Dr. Debanjan Das
Assistant Professor,
Centre of Excellence in Affordable Healthcare
Indian Institute of Information Technology, Kharagpur
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AREAS OF INTEREST

Mobile Health, Intelligent Health Sensing, Biomedical device, Biomedical Signal Processing, Wearable Sensors, On-Device ML, IoMT

ACADEMIC EMPLOYMENT

CURRENT POSITION

Assistant Professor	Centre of Excellence in Affordable Healthcare, (Mar 2024-Onwards) IIT Kharagpur, Kharagpur-721302, India

POSITION HELD

Assistant Professor	Department of Electronics and Communication, (Jan 2017-Mar 2024) IIIT Naya Raipur, Raipur-493661, India
Research Assistant	BioMEMS Lab, School of Medical Science & Technology, (Jul 2016 – Jan 2017) IIT Kharagpur

EDUCATION

- **Ph.D** (November, 2016), **Dept of Electrical Engineering, Indian Institute of Technology Kharagpur, India**.
  - **Thesis:** Impedimetric assessment of cellular behavior of healthy and malignant cells using microdevices
  - **Supervisors:** Dr. Karabi Biswas, Dept of Electrical Engineering, IIT Kharagpur and Dr. Soumen Das, School of medical Science & Technology, IIT Kharagpur, India.
  - **Research Funding:** My PhD research work has been awarded two research funding from NPMASS & ADA, Ministry of Defenece and MHRD, Govt of India. Results of my PhD research were used in those projects.
- **M.Tech in Instrumentation** (CGPA-9.2/10; July 2011**), Dept of Electrical Engineering, Indian Institute of Technology Kharagpur, India.**
  - **M.Tech Thesis:** Design and development of Electrowetting on Dielectric (EWOD) based microfluidic device using MEMS technique.
  - **Supervisors:** Dr. Karabi Biswas, Dept of Electrical Engineering, IIT Kharagpur.
  - **Research Funding:** Based on my MTech research work a research fund was awarded from DBT, Govt of India.

- **B.Tech in Applied Electronics & Instrumentation Engineering** (DGPA-8.9/10; July 2009)**,** Heritage Institute of Technology, Kolkata; WBUT University, India.
- **Higher Secondary Examination** (90.1%; 2005)**,** Madhyamgam High School; West Bengal Council of Higher Secondary Education, India.
- **Secondary Examination** (88.8%; 2003)**,** Madhyamgam High School; West Bengal Board of Secondary Education, India.

PROJECTS (AS PI/Co-PI)

SPONSORED PROJECT

1. **Title**: "TribeConnect: Integrated Smart Tribal Eco Platform - A Proof of Concept in Chhattisgarh"
   - ***Investigator***: Dr. Debanjan Das, Dr. Venkanna U (IIITNR), Prof. Sudip Misra (IIT Kharagpur), Prof. Subhas C. Misra (IIT Kanpur)
   - ***Funding Agency****: MeitY (Ministry of Electronics and Information Technology);*
   - ***Amount****: Rs. 210.00 Lakhs;* ***Duration****: 2020-2023 (completed)*

2. **Title:** AI/ML-based Network Management and Signal Processing for 5G and Beyond Base Station

   - ***Investigator****: Dr. Rajarshi Mahapatra;* ***Co- Principal Investigator****: Dr. Debanjan Das, Dr. Venkanna U*
   - ***Funding Agency****: IIITB COMET Foundation under NM-ICPS), DST, Government of India*
   - ***Amount****: Rs. 173.56 Lakhs; Duration: 2022-2026*

CONSULTANCY PROJECT

1. **Title**: Supply, Commission, and Maintenance of Real-Time Data Acquaint and Handling of CAAQMS/CEMS/EQMS data through client-Server System from Industries located across Chhattisgarh State"
   - ***Investigators*****:** Dr. Vivek Tiwari and Dr. Debanjan Das
   - ***Funding Agency***: Chhattisgarh Environment Conservation Board (CECB)
   - **Amount:** Rs. 16,42,82,000/-; **Duration:** 2021-2022

SUPERVISION

Ph.D.

1. Ms. Aakanksha Baghel, Thesis topic: "IoBNT driven targeted drug delivery" as a co-supervisor, ongoing (2024-ongoing)
2. Mr. Dipanjan Sar, Thesis topic: "mMTC-based IoT services" as a co-Supervisor, Ongoing (2023-ongoing)
3. Mr. Dixit Sharma, Thesis topic: "Smart Radio Environment" as a Co-Supervisor, Ongoing (2023-ongoing)
4. Ms. Aparna Sinha, Thesis topic: "Fault Diagnosis and Sustainable IoT System" as a Supervisor, Thesis Submitted (2020-2023).
5. Mr. Amit Kumar Shrivastava, Thesis topic/title: "Detection Techniques for Mobile Molecular Communication" as a Co-supervisor, Completed (2018-2021),

MS (R)/M.Tech.

1. Ms. Jyoti Prajapati, Thesis Topic: "Smartphone-based digital healthcare" as a Co-supervisor, Completed (2020-2023)
2. Ms. Tanushri Mukherjee, Thesis Topic: "Fault Diagnosis and Prediction of Agricultural Machinery" as a Supervisor (2021-completed).

PUBLICATIONS

PATENT

Granted

1. **D. Das**, A. Sinha, V. Udutalapally , "Self-Sustainable Iot Sensor Node With Self Battery And Sensor Health Monitoring Capability," Indian Patent, Patent No-472923, Application No. 202321017132 dated 14/03/2023
2. S. C. Misra, **D. Das**, V. Udutalapally, V. Kotiyal, P. Dev, "System and method for automatic assessing and monitoring of a user's activity" Indian Patent, Patent No- 396567, Application No. 202111043890 dated 27-09-2021

Filled

1. S. C. Misra, **D. Das**, S. Misra, V. Udutalapally, N. Sengar, A. Ghosh, Tanushree Pan "Wireless Network Device For Wireless Communication With User Devices In A Wireless Communication Network," Indian Patent, Application No. 202311028663 filed on April 20, 2023
2. S. C. Misra, **D. Das**, S. Misra, V. Udutalapally, A. Gupta, "A Continuous Lung Health Monitoring System", Indian Patent, Application No. 202311027111 filed on April 12, 2023
3. S. C. Misra, **D. Das**, V. Udutalapally, S. Misra, N. Sengar, A. Ghosh, "Blockchain-Enabled Iot System And Method For Securing Real Time Data In A Microcontroller-Based Blockchain Network" Indian Patent, Application No. 202211070221 filed on December 6, 2022
4. S. Misra, **D. Das**, V. Udutalapally, A. Ghosh, P. K. Dev, "A Secured Automated Power Control And Management System For Legacy IoT Infrastructures," Indian Patent (Filed), Application No-202131038016, 23/08/2021
5. **D. Das,** R. Mahapatra, A. K. Shrivastava, "Molecular Communication-Based System Having Differential Detectors with Inter-Symbol Interference Mitigation for Mobile Molecular Communication," Indian Patent (Filed) (Application No. 202131035299)

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1. **D. Das**, V. Udutalapally, J. Prajapati, S. Misra, R. Mahapatra, "HemOctor" on computer application software for Smartphone, Indian Copyright Filed, Diary no. 12055/2022-CO/SW, Dated 07.06.2022

BOOK Chapter

- **D. Das**, S. Das, "Non-Invasive Cellular Characterization using Bioimpedance Sensing," In *BioSensing, Theranostics, and Medical Devices*, pp. 133-164. Springer, Singapore, 2022.

WHITE PAPER

1. S. Misra, D. Tao, Q. Cao, D. Das, S. Misra, L Zhang, Y. Liao, D. Das, P. Deb, Venkanna U, S. C. Misra et al. "AIoT in Healthcare: A Cooperative Blueprint in China and India", White Paper published by the China Branch of BRICS Institute for Future Networks and East China Branch of Chinese Academy of Communications and Information Technology.

JOURNALS

1. S. Ghosal, D. Das, V. Udutalapally, S. Sridhar, S. M. S. S. Basha, & P. N. Wasnik, "DeepVitals: Deep neural and IoT based vitals monitoring in smart teleconsultation system," ***Elsevier Internet of Things***, 101117, 2024.
2. H. Pandey, S. Arya, **D. Das** and U. Venkanna, "FoodExpert: Portable Intelligent Device for Rapid Screening of Pulse Quality and Adulteration," ***IEEE Transactions on AgriFood Electronics***, Accepted Nov, 2023
3. A Sinha, **D Das**, "XAI-LCS: Explainable AI-based Fault Diagnosis of Low-Cost Sensors," ***IEEE Sensors Letters***, 2023, doi: 10.1109/LSENS.2023.3330046.
4. A Sinha, **D Das**, "An Explainable Deep Learning Approach for Detection and Isolation of Sensor and Machine Faults in Predictive Maintenance Paradigm," ***IoP Measurement Science and Technology***, 2023

5. J. Prajapati, **D. Das**, U. Venkanna, R. Mahapatra and P. N. Wasnik, "jScan: Smartphone-assisted Bilirubin Quantification and Jaundice Screening," in ***IEEE Sensors Journal***, doi: 10.1109/JSEN.2023.3315452.
6. A. K. Shrivastava, **D. Das**, and R. Mahapatra, "Detection and ISI mitigation in mobile molecular communication system for targeted drug delivery," ***Nano Communication Networks***, p.100476, 2023.
7. A. Sinha, A. S. Pandaw, **D. Das,** "An Intelligent Fault Detection Framework for HVAC Systems with Alert Generation", ***SN Computer Science,*** 4, 616, 2023**.**
8. A. Ghosh, S. Misra, V. Udutalapally and **D. Das**, "LoRaute: Routing Messages in Backhaul LoRa Networks for Underserved Regions," in ***IEEE Internet of Things Journal***, doi: 10.1109/JIOT.2023.3281941.
9. A. Sinha, **D. Das**, "SNRepair: Systematically Addressing Sensor Faults and Self-Calibration in IoT Networks", in ***IEEE Sensors Journal***, vol. 23, no. 13, pp. 14915-14922, 2023
10. A. Sinha, **D. Das**, and S.K. Palavalasa, "dClink: A data-driven based clinkering prediction framework with automatic feature selection capability in 500 MW coal-fired boilers," ***Elsevier Energy***, p.127448, 2023.
11. V. Kotiyal, A. Gupta, P. K. Deb, S. C. Misra, **D. Das** and V. Udutalapally, "Skipper: A Federated Siamese Network-Based Group Activity Segregator for IoMT Systems," in ***IEEE Transactions on Computational Social Systems****, 2023, doi: 10.1109/TCSS.2023.3244188*
12. D. Chowdhury, A. Sinha and **D. Das**, "XAI-3DP:Diagnosis and Understanding Faults of 3D Printer with Explainable Ensemble AI," in ***IEEE Sensors Letters***, 2022, doi: 10.1109/LSENS.2022.3228327.
13. A. Gupta, S. Misra, N. Pathak, and D. Das, "FedCare: Federated Learning for Resource-Constrained Devices in IoMT-based Social Healthcare Systems," ***IEEE Transactions on Computational Social Systems***, vol. 10, no. 4, pp. 1587-1596, Aug. 2023
14. A. Sinha, D. Chowdhury, S. Sharma, Y. R. Sherke, & **D. Das**, "nCare: Fault-aware edge intelligence for rendering viable sensor nodes," ***Elsevier Internet of Things***, vol. 21, p. 100643, 2023.
15. A. Sinha, D. Das, V. Udutalapally and S. P. Mohanty, "iThing: Designing Next-Generation Things With Battery Health Self-Monitoring Capabilities for Sustainable IIoT," ***IEEE Transactions on Instrumentation and Measurement***, vol. 71, pp. 1-9, 2022, Art no. 3528409, doi: 10.1109/TIM.2022.3216594.
16. J. Prajapati, V. Udutalapally, D. Das, R. Mahapatra, S. C. Misra, & P. N. Wasnik, "iFlick: Smartphone-based anemia screening in rural healthcare paradigm," ***Smart Health***, 100327, 2022.
17. A. Rajbanshi, D. Das, V. Udutalapally, R. Mahapatra, "dLeak: An IoT-Based Gas Leak Detection Framework for Smart Factory," ***SN Computer Science***, *3*(4), 1-12, 2022.
18. R. K. Murali-Baskaran, P. Mooventhan, D. Das, A. Dixit, K. C. Sharma, S. Senthil Nathan, P. K. Ghosh, "The Future of Plant Volatile Organic Compounds (pVOCs) Research: Advances and Applications for Sustainable Agriculture," ***Environmental and Experimental Botany***, p. 104912, vol 200, 2022.
19. S. Ghosal, **D. Das**, U. Venkanna, P. N. Wasnik, "iNAP: A Hybrid Approach for NonInvasive Anemia-Polycythemia Detection in the IoMT," ***ACM Transactions on Computing for Healthcare***, *3*(3), 1-28, 2022
20. D. Das, S. Ghosal, S. P. Mohanty, "CoviLearn: A Machine Learning Integrated Smart X-Ray Device in Healthcare Cyber-Physical System for Automatic Initial Screening of COVID-19," ***SN Computer Science***, doi : 10.1007/s42979-022-01035-x
21. P. Joshi, D. Das, V. Udutalapally, M. K. Pradhan and S. Misra, "RiceBioS: Identification of Biotic Stress in Rice Crops Using Edge-as-a-Service," in ***IEEE Sensors Journal***, vol. 22, no. 5, pp. 4616-4624, 2022.
22. S. Mandal, **D. Das**, V. Udutalapally, "mSickle: sickle cell identification through gradient evaluation and smartphone microscopy," ***Journal of Ambient Intelligence and Humanized Computing***, 1-13, 2022
23. S. Ghosal, A. Kumar, V. Udutalapally and **D. Das**, "gluCam: Smartphone Based Blood Glucose Monitoring and Diabetic Sensing," in ***IEEE Sensors Journal***, vol. 21, no. 21, pp. 24869-24878, 2021,
24. S.P. O. Kare, **D. Das**, K. Chaudhury, S. Das, "Hand-drawn electrode based disposable paper chip for artificial sweat analysis using impedance spectroscopy," ***Biomed Microdevices*** **23,** 42 (2021).
25. **D. Das**, V. Udutalapally and S. P. Mohanty, "Consumer Technologies for Smart Agriculture," in ***IEEE Consumer Electronics Magazine***, vol. 10, no. 4, pp. 49-50, 1 July 2021.
26. A. K. Shrivastava, **D. Das**, N. Varshney, and R. Mahapatra, "Transmission and detection techniques for internet of bio-nano things applications with static and mobile molecular communication: A survey", in ***ITU - Journal on future and evolving technologies***, 2021.
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33. S. Biswas, D. Sikdar, **D. Das**, M. Mahadevappa, & S. Das, "PDMS based multielectrode arrays for superior in-vitro retinal stimulation and recording," ***Biomedical Microdevices***, vol. 19(4), p. 75, 2017.
34. A.Anura, **D. Das**, M. Pal, R R Paul, S. Das, J. Chatterjee, "Nanomechanical Signatures of Oral Submucous Fibrosis in Sub-epithelial Connective Tissue," **Journal of the Mechanical Behavior of Biomedical Materials**, vol. 65, pp. 705-715, 2017.
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36. D. Maji, **D. Das**, J. Wala and S. Das, "Buckling assisted and lithographically micropatterned fully flexible sensors for conformal integration applications," ***Nature Scientific Reports***, vol 5, p. 17776, **2015**.
37. **D. Das**, F. A. Kamil, S. Agrawal, K. Biswas and S. Das, "Fragmental Frequency Analysis Method to Estimate Cellular Parameters from Bioimpedance Study," ***IEEE Transactions on Instrumentation & Measurement***, vol.63, no.8, pp.1991-2000, **2014**.
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39. **D. Das**, K. Biswas and S. Das "A microfluidic device for continuous manipulation of biological cells using Dielectrophoresis," ***Medical Engineering & Physics***, vo. 36 (6), pp. 726–731, **2014**.

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1. A. Sinha, U. Venkanna, D. Das, and R. Mahapatra, "SDN-Based Seamless Mobility Management for B5G Services in High-Speed Railways," ***IEEE ANTS 2023*** (Accepted).
2. S. R. Akshath, G. Srinith, U. Dheeraj, D. Das, "WiCare: Accidental Fall Detection for Elderly Care Using Passive Wi-Fi Sensing," ***9th IEEE International Conference On Signal Processing and Communication (ICSC 2023), Dec 2023***.
3. J. Prajapati, D. Das, U. Venkanna, R. Mahapatra, "XAIA: An Explainable AI Approach for Classification and Analysis of Blood Anemia," ***2023 OITS International Conference on Information Technology (OCIT),*** Raipur, India, Dec 2023 (Accepted).
4. A. Bhandekar, U. Venkanna, and D. Das, "Acoustic Based Chicken Health Monitoring in Smart Poultry Farms," 2023 ***IEEE International Symposium on Smart Electronic Systems (iSES)***, Jaipur, Dec, 2023 (Accepted).
5. G. S. Sriram, SVS. Aditya, G. T. Akshar, U. Venkanna, and D. Das, "Drone Vision Based Abiotic Stress Monitoring for Smart Agriculture," 2023 ***IEEE International Symposium on Smart Electronic Systems (iSES)***, Jaipur, Dec, 2023 (Accepted).
6. S. T. Rapolu, U. C. Kadali, J. Vemula, A. Sinha and D. Das, "Interpretable Deep Learning Approach for Long Horizon Health Prognosis of a Li-ion Battery," 2023 ***IEEE 20th India Council International Conference (INDICON),*** Warangal, India, Dec, 2023.
7. H. Soni, A. Sinha, V. Patel, D. Das and U. Venkanna, "Ensemble Learning Approach for Predictive Maintenance in Investment Casting Process," 2023 ***IEEE 20th India Council International Conference (INDICON),*** Warangal, India, Dec, 2023.
8. A. Sinha, S. F. Ahmed and D. Das, "Explainable AI for Bearing Fault Detection Systems: Gaining Human Trust," ***2023 IEEE Guwahati Subsection Conference (GCON)***, Guwahati, India, 2023, pp. 1-6.

9. A. Sinha and D. Das, “Machine Learning-based Explainable Stator Fault Diagnosis in Induction Motor using Vibration Signal,” ***2023 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)***, Kuala Lumpur, Malaysia, 2023, pp. 1-6.
10. M. Vasanth, P. A. Gunturu, A. Sinha, D. Das, “DELiB: Deep Extreme Learning-Based Health Estimation for Lithium-ion Battery,” 2023 ***IEEE International Instrumentation and Measurement Technology Conference (I2MTC)***, Kuala Lumpur, Malaysia, 2023, pp. 1-6.
11. S. Verma, I. Singh, K. Ray, R. Patra and D. Das, "iCAT : Intelligent Cataract Detection Using Deep Neural in Smartphone," ***2022 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE)***, Naya Raipur, India, 2022, pp. 126-131.
12. S. Shukla and D. Das, "IoT Based Non-Invasive Vital Signs Monitoring in Neonatal Intensive Care Unit (NICU)," ***2022 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE)***, Naya Raipur, India, 2022, pp. 95-100.
13. V. Tiwari and D. Das, "iHELM:An IoT-Based Smart Helmet for Real-time Motorbike Accident Detection and Emergency Healthcare Services," ***2022 OITS International Conference on Information Technology (OCIT),*** Bhubaneswar, India, 2022, pp. 531-536.
14. A. Sinha and D. Das, "On-board Battery Health Prediction in Sensor Node for Sustainable IoT," 2022 ***IEEE International Symposium on Smart Electronic Systems (iSES)***, Warangal, India, 2022, pp. 453-454, doi: 10.1109/iSES54909.2022.00098.
15. K. B. Singh, N. Sengar, D. Das and S. C. Misra, "Village 5.0: Enabling Technologies and its Applications in Development of Smart Village," ***2022 IEEE International Symposium on Smart Electronic Systems (iSES),*** Warangal, India, 2022, pp. 556-561, doi: 10.1109/iSES54909.2022.00122.
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21. R. Bompilwar, S. P. S. Rathor, A. Sinha and **D. Das**, “tCrop: Thermal Imaging Based Plant Stress Identification Using On-Edge Deep Learning,” ***2022 IEEE Region 10 Symposium (TENSYMP),*** 2022
22. D. Chowdhury, R. Rana, A. Sinha and **D. Das**, "AutoFD: An Intelligent Electrical Fault detection techniques for Photovoltaic cell using Autokeras," 2022 ***IEEE 10th Region 10 Humanitarian Technology Conference (R10-HTC),*** 2022, pp. 221-225, doi: 10.1109/R10-HTC54060.2022.9929579.
23. S. K. Agrawal, S. Banerjee, A. Sinha, **D. Das**, *“*SafeEngine: Fault Detection With Severity Prediction for Diesel Engine,” ***2022 IEEE 10th Region 10 Humanitarian Technology Conference (R10-HTC),*** 2022pp. 216-220, doi: 10.1109/R10-HTC54060.2022.9929791.
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27. T. Mukherjee, A. Sinha, D. Das, “mGearbox: Condition Based Monitoring of Gearbox in Agricultural Machinery,” in *2021 7th IEEE International Conference for Convergence in Technology (I2CT*), 2022.

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36. A. Jha, A. Dubey and **D. Das**, "Realization of Solid Fractional Order Capacitor Using Common Materials," *2021 IEEE Second International Conference on Control, Measurement and Instrumentation (CMI)*, 2021, pp. 138-143
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40. S. Kumar, G. Chaudhary, U. Venkanna, **D. Das**, S. P. Mohanty, “gCrop: Internet-of-Leaf-Things (IoLT) for Monitoring of the Growth of Crops in Smart Agriculture,” IEEE iSES, 16-18th Dec, 2019
41. V. Pallagani, V. Khandelwal, B. Chandra, U. Venkanna, **D. Das**, S. P. Mohanty, “dCrop: A Deep-Learning Based Framework for Accurate Prediction of Diseases of Cropsin Smart Agriculture,” iSES, 16-18th Dec, 2019
42. S. Yadav, S. Ganesh, **D. Das**, Venkanna U, R. Mahapatra, A.K. Shrivastava, P. Chakrabarti, A. K Talukder, “Suśruta: Artificial Intelligence Driven Smartphone Apps for diagnosis and differentiation of anemias with higher accuracy at Resource Constrained Point-of-Care settings,” The Seventh International Conference on Big Data Analytics, 17-20th Dec, 2019.
43. A. K. Shrivastava, **D. Das** and R. Mahapatra, “Slope Based Detection for Mobile Molecular Communication Based on Einstein's Law of Diffusion,” IEEE Indicon, Dec, 2018
44. M. Kumar, **D. Das**, “MEMS based Flow Cytometer with Instrumentation System for Detection of Micro Particles for Health Care Applications,” 2018 Recent Advances on Engineering, Technology and Computational Sciences (RAETCS), pp. 1-5. IEEE, 2018.
45. G Sai Rohit, M B. Chandra, S. Saha, **D. Das**, “Smart Dual Dustbin Model for Waste Management in Smart Cities,” 2018 3rd International Conference for Convergence in Technology (I2CT).
46. S. Biswas, **D. Das**, M. Mahadevappa, S. Das, “Characterization of Retinal Tissue and Vitreous Humor with Electrical Impedance Spectroscopy,” in Proceeding of 8th International IEEE EMBS conference on Neural Engineering, 2017.
47. **D. Das**, A. Anura, S. Das, M. Mandal, S. Das, "AFM based Biomechanical Characterization for Assessment of Cancer Aggressiveness," Biophysical Society Conference: Mechanobiology of Disease, September 27-30, **2016**, Singapore.
48. A. Anura, **D. Das**, M. Pal, R.R. Paul, J. Chatterjee, "Unrevealing nanomechanical signatures of epithelial and connective tissue of oral submucous fibrosis," Biophysical Society Conference: Mechanobiology of Disease, September 27-30, **2016**, Singapore.

49. O.K. S. Prakasam, **D. Das**, K. Chaudhury and S. Das, "Fabrication of Cost-effective and Lithographically Patterned Flexible Paper-based Microfluidic Device using Photo-PDMS for Point of Care Application", in *Proceeding of BIOSENSORS 2016*, Sweden, **2016.**
50. **D. Das**, K. Biswas and S. Das, "Dielectrophoresis based Microfluidic chip for continuous label-free separation of cells," in *IEEE Proceeding of 9th International Conference on Sensing Technology (ICST), New Zealand, **2015***.
51. S. Das, **D. Das**, S. Maiti and K. Biswas, "A bioimpedance-based microflow cytometer with compact electronic instrumentation for counting of microparticles," in *IEEE Proceeding of 9th International Conference on Sensing Technology (ICST), New Zealand, **2015***.
52. S. Sohail, **D. Das**, S. Das and K. Biswas, "Study of PDMS as Dielectric Layer in Electrowetting Devices," *Physics of Semiconductor Devices, Environmental Science and Engineering V. K. Jain and A. Verma, eds., pp. 487-490: Springer International Publishing, **2014***.
53. **D. Das**, F. A. Kamil, K. Biswas and S. Das, "Electrical Characterization of Suspended HeLa Cells using ECIS based Biosensor," *IEEE Proceeding in 6th International Conference on Sensing Technology (ICST), India, **2012***.
54. P. Manocha, **D. Das**, K. Biswas and S. Das, "Simulation and Fabrication for Dielectrophoretic Microfluidic Device," in *Proceedings of Sixth International Conference on Smart Materials, Structures and Systems (ISSS), Bangalore, **2012***.
55. **D. Das**, S. Sohail, S. Das and K. Biswas, " Voltage and Capacitance Analysis of EWOD System Using COMSOL," in *Proceedings of the 2011 COMSOL Conference in Bangalore,* **2011**.
56. S. Sohail, **D. Das**, S. Das and K. Biswas, " Electrowetting-on-dielectric Induced Droplet Actuation in MxN Array of Electrode," in *Proceedings of the 2011 COMSOL Conference in Bangalore,* **2011**.
57. **D. Das**, S. Sohail, S. Das and K. Biswas, "Dynamic positional study of EWOD induced Droplet transport on PDMS based micro-channel." in *Proceedings of National Conference on Sensor and Actuator,* **2011**.
58. **D. Das**, S. Das and K. Biswas, "Effect of Electrode Geometry on Voltage Reduction in EWOD Based Devices." in *IEEE Proceedings of 2010 International Conference on Systems in Medicine and Biology (ICSMB), IIT Kharagpur*, pp. 371-375, **2010**.

SHORT VISITS & INVITED TALKS:

- "***IoMT for Smart Healthcare***", Short Term Training Programme (STTP) Bajaj Institute of Technology (BIT), Wardha, March 2023**.**
- "***AIoT-based Smart Healthcare Paradigm***" on Artificial Intelligence Techniques for Healthcare Applications (AITHA-2023) Seminar Series, NIT Delhi, 23rd Feb, 2023.
- "***Skill based Teaching in 21st century***", FDP on Digital Pedagogy: Skill Oriented Teaching, ITM University, Naya Raipur, 23rd Jan, 2019,
- "***Design aspect of IoT Sensor Node***", National Workshop on Sensor Networks, Internet of Things (IoT) and Internet of Everything, Dec 14, 2019
- "***Digital Agriculture & Standardization***," World Standard Day, BIS Raipur, 14th Oct, 2019.
- "***Electrical Manipulation of Biological Samples on Microfluidic Lab-on-a-chip***," Guest Lecture in VIT Vellore, 9th April, 2019.
- "***Energy Harvesting @ Sensors Node for Internet of Things*** ", Guest Lecture in VIT Vellore, 30th Mar, 2018.
- "***Advanced MEMS Sensors & Devices for IoT based Healthcare Applications***", Guest Lecture in VIT Vellore, 30th Mar, 2018

STCS/SEMINARS/WORKSHOPS/CONFERENCES ORGANIZED:

- 5-Day Hands-on Winter School on "Introduction to IoT & Machine Learning", 26-30th Dec, 2023, IIIT Naya Raipur, India
- 3-Day Hands-on workshop on "Robotics & AI using Matlab", 4-6th March, 2020, IIIT Naya Raipur, India.
- E&ICT FDP on "Internet of Things", 4-8th July 2018 , IIIT Naya Raipur, India.
- One Day Workshop on "3-D Printing", 7th April, 2019 , IIIT Naya Raipur, India.
- Special session on "Smart Agriculture" in IEEE iSES conference 2019, NIT Rourkela, India.
- Organizing chair of IEEE TechSym 2014, IIT Kharagpur, India.
- Organizing Chair, IEEE Workshop on MEMS & Microsystems With Hands-on training in Device Simulation and Microfabrication Process, July, 2013, IIT Kharagpur, India.

ACADEMIC ACHIEVEMENTS

- Best Technical Presentation award Swetika Shukla (IIIT NAYA RAIPUR); Debanjan Das (IIIT Naya Raipur), "IoT Based Non-Invasive Vital Signs Monitoring in Neonatal Intensive Care Unit (NICU)", ***2022 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE)***, Naya Raipur, India.
- Best paper award A. Bhattacharya, R. Rana, U. Venkanna, **D. Das**, "CoviFL: Edge-Assisted Federated Learning for Remote COVID-19 Detection in an AIoMT Framework," ***2022 IEEE Conference on ICT Solutions for eHealth (ICTS4eHealth 2022)***, 2022.
- Awarded best poster in SMST-ATDC Research Scholars' Day 2016 in IIT Kharagpur
- Awarded best poster in EE Research Scholars' Day 2015, IIT Kharagpur in the specialization of "Instrumentation and Signal Processing".
- Awarded best poster in EE Research Scholars' Day 2013, IIT Kharagpur.
- MHRD Scholarship since 2009.
- Received Keshab K Parhi Endowment Prize for the academic year 2010-2011 for best application/demonstrable thesis among 2nd-year M.Tech. graduating students of EE, ECE, CSE and IT, IIT Kharagpur.
- Secured 99.14 percentile (48 Rank) in GATE*-2009 (Graduate Aptitude test in Engineering) in Instrumentation.
- Got National Merit Scholarship in Higher Secondary (12th) examination in 2005.
- Ranked 64th in the Madhyamik Pariksha (10th) in 2003 in West Bengal Board of Secondary Education.

RESEARCH EXPERIENCE

- Working as a Research Assistant in a project sponsored by MHRD, Govt. of India since July 2016.
- Involved in Bio-MEMS, microfluidics fabrication work in BioMEMS Lab at SMST and ATDC, IIT Kharagpur from 2011 as a Research Scholar.
- Involved in two projects sponsored by Defence and MHRD, Govt of India during Ph.D tenure since 2011.

TEACHING EXPERIENCE

Worked as Assistant Professor in the Department of Electronics & Communication Engg., DSPM IIIT-Naya Raipur and taught the following subjects:

- Sensors & Actuators
- Introduction to IoT
- Control Systems
- Network Analysis
- Measurements and Electronic Instruments
- IT Workshop
- 3D printing

Worked as Teaching Assistant in the Department of Electrical Engg., IIT Kharagpur for the following subjects:

- Electrical Technology Tutorial for 1st year
- Signals and Networks lab & Tutorial at IIT Kharagpur
- Instrumentation Lab
- Measurements and Electronic Instruments Lab & Tutorial

ADMINISTRATIVE EXPERIENCE

- Lab-in charge of IoT and Sensors Lab, Since 2017
- Lab-in charge of 3D Printing & Fabrication Lab, Since 2019

- Member Secretary of Institute Innovation Cells 2022-2023
- BoS member of ECE Dept. at BIT Durg, Since 2021
- Chairman: IIIT NR Website and Institute Promotional Committee, 2022
- Faculty Coordinator: PhD, 2019-2022
- Member: Academic Committee, 2019-2022
- Faculty Coordinator: Institute Event Management Committee, 2018-2019
- Member: IIIT NR Entrepreneurship Committee, 2022
- Member: IIIT NR Proctorial Committee, 2022
- PRM of Website Management & Institute Promotion Committee, DSPM IIIT-NR 2017-2019
- PRM of Event Management Committee, DSPM IIIT-NR 2017-2018

ORGANIZATIONAL AND EXTRA-CURRICULAR ACTIVITIES

- Two times faculty coordinator, "ScinTfic"- IIIT NR outreach event
- Faculty coordinator, "Technovate-2019"-IIIT NR annual techno-cultural fest
- Co-chair, IEEE EMB Student Club, IIT Kharagpur 2014-2015.
- IEEE UPP Liaison, IEEE Student Branch, IIT Kharagpur 2014-2015.
- Chair, IEEE Student Branch, IIT Kharagpur 2013-2014.
- Organizing chair of IEEE TechSym 2014.
- Organizing Chair, IEEE Workshop on MEMS & Microsystems With Hands-on training in Device Simulation and Microfabrication Process, July, 2013.
- Member of Student Activity Committee of IEEE Student Branch of IIT Kharagpur during 2012-2013.
- Executive member (Membership promotion) for IEEE EMB Student Club of IIT Kharagpur 2010-2013.
- Ph.D representative of EE Society, IIT Kharagpur, June 2012 - May 2013.

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EDITORIAL WORKS

- **Associate Editor**, Springer Nature Computer Science (SNCS), Oct 2022–present.

JOURNAL REVIEWER/TPC

- IEEE Consumer Electronics Magazine
- IEEE Transactions on Big Data
- IEEE Sensors
- Electroanalysis
- Journal of Medical and Biological Engineering
- International Journal of Hydrogen Energy
- Organizing member of IEEE WiECON-ECE 2022
- IEEE iSES-2019, 2020, 2021, 2022, 2023
- IEEE Computer Society Annual Symposium on VLSI, 2020

COLLABORATORS

- Prof. Saraju P. Mohanty, University of North Texas (UNT) USA
- Prof. Yoga Rahulamathavan, Loughborough University, UK
- Prof. Preetam Wasnik, AIIMS Raipur
- Prof. Rajarshi Mahapatra, IIIT Naya Raipur
- Prof. Venkanna U., NIT Warangal
- Dr. Radha Onkar, Satya Sai Research Foundation, Mumbai
- Dr. Jay Rai, Balco Medical Centre Naya Raipur
- Prof. Subhas Chandra Misra, IIT Kanpur

- Sh. Suneel Kumar Palavalasa, AGM OS-C&I, NTPC Limited, Naya Raipur
- Sh. R. Sarangapani, Chief General Manager & HOD(Station Engg. & R&M), NTPC Limited, Naya Raipur

Country Visited

- Kuala Lumpur, Malaysia, May 2023
- Singapore, 2016
- Auckland, New Zealand, 2015
- JSPS Program, Japan 2012

TRAINING RECEIVED / SUMMER SCHOOLS / WINTER SCHOOLS ATTENDED

- Attended summer school on **Microfluidics and nanotechnology for Healthcare Engineering** organized by IIT Kharagpur, 2015.
- Attended student exchange program through JENESYS in Japan, 2012.
- Attended short term course on **Organic Electronics** organized by SCDT, IIT Kanpur, 2010.
- Attended workshop on **Nanoelectronics and Lab-on-Chip** organized by CEN, IIT Bombay, 2011.
- Pursuing an advanced composite course from INTERNATIONAL INSTITUTE FOR ADVANCED TRAINING ON CONTROL & AUTOMATION (IIATCA) to qualify as an **ISA** Certified Automation Engineer.

PROFESSIONAL MEMBERSHIPS

- Senior Member of IEEE (Member ID **# 92196129**)
- Senior Member of IEEE Instrumentation & Measurement Society

PERSONAL INFORMATION

- **Date of Birth:** 30 March, 1987
- **Nationality:** Indian
- **Gender:** Male
- **Interest:** Listening instrumental; reading philosophy and biographies.
- **Permanent Address:** 8- A.P.C. Road, New Barrackpur, Dt: North 24 Parganas, West Bengal, Pin: 700131.