Curriculum Vitae – Shubhankar Majumdar

Contact Information

Department of Electronics & Communication,
National Institute of Technology Meghalaya (NITM),
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Date of Birth 1st November 1987

Nationality Indian

Present Designation Assistant Professor at National Institute of Technology, Meghalaya (NITM)

Career Objective I want to become an efficient professional who can contribute to the organization in terms of optimum utilization of technology (conceptual, analytical, adaptable skills).

Research Interest

1. Development of Machine learning models for prediction of air pollution, landslide, soil parameters etc.
2. Development of Physics inspired Artificial Intelligence framework for circuit automation.
3. Development of low-cost and Energy efficient IoT system for non-destructive testing, Disaster Management and Agriculture purpose.

Research / Voluntary highlights

— Published more than **ninety papers** so far in peer-reviewed international journals and conferences. More than 1100 citations(h index =16 and i10 index = 33).
— Received 2.5 million INR from DST for the Agriculture Startup, namely Soil Agritech Private Limited. Granted one Australian Patent (Application No. 2021102647) regarding Cloud assisted monitoring system for Hydroponics, and Granted one Indian Patent (Grant No. 443413) regarding Low-cost Soil Tensiometer design.
— Received 15 sponsored projects worth 5 crores INR.
— Opened IEEE CASS, MTTS, CEDA, WiE, Sensor Student Chapter at NIT Meghalaya. Reviewed more than hundred SCI Journal papers. TPC and reviewer for several IEEE conferences like ISCAS, VLSID, etc. Organized IEEE Society workshop funded by IEEE MTTS.

Education Qualification

Doctor of Philosophy (PhD) (Thesis Awarded : 24th November 2016)
(Specialization : Micro-Electronics)
from Advanced Technology Development Centre,
of Indian Institute of Technology Kharagpur, Kharagpur, WB, India.
Thesis Topic : TCAD based simulation, growth and characterization of Nitride-Based HEMT on Silicon for RF Switch Application.
Advisor : Prof. Dhrubes Biswas

Masters of Technology (M.Tech) with CGPA : 8.60/10 (Distinction), June 2012.
(Specialization : Microelectronics & VLSI Design)
from Department of Electronics and Instrumentation,
of Shri Govindram Seksaria Institute of Technology and Science (SGSITS), Indore, MP, India.
Thesis Topic : Design of Hardwired 8×8 SRAM BIST (Built In Self Test For Static Random Access Memory) in 180nm.
Advisor : Dr. Prashant. P. Bansod

Bachelor in Engineering (B.E.) with percentage : 75.78% (Distinction), June 2010.
(Specialization : Electronics & Communication)
from Department of Electronics and Communication,
of University Institute of Technology, Bhopal, India.
Thesis Topic : AM Receiver with 1 Mhz Center Frequency for Voice Recovery
Advisor : Ms. Prasansa Francis

Experience

1. **Mentoring Experience :** The proposal has been accepted and the team has become top 10 team of **India Innovation Challenge Design Contest 2016, sponsored by DST & Texas Instruments Inc.**
   The project title is **Automatic Regulated Water Supply through Energy Harvesting System**
2. **Teaching Experience :**
   (a) Working as **Assistant Professor (Level 12)** in Department of Electronics & Communication Engineering of National Institute of Technology, Meghalaya. from 19^{th} ***December 2023 - present***.

   (b) Working as **Assistant Professor (Level 11)** in Department of Electronics & Communication Engineering of National Institute of Technology, Meghalaya. from 25^{th} ***September 2019 -*** 18^{th} ***December 2023***.

   (c) Working as **Assistant Professor (Level 10)** in Department of Electronics & Communication Engineering of National Institute of Technology, Meghalaya. from 13^{th} ***December 2017 -*** 24^{th} ***September 2019***.

   (d) Working as **Faculty** in Department of Electronics & Communication Engineering of Indian Institute of Information Technology, Kurnool. from 18^{th} ***July 2017 -*** 12^{th} ***December 2017***.

   (e) Working as **Guest Faculty** in Special Manpower Development Project (SMDP) - Chip to System Design (C2SD) project of Department of Electronics and Information Technology (DietY), Government of India (GOI) at **NIT Raipur** from 9^{th} ***March 2016 -*** 27^{th} ***June 2017***.
   The project based on the ***"FPGA board level design of networking module having functionality of Media Access Control (MAC), routing and security as per IEEE 802.15.4 (Zigbee) standards"***

   (f) Conducted the class on Device Modeling at **IIT Kharagpur in VLSI Summer Course** from 15^{th} *May 2014 to* 17^{th} *June 2014*
3. **Research Experience :** Worked as Senior Research Fellow (SRF) in a project ***"Development of MBE cluster tool based epitaxial nano-semiconductor infrastructure and process integration facility for high performance RF/Microwave compound semiconductor heterostructure nano-devices on silicon"*** at **IIT Kharagpur** from 7^{th} *December 2015 -* 4^{th} *March 2016*

Skills

Scientific softwares : Keysight's Advanced Design Systems (Momentum, Harmonic Balance Simulation), Cadence (Spectre, Virtuoso & Assura), Matlab, HSpice, Tanner (S-edit, W-edit, L-edit & TSpice), Silvaco (Atlas & Athena), Python

Circuit Level Interfacing : VerilogA modelling.

Device's Parameter Extraction : Neural networks and Support vector machine.

Epitaxial Growth Tool : Molecular Beam Epitaxy

Fabrication Process Tools : Maskless Lithography via Focused Ion Beam Lithography, Optical Lithography through Mask Aligner (OAI200) & Spin-coater.

Characterization tools : Nanometrics's PL & HALL instrument, Bede's HR-XRD, Merlin SEM, RF probe stations (Cascade), DC probe station(Everbeing), Keithley's 4200SCS, Spectrum analyzer, Signal Generator, Mixed Signal Oscilloscope, Vector Network Analyzer .

Paper & Report Writing Tool : Microsoft Office, Visio, LaTeX, Origin, Draw.io.

Professional Organizations

IEEE Senior member (ID No. 92775344)	*2015- present*
Union Radio-Scientifique Internationale Member (ID No. M1838573204)	*Lifetime Member*
Electrochemical Society Member (ID No. 406059)	*Lifetime Member*
The Institute of Engineers (India) (ID No. AM1849193) Associate Member	*Lifetime Member*
International Association of Engineers (IAENG) (ID No. 208814)	*Lifetime Member*

Awards and Honors

- Received the Visvesvaraya Young Faculty Research Fellowship (YFRF)from Digital India Corporation, Ministry of Electronics and Information Technology (MEITY) in the year of 2025
- Awarded best researcher in the National Institute of Technology Meghalaya on 1st April 2025.
- Awarded best researcher in the National Institute of Technology Meghalaya on 1st April 2024.
- 2nd Runner Up in the 2023 IEEE DataPort Climate Change Dataset Upload Contest
- Enlisted in Golden List of Reviewers for 2020, 2021, 2022 of IEEE Transaction of Electron Devices
- Received Marie Sklodowska-Curie Actions Seal of Excellence award from European Commission in 2018.
- Semifinalist for the Cisco Global Problem Solver Challenge in 2018.
- Received National Postdoctoral (NPDF) Fellowship in 2017.
- Received Italian Fellowship for Postdoctoral in 2017.
- **TI IICDC 2016** (Technical Video | Buisness Video)
  Mentor of the Incubated Company – Successfully become top 10 teams in Texas Instruments Inc. India Innovation Challenge Design Contest 2016 with over 11000 participants from 624 colleges of India. Got Incubation of **INR 2500000/-** from Department of Science and Technology (DST), Texas Instruments, and anchored by NSRCEL of IIM Banglore for this project.
- **International Travel Grant** from Ministry of Human Resource and Development (MHRD) India for EMRS Fall Meeting, 2015, Warsaw Poland
- Received **IIT KGP Institute Scholarship** in 2012 for pursuing PhD from MHRD, Government of India.
- Received **GATE Scholarship** in 2010 for pursuing M.Tech from MHRD, Government of India.

Technology Developed

- ***DEWS- Drought Early Warning System*** in 2018
  Brief Details : DEWS is technology for Drought Prediction and Mitigation for governmental disaster management bodies leading to immediate response and relief for 53 million people affected by droughts annually.
  Reference : Semi-Finalist in CISCO Global Problem Solver 2018
- ***Automatic Regulated Water Supply through Energy Harvesting System*** in 2016
  Brief Details : IoT based system for automatic water supply in drip irrigation
  Reference : Mentor of Incubated company SOIL Agritech Private Limited

Sponsored Projects (National Level)

— **As Principal Investigator**

1. Project Title : Air Quality network for SMART City : Real-time air quality monitor, evaluation, and prediction of air pollutants using Machine Learning through the deployment of low-cost air quality sensor (LAQS) in India and two selected ASEAN countries (Malaysia, Philippines). (**Completed**)
   International PI : Prof. Mohd Shahrul Mohd Nadzir (Malaysia) & Prof. Mylene Cayetano (Philippines)
   Sponsoring Agency : ASEAN-India STI Cooperation
   Sanction Number : CRD/2020/000320
   Budget : 26,25,696 INR (Indian Side)
   Duration : 2 Years
2. Project Title : Development of E-mode III-Nitride devices for Energy Optimized Agile Power Electronics. (**Completed**)
   International PI : Prof. Alice Hospodkov (Institute of Physics, Czech Academy of Sciences)
   Sponsoring Agency : Department of Science & Technology (International Bilateral Cooperation Division)
   Sanction Number : DST/INT/Czech/P-015/2019
   Budget : 54,52,162 INR (Indian Side) + $ 57,543 (Czech Side)
   Duration : 3 Years.
3. Project Title : Prediction, Detection and Monitoring System for Landslide in Hilly Region. (**Completed**)
   International PI : Prof. Masahiro Fujita (University of Tokyo)
   Sponsoring Agency : Department of Science & Technology (International Bilateral Cooperation Division)
   Sanction Number : DST/INT/JSPS/P-301/2019
   Budget : 6,26,000 INR (Indian Side) + $ 16000 (Japanese Side)
   Duration : 2 Years.
4. Project Title : Tensiometer based Automated IoT system for irrigation. (**Completed**)
   Sponsoring Agency : Department of Science and Technology under Device Development Programme.
   Sanction Number : DST/TDT/DDP-27/2018
   Budget : 16,84,941 INR.
   Duration : 2 Years.

5. Project Title : DEWS– Drought Early Warning System (**Ongoing**)
   Sponsoring Agency : ISRO SAC AHEMDABAD
   Sanction Number :NGP-13
   Budget : 20,91,072 INR
   Duration : 3 Years.

— **As Co- Principal Investigator**

1. Project Title : UAV Assisted SOIL Moisture Content Determination through 5G Network **(Ongoing)**
   Sponsoring Agency : Department of Telecommunication Ministry of Communication
   Sanction Number : D.O.No. 1-IMC (100UCL)/2023-SR1
   Budget : 1,26,70,000 INR
   Duration : 5 Years.
2. Project Title : Development of On-chip MEMS Pressure Sensor based Tensiometer for Agriculture **(Ongoing)**
   Sponsoring Agency : R & D in Electronics Group, Ministry of Electronics & Information Technology
   Sanction Number : EE-9/2/2021-R&D-E
   Budget : 1,10,980,000 INR
   Duration : 5 Years.
3. Project Title : AI Empowered Advanced Wireless Communication Systems **(Ongoing)**
   Sponsoring Agency : DST sponsored FIST Level - 1
   Sanction Number : SR/FST/ET-I/2020/689
   Budget : 80,00,000 INR.
   Duration : 5 Years.
4. Project Title : Sensor based Big Data Analysis for Prognostics and health management of RCC bridges **(Ongoing)**
   Sponsoring Agency : Border Road Organization (BRO)
   Sanction Number -20416/Res/RCC Bridges/56/E2
   Budget : 34,02,800 INR.
   Duration : 3 Years.
5. Project Title : Fully acoustics testing of low velocity impact damage in composite plate using the concept of local defect resonance **(Ongoing)**
   Sponsoring Agency : Aeronautics R and D Board
   Sanction Number : ARDB/01/1052041/M/1
   Budget :2402800
   Duration : 3 Years.
6. Project Title : Cloud-assisted Data Analytics based Real-Time Monitoring and Detection of Water Leakage in Transmission Pipelines using Wireless Sensor Network for Hilly Regions.(**Completed**)
   Sponsoring Agency : Ministry of Earth Science under National Mission on Himalayan Studies (NHMS).
   Sanction Number : GBPNI/NHMS-2017-18/SG-21
   Budget : 44,70,880 INR.
   Duration : 3 Years.
7. Project Title : AI-Driven Soil Parameter Monitoring for Organic Farming in Meghalaya(**Completed**)
   Sponsoring Agency : DST - North East Center for Technology Application and Reach (NECTAR)
   Budget : 7,08,750 INR.
   Duration : 1 Year.
8. Project Title : 6G Standardization : Critical Data Transmission (Remote location data) during Natural Calamity for North-eastern Region in India for Vehicular Autonomy (**Ongoing**)
   Sponsoring Agency : Department of Telecommunication (DoT)
   Sanction Number : TTDF/6G/345
   Budget : 1,53,82,400 INR.
   Duration : 3 Years.

Sponsored Projects (State/ Institute Level)

— **As Principal Investigator**

- Project Title : Cloud-Assisted Hybrid Renewable Energy Sources for Electricity and Water Supply in Rural Area. (**Completed**) Budget : 99,960 INR
  Project Title : A Self-Sustained Multiple Sensor IoT Based Landslide Detector Early Warning System. (**Completed**) Budget : 49,335 INR

Project Title : Smart Agro Modular System. (**Completed**) Budget : 46,465 INR
Project Title : Smart Blind Stick. **(Completed)** Budget : 19,950 INR
Project Title : A Portable Wind-Hydro Hybrid Electronic Charger Targeted for Outdoor Activities and Military Applications. (**Completed**) Budget : 49,742 INR
Sponsoring Agency : State Council of Science, Technology & Environment Meghalaya
Total Budget : 2,65,452
Sanction Number : CST 6/2019/103
Duration : 1.5 Years.

As Co-Principal Investigator

- Project title : Design and Fabrication of temperature and humidity-controlled drying chamber for drying of spices. Budget : 3,98,800 INR Duration : 1 year **Ongoing**

Publications (TextBook)

Prabir Saha, Shubhankar Majumdar, Vishnu Murty Tammineni, " Signals and Systems: An Introduction for Communication Engineering " Publisher Eliva Press, ISBN 999934108X

Patents

1. **A Low-Cost Design Twig : Enhance RF Power Generation** by G. Bhargava, H.K. Dewangan, P. Saha, S. Majumdar **Application No. 202431092495, Patent Number :578397 (Status : Granted)**
2. **HYDROPOD : LOW-COST, SCALABLE, AND CLOUD-ASSISTED HYDROPONICS SYSTEM** by D. Adak, P. Singh, S. Majumdar, Australian Innovation Patent, (Application No. 2021102647) June 2021 **(Status : Granted)**
3. **Automatic Refilling Soil Tensiometer And Tip Rinsing Mechanism Through Fluid Whirls** by Shubhankar Majumdar, Shyam Akashe, Aaditya Chaudhary, Ashish Verma, Indian Patent, (Application No. 201931005912), **Patent No. - 443413**, 2019 **(Status : Granted)**
4. **An Implanted medical device** by A. Malakar, M. Roy, A. Ganguly, N. Chatterjee, S. Majumdar, B. Neogi, P. Saha **Application No. 202431050042 (Status : Filled)**
5. **Design of Multi Bit Decoder with Gate Diffusion Technique using Cadence Virtuoso Tool** by A.C. Nawalagatti, H. Vishalakshi, M.H,S,Merolin, P.K. Saham N. Devi, Veeresh, S. Majumdar, V.M .Tammineni, S.K. Suman **Application No. 202441102032 (Status : Filled)**

Single Author Publication

1. S. Majumdar "Single Transistor Leakage Control for Low Power CMOS Circuits in Bio-Implantable RF Receivers", Circuits, Systems & Signal Processing , Volume 45, pages 153â172, 2026

Contributor (Whitepaper)

1. Y. J. Zhao, L. L. Dai, J. H. Zhang, et al. " 6G Near-field Technologies White Paper," FuTURE Forum, Nanjing, China, Apr 2024. doi : 10.12142/FuTURE.202404002.

Publications (Article)

1. H. Kumari, A. Paul, Kai Da-Xu, S. Majumdar, " ML-SDR Framework for Selective & Rapid Detection of Volatile Organic Compounds" in IEEE Sensors Journal **(Accepted)**
2. S. Majumdar, S. Paul, G. Srivastava, " Seamless Human-Machine Interaction in Augmented Reality Gaming: A Low-Cost Webcam Approach " in IEEE Sensors Journal **(Accepted)**
3. D. Pyngrope, S. Majumdar, "Maximizing power efficiency in GaN HEMTs: The role of ScAlN integration through n2DEG analytical modeling and 3D simulations " Micro and Nanostructures **Elsevier**) **Accepted**
4. I. Karmakar, A. Chauhan, K. Singh, S. Majumdar, P. Kundu, "A Distinctive Parallel RC Matching Technique for Nonlinearity Reduction in GaN MMIC PA for FMCW RADAR Applications", in International Journal of Numerical Modelling : Electronic Networks, Devices and Fields **(Accepted)**
5. A. Paul, H. Kumari, S. Das, S. Majumdar "Low Cost Microwave System Development for Analysis of Classification and Adulteration of Honey" IEEE Transactions on AgriFood Electronics **(Accepted)**

6. J. Borah, Md. Shahrul Md. Nadzir, M. Cayetano, and S. Majumdar " FedEI: Fault Detection and Ensemble Iterative Inference for Low-Cost Air Quality Sensor Data" IEEE Sensor **(IEEE)**, in IEEE Sensors Journal, vol. 26, no. 1, pp. 665-672, 1 Jan.1, 2026 **Q1**
7. M. Biswas, S. Majumdar "Impact of Thermal, Optical, and Trap Effects on β-Ga2O3/ZnO Heterojunction for RF applications " Semiconductor Science and Technology, IoP Publisher **Accepted**, 2026
8. Ma Seenivasan, S. Majumdar, P. Saha, " Mathematical Model and Its Realization of Subthreshold Internal Membrane Dynamics and Implementation in CMOS Neuromorphic Systems", International Journal of Numerical Modelling : Electronic Networks, Devices and Fields, Wiley Publisher, **Accepted**, 2026
9. Mandira Biswas, Lalit Katariya, Franco Mayanglambam, Shubhankar Majumdar, Ankush Bag " β - Ga2O3/p-Si (100) based vertical diode deposited using RF sputtering for rectifier design " Micro and Nanostructures (**Elsevier**), 208495 **Accepted Q2**
10. Hemant Kumari, Amartya Paul, Shubhankar Majumdar, Giovanni Crupi, Jialin Cai "A compact dual-band power amplifier using spoof surface plasmon polaritons for broadband RF applications ", AEUE - International Journal of Electronics and Communications **Elsevier**, Volume 204, January 2026, 156116 **Q2**
11. Hemant Kumari, Amartya Paul, Wamchi Sangma, Shubhankar Majumdar, " Design and Optimization of an SSPP-Matched GaN HEMT Power Amplifier Using Bayesian Optimization" International Journal of Numerical Modelling : Electronic Networks, Devices and Fields, **(Accepted) Q3**
12. A. Paul, H. Kumari, S. Majumdar"Dual-Band Microwave Spectroscopy and Machine Learning for Rapid Milk Adulteration Detection" IEEE Transactions on AgriFood Electronics **Accepted**
13. A. Paul, D. Adak, S. Dutta, S. Majumdar "Non-Invasive RCC Beam Assessment via SDR-Integrated Microstrip Filter" IEEE Sensors Letters vol. 9, no. 10, pp. 1-4, Oct. 2025, Art no. 3504904 **Q2**
14. A. Paul, R. Snaitang, P.K. Gautam, S. Majumdar "EconoScan: Affordable Microwave Imaging for Non-Destructive Strength Testing of Bituminous Materials" IEEE Sensors Letters vol. 9, no. 12, pp. 1-4, Dec. 2025, Art no. 3506004 **Q2**
15. T. Maity, A. Mondal, J.Samanta, P. Saha, S. Majumdar and G. Srivastava, " Real-Time Soil Hydration Assessment and Monitoring Model for Smart Agriculture with IoT Integration " IEEE Sensor Journal **(Accepted) Q1**
16. S. Das, T. Maity, A. Mondal, J.Samanta, P. Saha, S. Majumdar and G. Srivastava, " Next Generation Intelligent Prediction Model for Real-Time Soil Nutrients Monitoring in Sustainable Farming " IEEE Sensor Journal **(Accepted) Q1**
17. H. Kumari, A. Paul, G. Bhargava, and S.Majumdar "APD-SSPP: Enhancing Linearization of Power Amplifier Using Spoof Surface Plasmon Polariton Propagation " Microwave and Optical Technology Letters (Wiley) Vol 67 (10), e70409 October 2025.**Q3**
18. R. Das, A. Acharyya, S. Majumdar " Influences of Human Presence on the Indoor Air Quality of Educational Institutions: Concurrent Multi-Pollutant Sensing Approach " IEEE Open Journal of Instrumentation & Measurement **IEEE** vol. 4, pp. 1-8, 2025, Art no. 9500508, **Q2**
19. J. Borah, Md. Shahrul Md. Nadzir, M. Cayetano, S. Majumdar, H. Ghayvat, and G. Srivastava " Timezone-Aware Auto-Regressive Long Short-Term Memory Model for Multi-Pollutant Prediction" Transactions on Systems, Man and Cybernetics : Systems, **(IEEE)**, vol. 55, no. 1, pp. 344-352, Jan. 2025,**Q1**
20. Jintu Borah, Tanujit Chakraborty, Md. Shahrul Md. Nadzir, Mylene G. Cayetano, Francesco Benedetto, Shubhankar Majumdar "A Novel Hybrid Approach For Efficiently Forecasting Air Quality Data" **(IEEE)**, vol. 9, no. 1, pp. 1-4, Jan. 2025, Art no. 6001204,**Q2**
21. Hemant Dewangan, Amartya Paul, Wamchi Sangma, Shubhankar Majumdar "Exhibiting the Superiority of Metal-Filled SSPP in Advanced Output Matching Networks for High-Performance Power Amplifier ", AEUE - International Journal of Electronics and Communications **Elsevier**, Volume 201, November 2025, 156016 **Q2**
22. Hemant Dewangan, Amartya Paul, Jintu Borah, Shubhankar Majumdar "Machine Learning Based Design of Ultra-Wideband GaN HEMT Power Amplifiers for Next-Generation 6G Systems " , Microsystem Technologies **Springer(Accepted) Q3**

23. M. Nadzir, U. Rabuan, S. Md Ali, J. Borah, S. Majumdar, M.S. Rohmad, "Drone-based Air Quality Monitoring: Development and Evaluation of Low-Cost PM2. 5 Sensor for Remote Environmental Assessment" Sensors and Materials, Vol. 37 (6), pp. 2153-2171 **Q3**
24. K.Naresh, P.Sai, C. Ganesh, S.Majumdar "Design of Logic Level Pruning Approximate Arithmetic Circuits using TIGFET " Circuits, Systems, and Signal Processing **(Springer) Q2 (Accepted)**
25. T. Maity, A. N. Bhawani, J. Samanta, P. Saha, S. Majumdar and G. Srivastava, "MLSFDD: Machine Learning-Based Smart Fire Detection Device for Precision Agriculture," in IEEE Sensors Journal, vol. 25, no. 5, pp. 8921-8928, 1 March1, 2025 **Q1**
26. M. Roy, S. Basu, B. Neogi, S. Majumdar, P.Saha, Development and performance analysis of a human respiratory system using state-space model-based system identification technique. Microsyst Technol (2025). **Q3 (Accepted)**
27. A. Paul, G. Bhargava, D. Adak, S. Dutta, S. Majumdar "Design and validation of a microstrip log-periodic feedline based filter for microwave imaging of rebar" IEEE Transactions on Instrumentation & Measurement , **(IEEE)**, vol. 73, pp. 1-8, 2024, Art no. 8005808 , **Q1**
28. Sharailin Gidon, Jintu Borah, Smrutirekha Sahoo, Shubhankar Majumdar, "Neural Network Approaches for Enhanced Landslide Prediction: A Comparative Study for Mawiongrim, Meghalaya, India ", Natural Hazards (Accepted 1/10/24) **Q1**
29. V. M. Tammineni, S. Beura, M.V.H B. MURTHY , P. Saha, S. Majumdar, " Optimized Recursive Approximate Multipliers for Edge Detection and Image Smoothing Application " Microsystem Technologies **Accepted**, 2024. **Q3**
30. A. Paul, G. Bhargava, S. Majumdar "Development and Characterization of Log Periodic Feedline Based Filter for Water Leakage Detection in Size Invariant PVC Pipes " Flow Measurement and Instrumentation, **(Elsevier)**, Volume 98, September 2024, 102647 **Q2**
31. A. Paul, G. Bhargava, P.K. Gautam, S. Majumdar " Non-Destructive Evaluation of Strength and Porosity of Bituminous Mixes Using Log Periodic feedlines-based Ring Filter ", IEEE Transactions on Instrumentation and Measurement, vol. 73, pp. 1-10, 2024, Art no. 8003110, doi : 10.1109/TIM. 2024.3381667 **Q1**
32. A. Paul, H. Kumari, R. Snaitang, P. K. Gautam, S. Majumdar, "Microwave Imaging and Non-Destructive Testing of Bituminous Mix Binder-Aggregate Behavior Utilizing Log-Periodic Feedline-Based Microstrip Filter" MDPI NDT, 2024 ***(Invited Paper)***
33. D. Pyngrope,N. Chaturvedi, S. Dasgupta, A. hospodko, S. Majumdar, " Comprehensive empirical modeling of ScAlN/AlGaN/GaN ferroelectric HEMT " Semiconductor Science and Technology, Semiconductor Science Technology, vol. 39, pp.no. 075015 **IoP Publisher**. **Q3**
34. G. Bhargava, V. Vadala, S. Majumdar, and G. Crupi "Physics-Informed Neural Network Assisted Automated Design of Power Amplifier by User Defined Specifications" Int J Numer Model. Volume37, Issue3, May/June 2024, e3246 **Q3**
35. J. Borah, Md. Shahrul Md. Nadzir, M. Cayetano, S. Majumdar, H. Ghayvat, and G. Srivastava " AiCareAir: Hybrid-Ensemble Internet of Things Sensing Unit Model for Air Pollutant Control, IEEE Sensor Journal vol. 24, no. 13, pp. 21558-21565, Jul 2024 **Q1**
36. G. Bhargava, S. Majumdar, F. Medjdoub Importing experimental results via S2D model in ADS tool for Power Amplifier Design IETE Journal of Research **Taylor and Francis**, vol. 70(8), pp. no. 6932 – 6939, 2024**Q3**
37. M. Shahrul, et.al. "Utilizing a Low-Cost Air Quality Sensor: Assessing Air Pollutant Concentrations and Risks Using Low-Cost Sensors in Selangor, Malaysia" Water, Air, & Soil Pollution **(Springer)** 235, 229 (2024) **Q2**
38. D. Pyngrope, M. Biswas, Shiv, S. Majumdar, A. Bag "RF magnetron sputtering of Ga2 O3 thin films: Analysis of thermal annealing induced tuning of structural, optical characteristics, and energy band alignments." *Materials Science in Semiconductor Processing* **(Elsevier)**, Volume 174, May 2024, 108243. **Q1**
39. D. Pyngrope, S. Majumdar, G. Crupi "Fractional order capacitance behavior due to hysteresis effect of ferroelectric material on GaN HEMT devices", Int J Numer Model. 2024 ; 37(2) :e3206. doi :10.1002/jnm.3206. **Q3**
40. J. Borah, S. Kumar, N. Kumar, M.S.M.Nadzir, M. G. Cayetano, H. Ghayvat, S. Majumdar, and N. Kumar "AiCareBreath: IoT Enabled Location Invariant Novel Unified Model for Predicting Air Pollutants to Avoid Related Respiratory Disease" in IEEE Internet of Things Journal vol. 11, no. 8, pp. 14625-14633, April 2024. **Q1**

41. S. Gidon, J. Borah, S. Sahoo, S. Majumdar, M. Fujita " Bi-Directional LSTM Model for Accurate and Real-Time Landslide Detection: A Case Study in Mawiongrim, Meghalaya, India" IEEE Internet of Things Journal, vol. 11, no. 3, pp. 3792-3800, Feb 2024. **Q1**
42. M. Biswas, D. Pyngrope, Shiv, S. Majumdar, A. Bag " RF magnetron sputtering of Ga2 O3 thin films: Analysis of oxygen flow rate impact on stoichiometry, structural, optical characteristics, and energy band alignments" *Materials Science in Semiconductor Processing* **(Elsevier)**, Vol. 169, January 2024, pp.no. 107937 **Q1**
43. A. Paul, G. Bhargava, and S. Majumdar "Impact of holes in an interdigital parallel folded coupled line-based wideband bandpass filter for X-band applications." in *Microwave and Optical Technology Letters* **(Wiley)**, Volume 66, Issue 1, pp. no. e33903, 2024 **Q3**
44. G. Bhargava, S. Majumdar, G. Gugliandolo, G. Campobello, N. Donato and G. Crupi, "Design and Validation of a Low-Cost Antenna-Based Solution for Microwave Imaging of RCC Structure," in *IEEE Sensors Letters* **(IEEE)**, VOL. 7, NO. 4, APRIL 2023 **Q2**
45. U.Rabuan, et. al. "Evaluations of low cost Air Quality Sensors for Particulate Matters (PM 2.5) in Indoor and Outdoor conditions", in *Sensors and Materials* **Myu Scientific Publishing** Vol. 35, No. 8, 2023, p. 2881-2895. **Q3**
46. G. Bhargava, V. Vadala, S. Majumdar, and G. Crupi. "Auto–encoder based hybrid machine learning model for microwave scaled GaAs pHEMT devices," International Journal of RF and Microwave Computer Aided Engineering **(Wiley)**, Vol. 32(11), pp. no. - e23339, 2022 **Q3**
47. N. Kattekola , S. Majumdar, "A novel design of N-bit approximate comparator for image processing applications," Circuit World (**Emerald Publishers**), Vol. 50, no. 2/3, pp. 257-266, 2024 **Q4**
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Publications (Book Chapters)

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2. Gaurav Bhargava, and Shubhankar Majumdar. "Pre-Distortion: An Effective Solution for Power Amplifier Linearization." In book RF Circuits for 5G Applications : Designing with mmWave Circuitry (2023) :**(Wiley Press)**, Chapter- 12, pp.no. - 223-239.
3. Applications of the Approximate Computing on ML Architecture In book "VLSI and Hardware Implementations using Modern Machine Learning Methods" by K. Naresh and S. Majumdar (2021)**(CRC Press)**, Chapter- 11, pp.no. - 197-234.
4. A Vision-Based Data-Analytics Tool for Crack Characterization in Reinforced Concrete Structures Advances in Structural Mechanics and Applications: Proceedings of ASMA-2021 by S. Das, S. Dutta, D. Adak, S. Majumdar (2022)**(Springer Press)**, Chapter-16, pp.no. - 210–218.
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6. Design of a 22 W (0.7 A) Current Controlled DC-DC Flyback Converter Operating in DCM Mode by Ananya Bhattacharya, Shubhankar Majumdar, In the book "Emerging Trends in Electrical, Communications, and Information Technologies" **(Springer, Singapore Publication)** Pages : 247-258 Year : 2020
7. **Reduction of Hardware Complexity of Digital Circuits by Threshold Logic Gates Using RTDs** by Muhammad Khalid, Shubhankar Majumdar, Mohammad Jawaid Siddiqui, In the book " Information and Communication Technology for Intelligent Systems" **(Springer, Singapore Publication)** Pages : 697-710 Year : 2019

Publications (Conference Proceedings)

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2. Mandira Biswas, Sonu Srikant, and Shubhankar Majumdar,"Simulation Study of Ohmic Contact Enhancement on Sn-doped β -Ga2O3 Using Al-Doped ZnO(AZO) Interlayers "MNDCS-2026. **Presented**

3. H. Kumari, A. Paul, S. Majumdar "A High-Efficiency Diplexer-Based Compact and Wideband Power Amplifier for 5G/6G Front-Ends", 6th International Conference on Electric Power and Renewable Energy (EPREC-2026)
4. H.Kumari, A. Paul, S. Majumdar "Reconfigurable Triple-Path Matching Network for Wide-Band and High-Efficiency Power Amplifier " , 2025 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Kochi, India, 2025. **Accepted**
5. A.Paul, M. Biswas, H. Kumari, S. Majumdar"A Novel Silicon-Duroid Microwave Sensor for Classification of Volatile Organic Compounds" , 2025 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Kochi, India, 2025. **Accepted**
6. M. Biswas, A.Paul, H. Kumari, S.Majumdar"Microwave Testing of n-Ga2O3/p-Si Diodes via RF Sputtering for High-Frequency Applications" , 2025 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Kochi, India, 2025. **Accepted**
7. I. Karmakar, A.Chauhan, K. Singh, S. Majumdar, P. Kundu "Design of High-Throughput MMIC Parallel-Combined Power Amplifier for 5G Applications" , 2025 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Kochi, India, 2025 **Accepted**
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9. A. Madanayake, K. S. Karunanayake, R. Hacker, C.U. S. Edussooriya, S. Majumdar, L. Belostotski, R. Rodrigo"A Case for Agentic Transceivers in Physical AI-RF Circuits and Systems" , 2025 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Kochi, India, 2025. **Accepted**
10. V. Tammineni, S.Majumdar, P. Saha, S.K. Beura, M. V. H. B. Murthy, "Enhancing Image Processing Applications with Rounding in Recursive Approximate Multipliers " 13th International Conference on Computing, Communication and Sensor Network. CCSN2024 (Best Paper Award)
11. H.Kumari, A. Paul, J. Borah, S. Majumdar "Data-Driven BiLSTM Prediction Model for Dual-Band RF Power Amplifier," 2024 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Hyderabad, India, 2024, pp. 1-4, doi : 10.1109/MAPCON61407.2024.10922981.
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49. Role of Bulk Traps on Intermodulation Distortion of AlGaN/GaN HEMT. by A. Bag, P. Mukhopadhyay, **S. Majumdar**, D. Biswas MRS Fall Meeting 2015, Boston, Massachusetts RR (2015)
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53. RF Based Wireless Data Transmission between Two FPGAs by J. Rusia, **S. Majumdar**, A. Naugarhiya, B. Acharya, S. Majumder, S. Verma at the International Conference on ICT in Business Industry Government (ICTBIG 2016) at Indore doi:10.1109/ICTBIG.2016.7892643.

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55. VERILOG based simulation of ASK, FSK, PSK, QPSK digital modulation techniques by A. Sharma, **S. Majumdar**, A. Naugarhiya, B. Acharya, S. Majumder, S. Verma, at the International conference on IoT in Social, Mobile, Analytics and Cloud (I-SMAC), 2017 doi: 10.1109/I-SMAC.2017.8058380

Student Supervision

PhD Graduated under my Supervision

1. **Gaurav Bhargava** - Automation of GaN-Based Power Amplifier for sub 6 GHz Application **Awarded on 19 Dec 2024 Sole Guidance**
2. **K. Naresh** - Towards Sophisticated Applications : Designing Approximate Computing Circuits for Neural Networks and Microwave Imaging **Awarded on 23 Dec 2024** , **Co-guided with Dr. Y. Padma Sai**
3. **Dariskhem Pyngrope** - Multifunctional Gallium-Based Heterostructures : Bridging Material Engineering and Compact Modeling for Power Devices. **Awarded on 10 Nov 2025 Sole Guidance**
4. **Jintu Borah** - Artificial Intelligence Framework : Development for Prediction of Air Pollutants at Various Geographical Locations **Awarded on 22 Dec 2025 Sole Guidance**

Ongoing PhD Students as Main Supervisor :

1. **Amartya Paul** - Automation of Passive Components for material characterization **Advanced Stage Sole Guidance**
2. **Hemant Kumari Dewangan** - Design and development of Highly linear Power Amplifier for 6G Application **Advanced Stage Sole Guidance**
3. **Mandira Biswas** - Development of device circuit co-design framework for RF application **Advanced Stage Sole Guidance**
4. **Rajib Das** - Development of Instrumentation framework for Indoor Air Pollution Monitoring and Prediction. **Co-guided with Dr. A. Acharaya**
5. **Simanta Das** - Development of Instrumentation framework for Soil Quality Monitoring and Prediction. **Co-guided with Dr. P.K. Saha**
6. **Pritish Tripathi** - Determination of correlation between the enviornmental parameters **Co-guided with Dr. Divya**
7. **Snigdha Ranee Das** - Development of Passive Reflectometry instrument for Soil moisture determination **Sponsored By NAVIC Project**
8. **Arunava Maity** - Development of RF FrontEnd for 433 MHz **Sponsored By Visvesvaraya PhD Scheme, Co-guided with Dr. P.K.Rathore**

Ongoing PhD Students as Co- Supervisor :

1. **Dhiraj Kumar** - Modelling and fabrication of perovskite-based lead-free solar cells. **Sponsored By Visvesvaraya PhD Scheme, Co-guided with Dr. P.K. Saha**
2. **Pubalee Podder** - Development of Inductorless RF Power Amplifier for 433 MHz **Sponsored By Visvesvaraya PhD Scheme, Co-guided with Dr. P.K.Saha**
3. **Deibaphira suchiang** : Development of MEMS based Pressure Sensor and signal conditioning circuit **Sponsored By SMDP Project, Co-guided with Dr. P.K. Rathore**
4. **Pragyan Priyadarshini** : Development of AI framework for Water pollutant prediction in water resources. **Co-guided with Dr. G.Dhal**

Completed PG (M.Tech) Students Dissertation as Supervisor :

1. **Amol Arjun Jawale - T17EC002** - APPROXIMATE 4 :2 COMPRESSOR BASED HYBRID DADDA MULTIPLIER FOR IMAGE PROCESSING APPLICATIONS
2. **Vodnala Srinivas - T18EC001** REGION OF INTEREST BASED ENCRYPTION OF BIOMEDICAL IMAGE
3. **Valle Hemanth - T19EC005**DESIGN AND ANALYSIS OF ANALOG PREDISTORTION CIRCUIT FOR POWER AMPLIFIER APPLICATIONS
4. **Pinak Kumar Rath - T20EC007** DESIGN, FABRICATION AND MEASUREMENT OF CLASS-F RF POWER AMPLIFIER

5. **Avinash Sahoo - T20EC003** CO-DESIGN OF ASYMMETRIC COUPLED BPF AND PA
6. **Wamchi Dora Sangma - T23EC001** Optimizing SSPP Matching Network for Ultra-High-Efficiency GaN Power Amplifier for 6G Systems.

Ongoing PG Student as Supervisor :

1. **Mohit Soni - T24EC001** Developing Low Dropout Regulator on SCL 180 nm Process Development Kit

Completed UG (B.Tech) Students Dissertation as Supervisor :

1. **A.Sharma, A.Chakradhari, A. Chaudhary, J.Rusia** - Design and Simulation of Secured transmitter for WSN, 2016-2017. (Co-Guided in NIT Raipur)
2. **Anand Kumar Paswan- (B15EC029)** - Designing of Metal Detector Using 555-Timer
3. **Raman Kumar Gupta (B15EC032) & Shiva Teja Chigicherla (B15EC021)** - USE OF AUTONOMOUS ROBOT FOR CRACK DETECTION
4. **Bollampalli Satya Abhinay (B16EC012) & Kamarapu Shivachandra (B16EC020)** - NONINVASIVE WATER FLOW AND LEAKAGE DETECTION IN PVC PIPES USING ACCELEROMETER
5. **Sourav Paul (B17EC014)**DEVELOPMENT OF HUMAN MACHINE INTERACTION SYSTEM - AN INTERACTIVE AUGMENTED REALITY BOARD GAME USING HAND GESTURES IN OPENCV PLATFORM
6. **MUMMIDI BHARADWAJ (B17EC015)** - NONINVASIVE WATER FLOW LEVEL AND LEAKAGE DETECTION
7. **Ujjwal Kumar (B17EC019)** - COMPARATIVE STUDY OF MACHINE LEARNING AND DEEP-LEARNING TECHNIQUES ON REAL-TIME AIR POLLUTION DATASET
8. **Bishal Doley (B18EC028)** - IMPLEMENTATION OF GENERATIVE ADVERSARIAL NETWORK ON AIR QUALITY DATASET
9. **Utkarsh Kumar (B18EC033)** - IMPLEMENTATION OF HYBRID MODEL APPROACH FOR AIR QUALITY PREDICTION
10. **Kerlarympei Mawrie (B18EC002), Matti Dondor Majaw (B18EC018), Alicelange Lyngkhoi (B18CE003) & Rudy L Suchiang (B18CE007)** - MEASUREMENT AND CALIBRATION OF EMBEDDED SENSORS FOR DETERMINATION OF CRACK AND DEFLECTION ON RCC BEAM
11. **Shashank Kumar (B19EC010) & Nikhil Kumar (B19EC025)** - LOCATION INVARIANT MODEL FOR PREDICTING AIR POLLUTANTS
12. **Shoaib Warjri (B19EC004), Atiarsing Surong (B19EC005), Michelvert Marbaniang (B19EE003) & Michael Mihsallan Langstieh (B19EE011)** - ASYMMETRIC AND WIDEBAND CHAOTIC RADAR COMMUNICATION
13. **Altrey Sansara Swer (B19CE006) & Baiahunlang Lyngdoh (B19CE007)** - PREDICTION AND MONITORING OF RAINFALL INDUCED LANDSLIDES
14. **Doma Jaswanth Kumar (B20EC001)** - Design of RF Amplifier for Non-Destructive testing
15. **Ajeet Kumar(B21EC027)** - Development of High-Frequency Trading Algorithm on FPGA
16. **Monomita Brahma (B21EC005)** - Development of an Algorithm for Air Pollution

Ongoing UG Student as Supervisor :

1. **Debashish Nayak (B22EC030), Botu Varun Kumar (B22EC008)** Development of system for non-destructive testing of edible liquids
2. **Pulagam Ajay Kumar Reddy (b22ec007), Muddada Satwik (b22ec020)** Antenna design for quadband (L1,L2,L5,S)

Tutorials

1. Given a Tutorial on Microwave based non- destructive and non- invasive testing at IEEE MAPCON 2024, Hyderabad.

Speaker at Workshop / STTP

1. Given Expert Lecture Organized by : IEEE Systems Council - Early Career Speakers Program on "AI in Systems (Cyber-Physical Systems, Artificial Intelligence in Systems, Embedded Systems, Internet of Things (IoT))" dated 23 Aug 2025.
2. Given Expert talk at IEEE MTTS Student Branch Chapter MTT17 (SBC99082B), IIT Palakkad on " Development of GaN based RF Power Amplifier for Various Applications" dated 22 Jun 2024.

3. Expert talk at Faculty Development Program on 5G Technology Session on "5G Core Network and 5G Front-haul" Organized by : Department of Telecommunications, Ministry of Communications, Government of India. Topic of the talk - *GaN based RF Frontend design for 5G network* on 24 Apr 2024. Link
4. Invited talk at AICTE ATAL-sponsored One-Week Offline Faculty Development Programme (FDP) on "Advancement in VLSI Design and its Applications" from February 5-10, 2024
5. Invited talk at UKM Malaysia on Deployment of Air Pollution Sensor on 28th Nov 2022
6. Invited talk at IESM, University of Philippines on Internet of things (IoT) and Low-cost Sensors in environmental Research on 6th Mar 2023
7. Invited talk at Mariano Marcos State University, Ilocos Norte Philippines on Use of AI models for prediction of air pollution on 7th Mar 2023
8. Invited talk at National Engineering University, Batangas Philippines on Air Quality Monitoring Evaluation on 9th Mar 2023
9. Power Amplifier Design Issues, AICTE sponsored Short Term Training Program on "Emerging Issues of VLSI Design" during 22-26 Nov 21
10. AICTE sponsored 5 Days online ATAL FDP on EMERGING MATERIALS, SENSORS AND DEVICES FOR IoT AND INDUSTRY 4.0 given talk entilted Utilization energy harvesting circuits based on IoT systems for various applications on 27th August 2021 at CV Raman University
11. online Short term Training Program (STTP) on "Emerging Issues of VLSI Design" given talk entilted CMOS based various Amplifiers and their design issues on 17th July 2021 at ITM University Gwalior.
12. AICTE - ATAL sponsored FDP on Latest Technological Developments for System on Chip (SoC) Applications given talk entilted Advanced CMOS RF Power Amplifier Architecture Trends for 5G Wireless Networks on 29th July 2021 at GIET University, Gunupur.
13. Delivered one-week online Short-Term Training Program on "Emerging Nanoscale Devices, Circuits and Its Applications" Organized on May 10, 2021 at Delhi Technological University.
14. Deliver a lecture in the ATAL FDP (NEHU) during 8th-12th February, 2021 on "Sensors Implementation for Non-Invasive Pipe Water Leakage Detection and Monitoring of Soil Properties for Agriculture".
15. Given talk on IoT in the AICTE sponsored STTP on Recent Trends in Internet of Things (IoT) and Embedded System Based Monitoring and Control of Distributed Generation.
16. Deliver two Expert talk in E Workshop On "Design Challenges of IoT with AI & ML Applications" November 30th âDecember 04th 2020, NIT Hamirpur, Case Study of IoT Usage in Hilly region for Landslide Prediction and Water Leakage Prediction
17. A talk on **Layout Design and Challenges** in the EICT workshop on Emerging CMOS Technologies and Beyond, Trends and Challenges organized by MNIT Jaipur. Video Recording of the talk - Link
18. A talk on **Case Study of IoT Usage in Hilly region for Landslide Prediction and Water Leakage Prediction** in the workshop on Design Challenges of IoT with AI and ML Applications
19. A talk on **Case Study of IoT Usage in Agriculture** in the workshop on Design Challenges of IoT with AI and ML Applications
20. A talk on **Various type of CAD tools and Cadence tool live demonstration** in the workshop on Recent trends in VLSI Devices/Circuits and Applications organized by MNIT Jaipur
21. A talk on **Ultra-wide bandgap semiconductor opportunities in Power sector** in the AICTE sponsored STTP on "Design and Simulation of Semiconductor Devices" at ABES Engineering College, Ghaziabad.
22. A talk on **Approximate Computing** in the IEI Sponsored five day workshop on Cutting edge technology held from 29th April-3rd May, 2019 in the CoochBehar Government Engineering College.
23. A talk on ***IoT System & Opportunities in Indian Context*** at IEEE EDS student branch chapter Meghnad saha Institute of Technology, dated : *11 March, 2019*
24. A talk on ***CMOS Layout Design*** in the TEQIP-III Sponsored five day workshop on **CMOS Digital IC Design : Concepts and Recent Trends** held from *March 26-30 March, 2018* in the College of Technology and Enginnering (CTAE), MPUAT at Udaipur.
25. A talk on ***Wide-BandGap Materials*** in the TEQIP-II Sponsored One Week Short Term Training Program (STTP) on **VLSI-SoC & Micro-nano Technologies** held from *26 - 30 September, 2016*, in the Department of Electronics and Telecommunication Engineering at NIT, Raipur.

Workshop Organized

1. Co-coordinator of five-day workshop titled âAdvances in Semiconductor Technologies : Challenges and Opportunitiesâ, funded by the Anusandhan National Research Foundation (ANRF) from 15th to 19th September 2025.
2. Coordinator of IEEE Sponsored 5-Day Hybrid Workshop on "Engineering the Future : From Data to Design" from 20th May to 24th May 2025 funding received $1500
3. Organized Advanced Management Development Program on Data Science and AI for Management Development sponsored by Ministry of Micro, Small and Medium Enterprises (MSME) as Coordinator from 10 - 14 March 2025. funding received INR 9,98,000 Media Coverage - Link 1 ; Link 2 ; Link 3
4. Organized Management Development Program on Smart Management : Tools and Techniques for Success sponsored by Ministry of Micro, Small and Medium Enterprises (MSME) as Coordinator from 24 - 28 March 2025. funding received INR 50,000
5. Organized one day Entrepreneurship Awareness Program (EAP) sponsored by Ministry of Micro, Small and Medium Enterprises (MSME) as Coordinator from 25,26,27 February 2025 ; 3, 4 March 2025. funding received INR 1,00,000
6. Organized Faculty Development Program entitled "Emerging trends in RF and Energy device and Circuits" as Convener from 22-26 Feb 2021 sponsored by AICTE, funding received INR 93000.
7. Organized Workshop entitled "Signal Processing Techniques for Real–Time Applications" as Coordinator from March 23 to 27, 2018 sponsored by NIT Meghalaya.

Certification

Remote Pilot Certificate (Certificate No. RP202500000874 | Status : Active (Valid Upto : 21 August 2035)) for Category of UAS – Rotorcraft, Sub–Category of UAS – RPAS, Class of UAS – Small, Training Category - VLOS.

Hindi Language Parangat Certification Completed.

Industrial Training & Workshop Attended

Participated in the **Online Short Term Course on Nanotechnology for Electronics and Photonic Devices (NanoDev 2010)**, organized by Electronics & Communication Engineering Department of Punjab Engineering College, Chandigarh, supported by TEQIP-III, during 15-19 June 2020

Instruction Enhancement Programme (IEP) under the project "Special Manpower Development Programme for Chips to System Design (SMDP-C2SD)" is scheduled to be held at VNIT Nagpur on *5- 9th December 2016.*

Mentor Graphics EDA Tool training under the project "Special Manpower Development Programme for Chips to System Design (SMDP-C2SD)" is scheduled to be held at SGSITS, Indore on *26th- 29th December 2016* .

National Workshop on **Timing Analysis of Digital VLSI Circuits** at IIIT Allahabad on *3-4 November, 2012*

Workshop on **Machine Learning and Social Networks** at IIT Kharagpur on *8 March, 2014*

Author Workshop jointly organized by Springer & IIT Kharagpur on *16 January 2015*

Workshop on **Scholarly Publishing** jointly organized by Wiley & IIT Kharagpur on *23 March 2015*

Organization : Grey Iron Foundry (G.I.F), Jabalpur (M.P) on *2008 (for 15 days)*
Key Learning : Learned about the use of the electronics in industry like Spectroscopy.

Organization : Broadcasting Corporation of India (Prasar Bharti / AIR) Jabalpur (M.P) on *2009 (for 15 days)*
Key Learning : Learned about transmitting of radio (FM) Signal and TV signal

Organization : Vehicle Factory Jabalpur (V.F.J) (M.P) on *2009 (for 15 days).*
Key Learning : Learned about the use of the electronics in industry like CNC (Computer Numeric Code).

Outreach Activities

Session chair in the conference International Conference on Cognitive Computing and Cyber Physical Systems 5-7 April 2024

Evaluator in Smart India Hackathon 2022

Primary Evaluator in Toycathon 2021 (Digital Edition).

Reviewer and Session chair of various conferences and journals.

Organizing chair and website administrator of IESC 2019 conference

Served as **Warden** of Lapalang-1 boys hostel of National Institute of Technology, Meghalaya, from July 2018 to June 2021.

Served as **General Secretary** (Library) in Acharya Jagadish Chandra Bose Hall of Residence IIT Kharagpur from *July 2014 to July 2015*

Served as **Organizing Committee** in Research Scholar's Day of Advanced Technology Development Center, IIT Kharagpur on *July 2015*.

Reviewer

1. **International Projects :**
   - International Science Partnerships Fund (ISPF) Project – 10 Project Reviewed
2. **Sponsored Projects :**
   - SERB– High Risk High Reward (HRR) DST Project – 2 Project Reviewed
   - SERB– Core Research Grant (CRG) DST Project – 10 Project Reviewed
   - Global Initiative of Academic Networks (GIAN) proposal reviewed - 2 proposals
3. **Journal :**
   - IEEE Transaction on Instrumentation and Measurements
   - IEEE Transactions on Intelligent Transportation Systems
   - IEEE Sensors Journal
   - IEEE Sensors Letters
   - IEEE Transactions on Nanotechnology
   - IEEE Transactions on Electron Devices
   - IEEE Access
   - IET Electronics Letter
   - Journal of Computational Electronics
   - Superlattices and Microstructures
   - Microelectronics Journal
   - Vacuum
   - International Journal of Numerical Modelling: Electronic Networks, Devices and Fields
4. **Conference :**
   - Special Session in iSES 2024
   - Reviewer and Tutorial Speaker in MAPCON 2024 and Reviewer in MAPCON 2023, 2022
   - Session Chair, Reviewer & TPC of VLSI DCS 2020
   - Program Chair of VDAT 2019 & VDAT 2022
   - Re1 31133viewer of UPCON 2019
   - Reviewer & Website Administrator of IESC2019
   - Member in Conference Committee in First International Conference on Microelectronic Devices and Technologies (MicDAT 2018), Universitat Politecnica de Catalunya (UPC), Barcelona, Spain.
   - Technical Program Committee (TPC) member of Conference on Information and Communication Technology (CICT) 2018
   - Technical Program Committee (TPC) member of Conference on Information and Communication Technology (CICT) 2017

Editorial Position

1. Associate Editor of Engineering Reports **Wiley**
2. Review Editor of Frontiers in Integrated Circuits and VLSI.

Special Session

1. Special Session 4: Advancements in RF Frontends and Enabling Software Solutions Proposers: Shubhankar Majumdar, Girish Chandra Tripathi, Arjuna Madanayake in MAPCON 2025 Conference

Voluntary Service for IEEE

1. Faculty in-charge of IEEE MTTS Student Chapter. Conducted about 15 webinars under this Student Chapter. Received $1000 from MTTS for organizing the events.
2. Faculty in-charge of IEEE CASS student chapter/ IEEE Sensor council student chapter/ IEEE CEDA student chapter. Motivating students for taking the membership via organizing membership drive and working for Agrielectronics. Received $1500 from the IEEE Society.
3. Faculty in-charge of IEEE WiE student chapter. Motivating female students to increase the visibility by opening WiE student chapter.
4. Reviewer of several transactions like TED, MTTS, TCAS-II, TNANO, TDMR, etc and letters like MWTL, EDL, etc.
5. TPC and Reviewer of several conferences like ISCAS, MAPCON, VLSID, VDAT, etc.

Tapeout Experience

1. We designed and fabricated the integrated circuit (IC), a Finite State Machine (FSM) chip under MeitY's Special Manpower Development Program (SMDP). The design was taped out and manufactured using a 180 nm process technology at the Semiconductor Laboratory (SCL) foundry. The completed chip has been demonstrated at SEMICON India 2025, presented to the Prime Minister and deployed for applications such as precision water flow control in the irrigation fields.
2. We designed and fabricated the integrated circuit (IC), a Digital to Analog Converter (DAC) chip under MeitY's Special Manpower Development Program (SMDP). The design was taped out and manufactured using a 180 nm process technology at the Semiconductor Laboratory (SCL) foundry.
3. I have designed the RF single pole double throw (SPDT) switch on GaN UMS 0.25 PDK. This RF switch shows 0.3 dB insertion loss, 40 dB Isolation, 50 dBm continous power, 6 μsec switching speed , 62dBm IIP3 , 20 dB Return Loss. These RF switch properties gives good results than the RF switches used nowadays in the Base Transceiver Station (BTS) tower. This Monolithic microwave integrated circuit (MMIC) was build and tested during my PhD work.