

Faculty Profile



Dr. Usha Rani T, M.Tech., Ph.D
Associate Professor/BME

HIGHLIGHTS:

- Number of Journal Publications: 30
- H-Index: 7
- i-10 Index: 6
- Patents Published: 22

PROFESSIONAL LINKS:

- Scopus ID: 57214330109
- Scopus Link: <https://www.scopus.com/authid/detail.uri?authorId=57214330109> •
- Anna University Faculty ID: 2697911991
- AICTE Faculty ID: 1-959320755035
- Anna University Supervisor ID: -
- LinkedIn: <https://www.linkedin.com/in/usharani-thirunavukkarasu-4a1bb341/>

PROFESSIONAL BACKGROUND:

- Teaching Experience till date: 11 years
- Industrial Experience: -

INTERNATIONAL EXPOSURE:

- Presented Research paper in the International Conference on Advanced Technology in Engineering and Management, Siam University, Bangkok, 2025.

AREA OF SPECIALIZATION:

- Thermal Imaging
- Non-Invasive Diagnostics
- Biomedical Imaging and Signal Processing
- Biomedical Instrumentation

Ph.Ds GUIDING:

- Full Time Scholars: -
- Part Time Scholars: -

PATENTS PUBLISHED/GRANTED:

- AMMO MIST - Ammonia Sensor for Aquariums (Published - 202441041294).
- Biofilm with PH indicator (Published - 202441041290).
- BSNDDB - A Database created on Bare Lymphocytes Syndrome (Published-202441041310).
- Column Bioabsorbent for waste water Reclamation purpose (Published - 202441053760).
- Dr. Disinfect: Portable and Cost effective solution for nosocomial infection and prevention (Published - 202441053706).
- Fetal Heart Rate Monitoring System (Published 2024410538).
- Guardian Dose Dispenser - Trusted Digital Pill Management (Published - 202441041291).
- Herbal Hair Elixir (Published - 202441061371).
- Hair Serum (Published - 202441061150).
- Hydrogel for Gardening (Published - 202441041314).
- Lab Scale Ferment (Published - 202441041268)
- Equipment for Laundry Wastewater Reclamation (Published - 202441041299).
- MSDP: A database created on muscular dystroph (Published - 202441041312).
- Nano Selenium coated starch based edible packing material (Published - 202441053761).
- PICADB - A database created on PICA Syndrome (Published - 202441041320).
- Enhanced Rectangular Photobioreactor with integrated cell harvesting system (Published 202441041292).
- Respitrack (Published - 202441053828).
- Ayurvedic Deep Cleansing Shower Gel for Dry Skin (Published 202441061152).
- Equipment for degradation of pollutant - UV Photoreactor (Published - 202441041274).
- Vaginal Wipes (Published - 202441061151).
- An Intelligent Advisory System Based on Image Processing to Teeth Diseases Diagnosis (Published - 202241008447).
- Intelligent Brain Actuated Wheel Chair (Published-202041050106).

COURSES CERTIFIED:

- Completed IUCEE International Educators Certification Program (IIECP) in Spring 2026.
- Completed the NPTEL course titled " Healthcare Entrepreneurship", from IIT Delhi.
- Completed the online courses from Great Learning titled "Digital Image Processing", "Image Processing Projects", and "AI in Healthcare".
- Completed the NPTEL course titled "Medical Image Analysis", from IIT Kharagpur.
- Completed the certified course titled "Image Processing", from MATHWORKS.
- Completed the certified course titled "Pacemakers and ECG", from MEDTRONIC Academy.

ACHIEVEMENTS AND AWARDS:

- Recognized among the Top 1000 Scholars in Scientific and Engineering Research Topics, with a World Rank of #173 and India Rank of #65, based on the 2021–2025 impact window, 2026.
- Recognized for publishing a Top-Cited Article in CAAI Transactions on Intelligence Technology, 2025.
- Recognized as one of the top ten papers at the 16th International Engineering and Computing Research Conference held at Taylor's University, Malaysia, 2021.
- Received the Academic Ambassador Award from Abinnovus Consultancy Private Ltd in 2023.
- Received the Breakthrough Discovery Award from Agastiyar Research & Technologies in 2023.
- Ranked third overall in undergraduate studies and recognized as the Department Topper.
- Selected as one of the shortlisted candidates in the Project Contest'12 organized by the

Indian Society of Technical Education (ISTE) in 2012.

SPECIAL SESSIONS DELIVERED:

- Served as Session Chair at the International Conference held at Karpagam Academy of Higher Education, 2025.
- Served as Session Chair at the International Conference held at Galgotias University, 2024.
- Served as Session Chair at the International Conference on Recent Advancements in Biomedical Engineering, Bharath University, 2021.

CONFERENCES/SEMINARS/WORKSHOPS/JOURNALS:

- ✓ Journal and Conference Publications: 30
- ✓ Conference Presentations: 16
- ✓ FDPs, Workshops, Seminars, Webinars and STTPs: 36
- Nadeem, A., Khan, M.Z., Sirshar, M., and Thirunavukkarasu, U. (2026). "NSX-Net: A Neurolinguistic and Acoustic Multimodal Deep Learning Framework for Speech Disorder Classification." *Diagnostics*, 16(15), 2377.
- Thirunavukkarasu, U. and Mahendran, R.K. (2026). "VITAL-DR: Vision Transformer Adaptive Learning for Diabetic Retinopathy Detection and Classification from Fundus Images." *Biomedical Signal Processing and Control*, 123, 110567.
- Ravi, B., Aljubayri, I., Thirunavukkarasu, U., and Khan, M.Z. (2026). "Self-Supervision Enabled Compounded Multi-Modal Feature-Learning Network for Classifying Depressive States with Fine-Grained Emotions Using Wearable Sensors." *Biosensors*.
- Thirunavukkarasu, U., Umapathy, S., Ravi, V., and Alahmadi, T.J. (2024). "Tongue Image Fusion and Analysis of Thermal and Visible Images in Diabetes Mellitus Using Machine Learning Techniques." *Scientific Reports*, 14, 14571.
- Khan, A.A., Thirunavukkarasu, U., Mahendran, R.K., and Faheem, M. (2023). "Epileptic Seizures Prediction Using Adversarial Deep Dual Patch Attention Mechanism." *CAAI Transactions on Intelligence Technology*.
- Mahendran, R.K., Prabhu, P., Ramadass, P., Thirunavukkarasu, U., Mary, and Jagadesh (2021). "An Energy-Efficient Centralized Dynamic Time Scheduling for Internet of Healthcare Things." *Measurement*.
- Kalidoss, R., Thirunavukkarasu, U., and Umapathy, S. (2021). "A Breathalyzer for the Assessment of Chronic Kidney Disease Patients' Breathprint: Breath Flow Dynamic Simulation on the Measurement Chamber and Experimental Investigation." *Biomedical Signal Processing and Control*.
- Thirunavukkarasu, U., Umapathy, S., Krishnan, P.T., and Janardanan, K. (2020). "Human Tongue Thermography Could Be a Prognostic Tool for Prescreening Type II Diabetes Mellitus." *Evidence-Based Complementary and Alternative Medicine*.
- Thirunavukkarasu, U., Umapathy, S., Janardhanan, K., and Thirunavukkarasu, R. (2020). "A Computer-Aided Diagnostic Method for the Evaluation of Type II Diabetes Mellitus in Facial Thermograms." *Physical and Engineering Sciences in Medicine*.

PROFESSIONAL MEMBERSHIPS:

- Institution in Engineering and Technology (IET)
- International Association of Engineers (IAENG).