CURRICULUM VITAE

Dr.R.SOWMYALAKSHMI Assistant Professor (Senior Grade) Department of ECE UCE – BIT Campus, Tiruchirappalli 620 024 Contact no: 9442582113,9443481113 Mail. ID: sowmya.anand2007@gmail.com

Research Area:

- Signal Processing
- Image Processing
- Biometrics
- Microwave Engineering

Educational Qualifications:

Qualification	College/University	Year of completion	Percentage	Class
Ph.D. (Image Processing)	Anna University	2018		Highly commended
M.Tech.(Microwave and Radar Electronics)	Cochin University of Science and Technology	2001	76	Ι
B.E. (Electronics & Communication Engineering)	Institute of Road and Transport Technology, Erode	1998	73	Ι

Experience: (chronological order)

Name of Institutions	Designation of Post	From	То	Experience in Year
College of Engineering Munnar, Kerala	Lecturer – ECE	16-08- 2001	28-06- 2006	4 years, 10 months & 12 days
School of EEE, SASTRA	Lecturer –	05-07-	01-09-	2 years, 1 month & 26



	22 years & 1 month			
BIT Campus, University College of Engineering, Tiruchirappalli	Assistant Professor - ECE	19-08- 2009	Till date (23-09- 2023)	14 years, 1 month
Anna University, Tiruchirappalli	Lecturer – ECE (contract basis)	02-09- 2008	18-08- 2009	11 months & 16 days
University, Thanjavur	ECE	2006	2008	days

> <u>Awards / Honours Received:</u>

- Received memento and certificate of appreciation for 100 % results in EC8352 Signals and Systems - Anna University End semester examination held during Nov – Dec 2020.
- Received memento and certificate of appreciation for 100 % results in EC8352 Signals and Systems - Anna University End semester examination held during Nov – Dec 2021.

> Additional / Academic Responsibilities at University:

- a. **External Examiner** & **Internal Examiner** for conducting University Practical Examinations of Anna University.
- b. **Examiner** for examining UG and PG answer sheets in Central Valuation of Anna University.
- c. Hall invigilator during University Theory Examinations of Anna University.
- d. **Question paper setter** for University UG & PG examinations (both theory & practical) of Anna University and other reputed universities/institutions.
- e. **Member** of Affiliation Inspection Committee.
- f. **Member** of Squad for University Theory Examinations conducted by Anna University.
- g. **Anna University Representative** for University Theory Examinations conducted by Anna University, Trichy.

- h. **Certificate distribution Committee member** of ECE students during Graduation day celebrations in the year of 2014, 2015, 2016 & 2017.
- Press and Media Committee member during Graduation day celebrations since 2018.

Professional Activities:

- a. **Time table Co-ordinator** of ECE department during Jan 2009- April 2012.
- b. Internal Assessment Test Co-ordinator of ECE department from July 2012 Dec 2019.
- c. **Alumni Co-ordinator** of ECE department from March 2013 till date.
- Class Co-ordinator for UG students of batches 2007 2011, 2011 2015 and 2015 2019, 2019 2023.
- e. **Student Counsellor** for 21 UG students of batches 2008 2012, 2009 2013.
- f. **Faculty-in-charge** for Optical & Microwave Laboratory from 2008 Dec 2019.
- g. **Faculty-in-charge** for Digital Signal Processing Laboratory from Dec 2019 till date.
- h. **Instrumental** in the purchase of Optical and Microwave laboratory equipment towards the establishment of Optical and Microwave laboratory during 2008-2009.
- i. **Instrumental** in the purchase of Digital Communication lab equipment during 2008-2009.
- j. Faculty-in-charge for Digital Electronics Laboratory from 2016 Dec 2019.
- k. Instrumental in the purchase of 3 GHz Vector Network Analyzer for Optical & Microwave Laboratory during 2012-13.
- 1. Co-ordinator of Signal Processing module for NBA process.
- m. Criterion 3 in-charge for NBA process.
- n. **Presented** a lecture on Criteria 3 of NBA process twice to the faculty of Department of ECE, BIT Campus, Trichy.

> <u>Membership of Scientific and Professional Societies:</u>

Life member of The Institution of Engineers (India): M -1564956

Fellowships and Grants received:

a. PG stipend – Qualified in GATE '98

Duration : Nov 1999 – June 2001

Role	: M.Tech. Scholar at Department of Electronics, Cochin University of
	Science & Technology, Kochi
Agency	: MHRD, Government of India
Amount	: Rs.2500/- per month

b. Conference grant - National Conference titled ' Nascent Technologies in Signal

Processing and Communication (NT-SIPCOM '11)'

Duration	: March 17 -18, 2011 (2 days)
Role	: Organizer
Agency	: CSIR
Amount	: Rs.25000/-

c. Faculty Development Programme grant - 'Nascent Technologies in Signal

Processing'

: Dec 11-17, 2013 (7 days) Duration : Organizer Role : TEQIP II Agency Amount : Rs.100000/-

d. Conference grant - National Conference titled 'Nascent Technologies in Signal Processing and Communication (NT-SIPCOM '14)'

Duration	: Nov 27 - 28, 2014 (2 days)
Role	: Organizer
Agency	: TEQIP II
Amount	: Rs.100000/-
6 5	e

e. Conference grant - National Conference titled 'Nascent Technologies in Signal Processing and Communication (NT-SIPCOM '16)'

Duration : Sep 1 - 2, 2016 (2 days) : Organizer Role : TEQIP II Agency : Rs.100000/-Amount

Completed PG/UG Projects:

- a. Number of PG Projects Completed: 21 Nos
- b. Number of UG Projects Completed: 25 batches

<u>Research Guidance (M.S/Ph.D.) (Completed): Nil</u>

S1. No	Name of the scholar	Tentative Title of the thesis	Year of registration	Status
1.	S.Athistalakshmi	Deep learning algorithms utilized in the plan and improvement of the data analytics of IOMT E-medical care framework	2022	Course work
2.	E.Shapna Rani	Automated Welding Defect Analysis using Machine vision enabled by Deep Learning Neural Network techniques	2023	Course work
3.	N.Ramya	Development of Olfactory system using Machine learning approaches	2023	Course work

<u>Research Guidance (M.S/Ph.D.) (Ongoing):</u>

> <u>Publications:</u>

a. <u>Books / book chapters:</u>

- Sowmyalakshmi, R., Anantha Padmanaban, M. R., Girirajkumar, S. M., Benazir, S., & Farzana, A. (2020). Multi-step Radiographic Segmentation of Weld Defect Images. In Advances in Additive Manufacturing and Joining (pp. 409-419). Springer, Singapore.
- **Sowmyalakshmi R.**, P. Maheswara Venkatesh, T. Jayasankar, and K. Shankar. "Class imbalance data handling with deep learning-based ubiquitous healthcare monitoring system using wearable devices." Wearable Telemedicine Technology for the Healthcare Industry: Product Design and Development (2021): 123.

b. International Journals:

- Balamurugan, S & Sowmyalakshmi, R, 2013, 'Higher Order Partial Differential Equation Based Method for Image Enhancement', International Journal of Engineering Trends and Technology, Vol. 4, no.6, pp. 2236 -2240, ISSN : 2231-5381.
- Sowmyalakshmi, R & Girirajkumar, SM, 2017, 'A New Technique for Computationally Efficient Human Recognition', Applied Mathematics & Information Sciences An International Journal, Vol.11, No.2, pp. 457 - 464.
- Sowmyalakshmi, R & Girirajkumar, SM, 2017, 'Automatic Classification of fruits using GA optimized, Robust SMRT features', International Journal of Printing, Packaging & Allied Sciences, ISSN 2320-438.
- Sowmyalakshmi, R, Girirajkumar, SM, Anantha Padmanaban, MR & Sree Vashini R, 2017, 'Survey on Non-destructive Evaluation of Weld Quality Inspection using Digital Image Processing techniques', Elixir Renewable Energy 102, pp. 44273-44276, ISSN 2279-712X.
- Sowmyalakshmi, R., Jayasankar, T., Pillai, V. A., Subramaniyan, K., Pustokhina, I., Pustokhin, D. A., & Shankar, K. (2021). An Optimal Classification Model for Rice Plant Disease Detection. CMC-COMPUTERS MATERIALS & CONTINUA, 68(2), 1751-1767.
- Sowmyalakshmi, R., Waly, M. I., Sikkandar, M. Y., Jayasankar, T., Ahmad, S. S., Rani, R., & Chavhan, S. (2021). An Optimal Lempel Ziv Markov Based Microarray Image Compression Algorithm. CMC-COMPUTERS MATERIALS & CONTINUA, 69(2), 2245-2260.

c. <u>National Journals:</u>

> <u>Patents:</u>

Patent titled 'RECIPROCAL DATA MAX-LOG-MAP (RD-MLMAP) BASED OFDM SYSTEM FOR IMAGE TRANSMISSION' filed on 23/11/2020 has been published on 11/12/2020.

Inventors: N.S.Pradeep, P.Maheswara Venkatesh, T.Jayasankar, R.Sowmyalakshmi

> Sponsored Research Projects:

S1.No	Name of the project	Funding agency	Project value (Rs.)	Duration	Status
1	Noninvasive measurement of multi physiological parameters from blood volume pulse	<u>TEQIP II</u>	<u>Rs.10000/-</u>	<u>Dec 2014 –</u> <u>April 2015</u>	<u>Completed</u>
2	Genetic Algorithm based fast image segmentation for biometric application	<u>TEQIP II</u>	<u>Rs.10000/-</u>	<u>Dec 2014 –</u> <u>April 2015</u>	<u>Completed</u>
3	Discrete Cosine Transform based multi focus image fusion in wireless visual sensor networks	<u>TEQIP II</u>	<u>Rs.10000/-</u>	<u>Dec 2015 –</u> <u>April 2016</u>	<u>Completed</u>
4	Elastic distortion estimation in Fingerprint biometrics	<u>TEQIP II</u>	<u>Rs.10000/-</u>	<u>Dec 2015 –</u> <u>April 2016</u>	<u>Completed</u>

Consultancy Activities: Nil

> List of Seminar / Short Term Course /FDP/ Workshop organized:

- a. Organized 2 days national workshop on 'MATLAB Simulink and its applications' at Anna University Trichy in Jan 2013.
- b. Organized TEQIP II sponsored 7 days FDP in "Nascent Technologies in Signal Processing" at Anna University, Trichy from Dec 11 17, 2013.

c. Organised TEQIP II sponsored National Level Symposium "TROY' 19" at Department of Electronics and Communication Engineering, BIT Campus, Anna University -Tiruchirappalli on Mar 19 & 20, 2019.

List of Seminar / Short Term Course /FDP/ Workshop attended:

FDPs attended

- a. "Advances in Signal Compression technology", organized by National Institute of Technology Calicut (AICTE – ISTE sponsored) during Jan 6-17, 2003. (14 days)
- b. "Fourier Transform, Wavelet Transform and applications", organized by Department of Mathematics, Indian Institute of Technology Madras during Dec 13-24, 2004. (14 days)
- c. "Deploying Multimedia Applications for deployment over Internet and Mobile devices", organized by Department of Electrical Engineering during June 20 – 24, 2005. (5 days)
- d. "78th Orientation Programme" organized by UGC Academic Staff College, Bharathidasan University Trichy during Feb 1 – 28, 2013. (28 days)
- e. "Digital Image Processing (DIP'13)", organized by Department of CSE, Bharathidasan Institute of Technology Trichy (TEQIP II sponsored) during July 25 – 31, 2013. (7 days)
- f. "Computer Networking", conducted by NMECT IIT Bombay during May 28 July 5, 2014 (Online activity May 28 June 29, 2014 & Physical participation at Remote center SASTRA University Thanjavur June 30 July 5, 2014). (14 days)
- g. "Emerging Trends in Mathematical Modelling and Simulation (ETMMS '15)", organized by Department of Mathematics, Bharathidasan Institute of Technology Trichy (TEQIP II sponsored) during May 8 - 14, 2015. (7 days)
- h. "Role of Renewable Energy in Indian Power Sector (RREIPS'15)", organized by Department of EEE, Bharathidasan Institute of Technology Trichy (TEQIP II sponsored) during Sep 21 – 27, 2015. (7 days)
- "Big Data Analytics", organized by Bharathidasan Institute of Technology Trichy (DST sponsored) during July 14 – 23, 2016. (10 days)
- j. "Deep Learning and Applications" organised by University College of Engineering (BIT Campus) Trichy, IIITDM Jabalpur and NIT Warangal during Dec 9 -13, 2019. (5 days)
- k. Industrial Training programme on "Communication and Networking Technologies organized by RGMTTC, BSNL during June 1 19, 2020. (3 weeks)

- "Inculcating Universal Human Values in Technical Education" organized by All India Council for Technical Education(AICTE) from Jan 31 – Feb 4, 2022. (5 days online mode)
- m. Online Induction Training/Orientation Programme for Faculty in Universities/ Colleges/ Institutions of Higher Education organized by Teaching Learning Centre, Ramanujan College, University of Delhi during March 22 – April 20, 2023. (Self-paced)
- n. Physical mode Faculty Empowerment Programme on "Transmission lines and RF Systems" organized by Department of Electronics Engineering, MIT Campus Chennai during July 24 – 29, 2023. (6 days)

Seminar / Short Term Course / Workshop attended

- a. "Biometrics & Nonlinear Filters", organized by Department of ECE, Anna University Coimbatore on Feb 28 & March 1, 2009. (2 days)
- b. "Real time image processing and its applications", organized by Department of ECE, PSG College of Technology, Coimbatore on Jan 30, 2010. (1 day)
- c. "Networking Simulator tools", organized by Department of ECE, Bharathidasan Institute of Technology Trichy on July 17-18, 2009. (2 days)
- d. "Discrete event simulation for protocol design in wireless networks", organized by Department of ECE, Bharathidasan Institute of Technology Trichy on Dec 22, 2010. (1 day)
- e. "Teaching Methodologies", organized by Department of English, Bharathidasan Institute of Technology Trichy on Jan 8, 2011. (1 day)
- f. "Signal Processing for Biomedical Applications" organized by Department of ECE, Amrita Vishwa Vidyapeetham Coimbatore (CSIR sponsored) during Dec 14 – 17, 2011. (4 days)
- g. "Research Challenges in RF and Wireless Communication", organized by Indian Institute of Information Technology, Design and Manufacturing Kancheepuram (CSIR sponsored) during June 21-22, 2013. (2 days)
- h. "Effective Teaching & Learning Pedagogy", organized by ISTE-WPLP Bengaluru at KTDC Chaitram Hotel Trivandrum during Feb 5-7, 2014. (3 days)
- i. "R & D Project Proposals Awareness, Needs and Benefits", organized by Centre for Technology Development and Transfer, Anna University Chennai on Feb 26, 2014. (1 day)

- j. "Training Program on Cadence OrCAD Simulation and PCB Design Software", conducted by FTD Automation Pvt. Ltd. Bangalore at University College of Engineering Villupuram, Villupuram during Aug 12-14, 2014. (3 days)
- k. "Advanced Communication System" organized by Department of ECE, Bharathidasan Institute of Technology Trichy on 11.07.2017. (1 day)
- "IOT-LORA", organized by Department of ECE, Bharathidasan Institute of Technology Trichy during Sep 1 – 2, 2017. (2 days)
- m. "Asana and Breathing Exercise", organized by Department of Physical Education, Bharathidasan Institute of Technology Trichy on Feb 1, 2018. (1 day)

S1.No.	Course Name	No. of Weeks	FDP (Y/N)	Timeline	Status & Performance
1.	Developing Soft skills and Personality	12	Y	Aug – Oct 2018	Pass & Elite + Gold
2.	Roadmap for Patent Creation	8	Y	Jan – March 2019	Pass & Elite
3.	Enhancing Soft skills and Personality	12	Y	Feb – April 2019	Pass & Elite + Gold
4	Digital Image Processing	12	Y	Jul – Oct 2019	Pass & Elite
5	The Joy of Computing using Python	12	Y	Sep – Dec 2020	Pass & Elite + Silver
6.	Introduction to Industry 4.0 and Industrial Internet of Things		Y	Sep – Dec 2020	Pass & Elite + Silver
7.	Principles of Signals and Systems	12	N	Jan – April 2021	Pass & Elite
8.	Principles of Communication	8	N	July – Sep 2021	Pass & Elite + Silver

• List of NPTEL courses completed

	Systems Part II				
9.	An Introduction to Information Theory	8	Y	Jan – Mar 2022	Pass
10.	Discrete Time Signal Processing	8	N	Jan – Mar 2022	Pass & Elite
11.	Principles of Communication Systems Part I	12	Ν	Jan – April 2022	Pass & Elite + Gold
12.	Principles and Techniques of Modern Radar systems	12	Y	July – Oct 2022	Pass
13	Introduction to Wireless and Cellular Communications	12	Y	July – Oct 2022	Pass

National / International Conferences organized / Participated: Organized :

- **Organised** CSIR sponsored National Conference titled 'Nascent Technologies in Signal Processing and Communication (NT-SIPCOM) at Department of Electronics and Communication Engineering, BIT Campus, Anna University -Tiruchirappalli on March 17 & 18, 2011.
- **Organised** TEQIP II sponsored National Conference titled 'Nascent Technologies in Signal Processing and Communication (NT-SIPCOM) at Department of Electronics and Communication Engineering, BIT Campus, Anna University -Tiruchirappalli on Nov 27 & 28, 2014.
- Organised TEQIP II sponsored National Conference titled 'Nascent Technologies in Signal Processing and Communication (NT-SIPCOM) at Department of Electronics and Communication Engineering, BIT Campus, Anna University -Tiruchirappalli on Sep 1 & 2, 2016.

Presented / participated :

- Nithya, J & Sowmyalakshmi, R, 'Particle filter based detection and tracking of moving object in video scenes', Proceedings of 2nd National Conference on Recent Trends in Communication, Computation & Security, 9th March 2012, Christian College of Engineering & Technology, Oddanchatram, pp. 324 327.
- Sathis Kumar, R & Sowmyalakshmi, R, 'A real time approach for facial expression recognition', Proceedings of 2nd National Conference on Recent Trends in Communication, Computation & Security, 9th March 2012, Christian College of Engineering & Technology, Oddanchatram, pp. 297 - 304.
- Annamalai, K, Sowmyalakshmi, R, 'Satellite image resolution evaluation performance using Haar and Multi wavelet Transform', Proceedings of National Conference on Recent Trends in Engineering and Technology -2013 (NCRTET – 2013), 22nd March 2013, Mount Zion College of Engineering and Technology, Pudukkottai.
- Mohanraj, R, Sowmyalakshmi, R, 'Advancements in noncontact measurements of heart and respiratory rate using webcam', Proceedings of 5th National Conference on Signal Processing Communications and VLSI Design (NCSCV 13), 10th & 11th May, 2013, Anna University Coimbatore, pp. 272 -276, ISBN 978-0-9894254-0-7.
- Jegatheeswaran, S, Sowmyalakshmi, R, Efficient extraction system for abnormal blood vessels detection based on CDR & ISNTR', Proceedings of 5th National Conference on Signal Processing Communications and VLSI Design (NCSCV 13), 10th & 11th May, 2013, Anna University Coimbatore, ISBN: 978-0-9894254-0-7.
- Sowmyalakshmi, R, Anantha Padmanaban, MR, Jayarani, R & Sree Vashini, S, 'A comprehensive overview of welding defects detection using image processing techniques', Proceedings of TEQIP II sponsored National Conference titled Nascent Technologies in Signal Processing and Communication (NT-SIPCOM '16), 1st & 2nd Sep 2016, Bharathidasan Institute of Technology, Trichy, pp. 149 152, ISBN: 978-93-80622-16-3.
- Sowmyalakshmi, R., Anantha Padmanaban, M. R., Girirajkumar, S. M., Benazir, S., & Farzana, A., 'Digital Image Processing approach for assisting weld quality inspection, National Conference on Recent Innovations in Engineering Science,

Technology & Management, Jan 24 & 25, 2019 at Agnel Institute of Technology & Management and Design, Assagoa, Goa.

Professional recognitions:

- Served technical reviewer for 7th International 28th A11 as а & India Manufacturing Technology, Design and Research Conference (AIMTDR University, 2018) organized bv Anna Chennai, India during 13th – 15th December 2018.
- Served as a mentor for four teams during the 100 day long COVID -19 National Bioinformatics Online Hackathon for fullstackers from 29 April 2020 to 03 August 2020 event organized by BIT Campus, Anna University Trichy, IIT Bombay, Derbi Foundation and MSSW Chennai.
- Served as a **technical reviewer** for journals of Tech Science Press.
- Served as a **technical reviewer** for the August and September (2023) issues of Springer Nature Scientific Reports Journal.
- Serving as a **technical reviewer** for the Springer Signal, Image and Video Processing journal.
- Serving as a technical reviewer for 2023 International Conference on Advances in Machine Intelligence, and Cybersecurity Technologies (AMICT2023) organized by the Faculty of Computing and Informatics, Universiti Malaysia Sabah to be held on Kota Kinabalu, Sabah, Malaysia on Dec 11 & 12, 2023.
- Serving as a technical reviewer for ICDIDSA-2023: 1st International Conference on Deep Learning, IOT, Drone Technology, Smart Cities & Application organised by Sandip Institute of Technology & Research Centre, Nashik, India on November 29 & 30, 2023.
- Recognized as **NPTEL discipline star** (Electrical Engineering) during Jan April 2022.
- Completed the NPTEL domain certification in Communication and Signal Processing (Electrical Engineering) in Oct 2022.
- Chairperson for conferences / Seminar / Technical symposia:
 - **Judge** during symposium conducted by Department of ECE, MAMCET in Aug 2011.

- **Subject Expert / Judge** for the TNSCST-SPS-Seminar cum Exhibit held at National College, Trichy on July 20-21, 2018.
- **Guest of Honour** for the National Conference (NCACCPS2K19) conducted by Department of EEE, ECE and CSE, St. Joseph's College of Engineering and Technology, Thanjavur in March 2019.
- **Judge** for paper presentation for the National level technical symposium titled MICFA'19 organized by Department of ECE, University College of Engineering (BIT Campus), Tiruchirappalli on Sep 26 & 27,2019.

• Guest lectures delivered:

- **Resource person** during 2 days national workshop on 'MATLAB Simulink and its applications' conducted by Department of ECE, BIT Campus Trichy and delivered a talk on 'Image processing & Wavelet toolboxes of MATLAB' in Jan 2013.
- **Resource person** during 7 days FDP titled 'Nascent Technologies in Signal Processing' conducted by Department of ECE, BIT Campus Trichy and delivered a talk on 'Biometric Signal Processing' in Dec 2013.
- **Resource person** for delivering expert lecture on 'Data Converters' to the final year ECE students, Kings College of Engineering, Thanjavur in April 2017.
- **Resource person** for delivering expert lecture on 'Digital Modulation Techniques' to UG ECE students, K Ramakrishnan College of Engineering and Technology, Trichy in Sep 2018.
- **Resource person** for delivering expert lecture on 'Single Sideband (SSB) and Vestigial Sideband (VSB) Amplitude Modulation Techniques' in the Anna University sponsored Faculty Development Training Programme conducted by Sri Muthukumaran Institute of Technology Chennai in Nov 2018.
- **Resource person** for delivering invited lecture on 'Industrial Image Processing' in the AICTE sponsored Faculty Development Programme conducted by Department of Mechanical Engineering, Saranathan College of Engineering, Trichy in June 2019.
- **Resource person** for delivering invited lecture on 'An Insight into Ear Biometric Recognition Techniques' in the Institute of Engineers (Trichy Local Chapter), IEI Institution Building Trichy in July 2019.

- **Resource person** for delivering invited lecture on 'Importance of continuous learning and related topics' in the First year induction programme for first year ECE students at University College of Engineering, BIT Campus, Trichy in Sep 2018, Aug 2019, Nov 2020 and Nov 2021.
- **Resource person** for delivering invited lecture on 'Significance of Computer Vision in Object Recognition' in the national seminar titled 'Recent trends in Image Processing and its Applications' conducted by Sri Bharathi Engineering College for Women, Pudukkottai on May 21,2022.
- Resource person for delivering invited lectures on 'Introduction to Z Transform and Discrete Time Fourier Transform and discussion on their properties' and 'Analysis of discrete time systems using Z Transform and Fourier Transform' in the Anna University sponsored online Faculty Development Programme conducted by Kingston Engineering College, Vellore during July 11 – 16, 2022.
- **Resource person** for delivering invited lecture on 'Importance of continuous learning and Universal Human Values' in the First year induction programme for first year ECE students at University College of Engineering, BIT Campus, Trichy on Nov 17,2022 and Sep 15,2023.
- **Resource person** for delivering expert lecture on 'An insight into Computer Vision techniques' for the students of ECE in M.A.M. school of Engineering, Trichy on April 27, 2023.