, France, Dec 2008.
- "Reconfigurable Low Complexity Digital Filter Banks for Software Radio Receivers", Graduate Students Workshop organized by IEEE CAS society, Singapore, September 2007.

5 PUBLICATIONS

Google scholar Citation: 1600, h-index: 18 (as of Jan 2026)
Scopus Citation: 995, h-index: 15 (as of Jan 2026)

Journals:

Published:

1. Mimisha M Menakath,**Mahesh Raveendranatha Panicker** and Hareesh G, "Orthogonal Linear Array based Product Beamforming for Real Time Underwater 3D Acoustical Imaging." IEEE Journal of Ocean Engineering. `https://doi.org/10.1109/JOE.2025.3633536`
2. Abdul Rahoof,Vivek Chaturvedi, **Mahesh Raveendranatha Panicker**,Muhammad Shafique and Gang Quan, "FeatuReBeam: Efficient Beamforming for High Frame Ultrasound Imaging using Adaptive Feature Reuse with (m,k)-Guarantee." IEEE Access. Volume 13, September 2025. `https://doi.org/10.1109/ACCESS.2025.3604479`
3. Mimisha M Menakath,**Mahesh Raveendranatha Panicker**, Hareesh G, Midhila Madhusoodanan and Tessin K Jose, "Experimental Validation of Underwater Target Modeling using k-Wave Toolbox for Acoustical Imaging." IEEE Sensors Letters. Volume: 9, Issue: 7, 2025. `https://doi.org/10.1109/LSENS.2025.3575532`
4. Gopalakrishnan, Pisharody Harikrishnan, and **Mahesh Raveendranatha Panicker**, "Non-Newtonian Fluid Lens for Wearable Planewave Ultrasound Imaging System." Elsevier Biomedical Engineering Advances. Vol. 9, June 2025, 100173. `https://doi.org/10.1016/j.bea.2025.100173`
5. Abdul Rahoof,Vivek Chaturvedi,**Mahesh Raveendranatha Panicker** and Muhammad Shafique, "CapsBeam: Accelerating Capsule Network based Beamformer for Ultrasound Non-Steered Plane Wave Imaging on Field Programmable Gate Array." IEEE Transactions on Very Large Scale Integration Systems (2025). `https://doi.org/10.1109/TVLSI.2025.3559403`
6. Mimisha M Menakath,**Mahesh Raveendranatha Panicker**, Hareesh G, and Rubin Peter, "Towards Sparse Planar Array Underwater Acoustical Imaging Using Compressive Sensing Pattern Matching Technique." IEEE Transactions on Instrumentation and Measurement (2025): 4502811. `https://doi.org/10.1109/TIM.2025.3545198`
7. Soolmaz Abbasi, Assefa Seyoum Wahd, Shrimanti Ghosh, Maha Ezzelarab, **Mahesh Raveendranatha Panicker**, Yale Tung Chen, Jacob Jaremko, Abhilash Hareendranathan, "Improved A-line and B-line Detection in Lung Ultrasound Using Deep Learning with Boundary-Aware Dice Loss." MDPI Biomedical Engineering and Biomaterials: 12(3):311 (2025). `https://doi.org/10.3390/bioengineering12030311`

8. Gopalakrishnan, Pisharody Harikrishnan, and **Mahesh Raveendranatha Panicker**, "Non-Newtonian fluid coupling media for wearable ultrasound imaging systems using rigid linear sensor array." Sensors and Actuators A: Physical 376 (2024): 115588. https://doi.org/10.1016/j.sna.2024.115588

9. Arpan Tripathi, Abhilash Rakkunedeth, **Mahesh Raveendranatha Panicker**, Jack Z. Zhang, Naveenjyote S. Booora and Jaremko L Jacob, "Deep Learning Approach for Automatic Wrist Fracture Detection Using Ultrasound Bone Probability Maps", Springer Nature Comprehensive Clinical Medicine, 5, 276 (2023). https://doi.org/10.1007/s42399-023-01608-8

10. Malamal, Gayathri, Hans-Martin Schwab, and **Mahesh Raveendranatha Panicker**, "Enhanced Needle Visualization with Reflection Tuned Apodization based on the Radon Transform for Ultrasound Imaging", IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (2023). https://doi.org/10.1109/TUFFC.2023.3316284

11. Anto, Anito, Linda Rose Jimson, Tanya Rose, Mohammed Jafrin, and **Mahesh Raveendranatha Panicker**, "SPAALUV: Software Package for Automated Analysis of Lung Ultrasound Videos", SoftwareX 23 (2023): 101460. https://doi.org/10.1016/j.softx.2023.101460

12. Jinu Joseph, **Mahesh Raveendranatha Panicker**, Yale Tung Chen, Kesavadas Chandrasekharan, Vimal Chacko Mondy, Anoop Ayyappan, Jineesh Valakkada and Kiran Vishnu Narayan, "lungEcho-Resource Constrained Lung Ultrasound Video Analysis Tool for Faster Triaging and Active Learning", in *Elsevier Biomedical Engineering Advances* 6 (2023): 100094. https://doi.org/10.1016/j.bea.2023.100094

13. Madhavanunni A. N. and **Mahesh Raveendranatha Panicker**, "Beam Multiply and Sum Beamforming for Non-Steered Plane Wave High Framerate Ultrasound Imaging," in *Elsevier Biomedical Signal Processing and Control* 85 (2023): 104807.https://doi.org/10.1016/j.bspc.2023.104807

14. Gayathri M and **Mahesh Raveendranatha Panicker**, "On the Physics of Ultrasound Transmission for In-Plane Needle Tracking in Guided Interventions," in *Biomedical Physics & Engineering Express*. 9, no. 3 (2023): 035018. https://doi.org/10.1088/2057-1976/acc338

15. Adithya Sineesh and **Mahesh Raveendranatha Panicker**, "Exploring Novel Pooling Strategies for Edge Preserved Feature Maps in Convolutional Neural Networks", in *Springer Multimedia Systems*, 29, 1277–1290 (2023). https://doi.org/10.1007/s00530-023-01053-6

16. Gayathri M and **Mahesh Raveendranatha Panicker**,, "A Novel Technique for Estimation and Detection of Specular Reflections by Leveraging High Frame Rate Ultrasound Imaging," in *IEEE Transactions on Instrumentation and Measurement* 72 (2022): 1-11. https://doi.org/10.1109/TIM.2022.3232642

17. Arpan Tripathi, **Mahesh Raveendranatha Panicker**, Abhilash Rakkunedeth, Jacob Jaremko, Yale Tung Chen, Kiran Vishnu Narayan, Kesavadas C , "Unsupervised Landmark Detection and Classification of Lung Infection Using Transporter Neural Networks," accepted in *Elsevier Computers in Biology and Medicine* 152 (2023): 106345. https://doi.org/10.1016/j.compbiomed.2022.106345

18. Roshan P Mathews, **Mahesh Raveendranatha Panicker**, Abhilash R Hareendranathan, Yale Tung Chen, Jacob L Jaremko, Brian Buchanan, Kiran Vishnu Narayan, Kesavadas C, Greeta Mathews, "Unsupervised multi-latent space reinforcement learning framework for video summarization in ultrasound imaging", *IEEE Journal of Biomedical and Health Informatics*. Accepted September 2022. `https://doi.org/10.1109/JBHI.2022.3208779`

19. Abhilash Rakkunedeth Hareendranathan, Arpan Tripathi, **Mahesh Raveendranatha Panicker**, Yuyue Zhou, Jessica Knight and Jacob L Jaremko, "Domain-Aware Contrastive Learning for Ultrasound Hip Image Analysis," in *Elsevier Computers in Biology and Medicine* 149 (2022): 106004. `https://doi.org/10.1016/j.compbiomed.2022.106004`

20. Madhavanunni A. N. and **Mahesh Raveendranatha Panicker**, "A Nonlinear High-Resolution Beamforming for Plane Wave Ultrasound Flow Imaging," in *Elsevier Computers in Biology and Medicine* 147, 105686 (2022). `https://doi.org/10.1016/j.compbiomed.2022.105686`

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