



Dr. Suman Paul (সুমন পাল)

Assistant Professor, Dept. of ECE, Haldia Institute of Technology
Ex-Research Associate IIM Calcutta, Cisco Certified Network Associate

Address: Faculty room no. 7, Gr. Floor, 7th Block, Dept of ECE, Haldia Institute of Technology, Haldia-721657, WB (INDIA).
Research Interest: ML in NGWN, Edge Intelligence, B5G, 6G, QoS/QoE.
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Vision

To work in an academic and professional environment, that will provide a platform of professional development aiming academic excellence, applying innovative technical knowledge and managerial efficiency to enhance my teaching, research, and administrative skills as per the vibrant need of academia and industry for the betterment of the students and the well being of the society.

Education



PhD in Technology, w.e.f. 25.02.2022 Maulana Abul Kalam Azad University of Technology West Bengal (affiliating state technical university, West Bengal) Thesis: Novel Intelligent Real-time Embedded Computing Scheduler for High System QoS,

Supervisor: Prof. (Dr.) Malay Kumar Pandit, Dept of ECE, HIT Haldia.

M.Tech, 2008 from the West Bengal University of Technology, DGPA 7.06 (Out of 10).

Specialization: **Mobile Networking & Computing.**

Thesis: Design of Efficient Algorithm and Protocols for Stability of Mobile Ad Hoc Network.

B.Tech, 2005 the West Bengal University of Technology, DGPA 7.67(Out of 10).

Appointment

- **Assistant Professor** (Full-time) at Dept. of ECE, Haldia Institute of Technology, till date. [DOJ at Institute: July, 22, 2008].
- Associated as **Lecturer** in the department of Electronics and Communication Engineering - Haldia Institute of Technology from 22.07.2008 to 31.8.2010.
- **Research Associate** (Part-time, contract) in **Indian Institute of Management, Calcutta** from 1.06.2007 to 31.10.2007. Assigned Project: 'Pollution Monitoring and Evaluation System using Sensor-based Wireless Mesh Networks for Protection of Public Spaces' funded by Dept. of Information Technology, Govt. of India. Protocol Used: Zigbee (IEEE 802.15.4), Role: Designing codes for CC2430. / TiMAC (Chipcon Product of Texas Instruments).



Publication

- **S. Paul (Sole author)**, "Comparative performance analysis of SL, FL, SFL for the intelligence at the edge", in *IEEE Int. Conf. Proc. CISCT, Dehradun, Dec., 2025, -presented (Scopus).awaiting galley proof.*
- **S. Paul (Sole author)**, "Investigating Federated Learning Implementation Challenges in 6G", in *IEEE Xplore, Proc. of Fourth International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT)*, organized by SSIET Bhilai, India, pp. 1-6, March, 2024. (Scopus).
- **S. Paul (Sole author)**, "A Comprehensive Review on Machine Learning-based Approaches for next Generation Wireless Network", *S N (Springer Nature) Computer Science (J.)*, vol. 5, article no. 468 (2024), April, 2024, pp. 1-28. (Scopus).
- **S. Paul (Sole author)**, "Machine Learning Based Techniques for the Network Design of Advanced 5G Network, Beyond 5G (B5G) and Towards 6G: Challenges and Trends", *Proc. of 3rd Int. Conference on Communication, Networks and Computing*, Organized by Dept. of ECE, School of Engineering, ITM University, Gwalior, Dec. 8-10, 2022, in *Communications in Computer and Information Science (CCIS) Springer*, Vol. 1894, September, 2023 (Scopus).
- D. K. Sarkar, P. K. Sadhu, S. Bhunia, J. Samanta and **S. Paul** (eds./Edited book), "*Proc. of the 4th Int. Conference on Communication, Devices and Computing (ICCDC 2023)*" in Springer Lecture Notes in Engineering (LNEE) Series", vol. 1046, Springer, Singapore, ISBN: 978-981-99-2709-8, July 2023.
- **S. Paul** and M. K. Pandit, "A QoS-enhanced intelligent stochastic real-time packet scheduler for multimedia IP traffic", *Springer Multimedia Tools and Applications*, vol. 77, no. 10, pp. 12725-12748. (SCIE, IF: 3.00).
- **S. Paul** and M. K. Pandit, "Load Balancing BPN in a Dual-Core Processor in IP Router Running with QUEST Scheduler", *Proc. 2nd Int. Conference on Communication, Devices and Computing (ICCDC - 2019)* at Dept. of ECE, Haldia Institute of Technology, Haldia, West Bengal, India, during 14-15th March, 2019, in *Lecture Notes in Electrical Engineering Series (LNEE) Springer*, vol. 602, pp. 301-309, 2020. (Scopus).
- **S. Paul** and M. K. Pandit, "A QoS-Enhanced Smart Packet Scheduler for Multi-core Processors in Intelligent Routers", *Proc. 2nd Int. Conference on Smart Intelligent Computing and Applications (SCI 2018) vol. 1*, at P. V. P., Vijayawada, Siddhartha

Institute of Technology, Vijayawada, Andhra Pradesh, India, during 27th -28th Jan., 2018, in Smart Innovation, Systems and Technologies (SIST) Springer, vol. 104, pp. 713-720, 2018 (Scopus).

- **S. Paul** and M. K. Pandit, "A Jitter Minimized Stochastic Real-time Packet Scheduler for Intelligent Routers", *Proc. 2nd Int. Conference Soft Computing: Theories and Application (SoCTA 2017)* at Bundelkhand University, Jhansi, Uttar Pradesh, India, during 22nd -24th Dec., 2017, in Advances in Intelligent Systems and Computing Series (AISC) Springer, vol. 742, pp. 547-556, 2018, (Scopus).
- **S. Paul** and M. K. Pandit, "Comprehensive Investigations on QUEST: a Novel QoS-Enhanced Stochastic Packet Scheduler for Intelligent LTE Routers," *KSII Transactions on Internet and Information Systems*, vol. 12, no. 2, pp. 579-603, 2018 (SCIE, IF: 1.2).
- **S. Paul**, Sara Paiva (Polytechnic Institute of Viana do Castelo) and Bo Fu (California State University), [eds./Edited book] "Frontiers of Data and Knowledge Management for convergence of ICT, Healthcare, and Telecommunication Services", EAI/Springer Innovations in Communication and Computing, ISBN 978-3-030-77557-5, 2022, (Scopus).
- **S. Paul**, A. K. Jana and M. K. Pandit, "A Novel Embedded Scheduler Based on Markov Statistics for generating High QoS", in *IEEE Xplore, Proc. of International Conference on Communication and Computational Intelligence (INCOCCI)*, organized by Kongu Engineering College, Erode, India, pp. 7-10, March, 2011. (Scopus).
- **S. Paul** and M. K. Pandit, "A QoS-Enhanced Stochastic Scheduler for Smart Routers with Timing Jitter Analysis", *Journal of Internet Technology*, vol. 19, no. 7, pp. 2235-2243, 2018. (SCIE, IF: 0.9).
- Sara Paiva (Polytechnic Institute of Viana do Castelo) and **S. Paul**, [eds./Edited book] "Convergence of ICT and Smart Devices for Emerging Applications for Human Beings", EAI/Springer Innovations in Communication and Computing, ISBN 978-3-030-41368-2, 2020, (Scopus).
- A. K. Jana, D. Mallick, **S. Paul**, "Neural Input Device" - International Conference on Systemic, Cybernetics, and Informatics, 2008, Hyderabad on January 2 - 5, 2008, pp. 429-431.
- **S. Paul**, and S.Barman, "Design of Efficient Energy Based Clustering Algorithm in MANET", in *Proc. of National Conference on Emerging Trends in Engineering* organized by SVP CET, Andhra Pradesh, April 16 - 17, 2008, pp. 230-239.
- **S. Paul**, Study of Cluster Based Algorithm in MANET using Network Simulator, Survey, Challenges, Applications, Lap Lambert Academic Publishing, Germany, 978-3-659- 66815-9, February, 2015.
- **S. Paul**, Roadmap to Mobile Ad Hoc Networks and Wireless Sensor network : fundamentals to Applications, Lap Lambert Academic Publishing, Germany, 978-3-659- 91491-4, Oct., 2018.

Other Publication

- A. Bhattacharyya, A. Das, **S. Paul**, D. Samanta and S. Sinha, "Current conveyor based non-sinusoidal oscillator implementation," in *IEEE Xplore, Proc. of 2015 Global Conference on Communication Technologies (GCCT)*, Thuckalay, India, 2015, pp. 1-3, (Scopus)
- A. Das, K. Roy, A. Bhattacharyya, D. Chowdhury and **S. Paul**, "Design and analysis of microwave stepped impedance low pass filter for Bluetooth application," in *IEEE Xplore, Proc. of 2015 IEEE International Conference on Electrical, Computer and Communication Technologies (ICECCT)*, Coimbatore, India, 2015, pp. 1-3. (Scopus).
- A. Bhattacharyya, A. Das, K. Roy, A. Roy, **S. Paul**, "Implementation of Non Sinusoidal Oscillator using Current Conveyor", *International Research Journal of Engineering and Technology*, ISSN 2395-0056, vol. 2, issue. 6, pp. 1296-1299, September, 2015.
- A. Bhattacharyya, A. Das, **S. Paul**, D. Samanta, S. Sinha, "Differential Voltage Current Conveyor Based Non-Sinusoidal Wave Generator", *International Journal of Applied Engineering Research*, ISSN 0973-4562, vol. 10, issue. 2 (2015), pp. 1322-1325, Research India Publications, March 2015.
- A. Bhattacharyya, A. Das, A. Roy, **S. Paul**, D. Samanta, "Realization of Balanced Current Conveyor Based Voltage mode Universal Filter", *International Journal of Emerging Trends & Technology in Computer Science*, ISSN 2278-6856, vol. 3, issue. 6, pp. 210-212, Nov. -Dec. 2014.

Publication in Seminar /Presentation

- **S Paul**, D. Mallick, J. Samanta, S. Ojha, and A. K. Jana, "Explosive Detection with Electronic Nose", in *Proc. of National Seminar on Explosive Detection*, Dept. of ECE, HIT, Haldia funded by TEQIP on May 19, 2007, pp. 41-42.
- **S. Paul**, D. Mallick, J. Samanta, S. Chottopadhyay, and S. Khanra, "Explosive Detection with THz Frequency", in *Proc. of National Seminar on Explosive Detection*, Dept. of ECE, HIT, Haldia funded by TEQIP on May 19, 2007, pp. 43-45.

Journal Edited Volume/ Special issue

S. Paul and C. K. De, (Guest Eds.), *Special issue: Advances in Communication, Computing and Devices with Applications in Mathematical Sciences* (ICCDC 2019, Haldia, INDIA), *Advances and Applications in Mathematical Sciences*, vol. 8, issue. 9, July 2019, pp. 817-985. (ESCI - Web of Science, the then UGC Care).

Noteworthy Citation(s) [Selected]

- S. Paul (Sole author), “Investigating Federated Learning Implementation Challenges in 6G”, in *IEEE Xplore, Proc. of Fourth International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT)*, organized by SSIET Bhilai, India, pp. 1-6, March, 2024. (Scopus) **cited by** D. Sharma, V. Tilwari and **Sangeon Pack (School of Electrical Engineering, Korea University QS ranking 67)**, "An Overview for Designing 6G Networks: Technologies, Spectrum Management, Enhanced Air Interface, and AI/ML Optimization," in *IEEE Internet of Things Journal*, vol. 12, no. 6, pp. 6133-6157, March, 2025.
- S. Paul (Sole author), “A Comprehensive Review on Machine Learning-based Approaches for next Generation Wireless Network”, *S N (Springer Nature) Computer Science (J.)*, vol. 5, article no. 468 (2024), April, 2024, pp. 1-28. (Scopus) **cited by** white paper of Zira (**A globally recognized vendor of BSS solution provider**) authored by H. Hasic, PhD student of **Tokyo Institute of Technology**.
- S. Paul and M. K. Pandit, “A QoS-enhanced intelligent stochastic real-time packet scheduler for multimedia IP traffic”, *Springer Multimedia Tools and Applications*, vol. 77, no. 10, pp. 12725-12748. (SCIE) **cited by:** Z Hu (Nanjing University of Posts and Telecommunications), Y-n. Dong (Nanjing University of Posts and Telecommunications), J. Jin (Swinburne University of Technology, Australia), H. L. Wei (**University of Sheffield, UK**), G. Xie (University of Chinese Academy of Sciences), “Multimedia Traffic Classification for Imbalanced Environment”, *IEEE Transactions on Network Science and Engineering*, vol. 9, issue. 3, pp. 1838-1852, May-June, 2022.

Patent

- **Granted**, Indian Design Patent, *IoT Based Automatic Vehicle Tracking Device*, D. R. Solanke, J. Anitha, Suman Paul (HIT), N. Nandakumar, T. Valavan A, N Nagabhooshanam, Design No. 401642-001, Granted 7th Dec., 2023.
- **Granted**, Indian Design Patent, *AI based Fish Freshness Analyzing Device*, G. V. Manekar, A. Mandal, S. S. Barik, Ammu V, Suman Paul (HIT), N. Nagabhooshanam, Application No. 413267-001, Date: 11th April, 2024.
- Filed, Indian Design Patent, *IoT Based Wireless Communication Equipment*, P. Torne, A. P. Ray, R. Parimelazhagan, V. Kannan, J. Jaya, D. Sengottaiyan, Suman Paul (HIT), Application No. 406243-001, Date: 1st Feb., 2024.
- Filed, Indian Design Patent, T. Venketbabu, . . ., Suman Paul (HIT) *et al.: The Sentimental Analysis Based Disease Estimation and Health Risk Prediction System*, Application No. 202241037-150 Dated: 28th June, 2022.

Session Chair/ Talk

- Session Chair in 5th Int. Conf. on Innovative Research in Renewable Energy Technologies, March 23-24, 2025 organized by IMPS College of Engg. and Tech., Malda, WB.
- Delivered a talk on “An overview of Real-time Operating System (RTOS) ” on 29th January, 2018 in Winter School on Microcontroller and Embedded Systems (Jan. 29th – Feb 4th) organized by Dept, of ECE, Haldia Institute of Technology.
- Delivered ‘**the debut talk**’ on “Statistical Scheduling in Computing Systems” on 30th August, 2011 in School of Engineering, Haldia Institute of Technology.

Conference/ FDP/Short term course Organized with ‘key role’

- ‘**Joint Convener**’, in 2nd International Conference on Communication, Devices and Computing (ICCDC 2019) held during March 14-15, 2019 organized by the Department of ECE, Haldia Institute of Technology. Proceedings of ICCDC 2019 has been published LNEE Springer series.
- ‘**Program Chair**’ of FDP Emerging Trends in IoT Enabled Wireless Communication 8-12th August, 2022 (Online), Organized By Dept. of ECE, HIT, Haldia.
- ‘**Jt.-coordinator**’, short term course on Advanced Communication & Signal Processing (ACSP-2015), June 15-22, 2015 organized by Dept. of ECE, H IT, Haldia.

Review Assignment**A. Journal: [selected]**

1. Springer Int. Journal of Machine Learning and Cybernetics (SCIE)
2. Springer S N Computer Science.(Scopus)
3. Journal of Engineering Science and Technology, Taylor’s University, Malaysia, (Scopus, ESCI)
4. Springer Wireless networks (SCIE)
5. Emerald Int. Journal of Pervasive Computing and Communications (Scopus)

B. Int. Conf. (Member of Technical programme): [selected]

1. 2nd Int. Conf. on Comp. Sc. and Application Engineering, Oct. 2018, Hohhot, China.
2. 3rd Int. Conf. Adv. Network Technologies and Intelligent Computing (ANTIC), 2023, Dept. of CS, Institute of Science, Benaras Hindu University (BHU), Varanasi.
3. Int. Conf. Recent Advances in Artificial Intelligence and Smart Applications (RAAISA), 2023, subsequently 2024, UEM, Kolkata.
4. Int. Conference of Communication, Computing and Devices (ICCDC) 2017, and subsequently 2019, 2021, 2023, organized by Dept. of ECE, HIT Haldia.

In Organizing Committee (member):

- Organizing Committee member, Co-chair of Publication committee, and Joint editor 4th International Conference on Communication, Devices and Computing (ICCDC 2023), 1-3rd march, 2023
- Organizing Committee member, 3rd International Conference on Communication, Devices and Computing (ICCDC 2021) 16-18th August, 2021.
- Organizing Committee member, 2nd International Conference on Communication, Devices and Computing (ICCDC 2019), 14-15th March, 2019.
- Organizing Committee member, FDP Emerging Trends in IoT Enabled Wireless Communication 8-12th August, 2022 (Online), Organized By Dept. of ECE, HIT, Haldia.
- Organizing Committee member, International Conference International Conference on Communication, Devices and Computing (ICCDC 2017) 2-3 Nov. 2017
- Organizing Committee member, Workshop on Winter school on Microcontrollers and Embedded systems 6 -12 February, 2017
- Organizing Committee member, short term course on Advanced Communication & Signal Processing (ACSP-2015), June 15-22, 2015 organized by Dept. of ECE, H IT, Haldia.
- Organizing Committee member, National Conference on Advance Communication System and Design Techniques (NACAD 2011), 5-6 Nov, organized by Dept. of ECE, H IT, Haldia
- Organizing Committee member, NCAD 2012, Sept. 29-30, 2012 organized by Dept. of ECE, H IT, Haldia.
- Organizing Committee member, Winter school on Microcontrollers and Embedded system, 2010 organized by Dept. of ECE, H IT, Haldia.

Administrative and teaching Assignments:

- Convener, Departmental Advisory Board (DAB), Dept. of ECE, HIT, Haldia.
- In Routine Committee during the session 2009-2010
- In-charge (Dept of ECE), Industrial/ vocational training for UG engineering students (2016--2019)
- Departmental representative of central Placement cell in the Institution. (2012-2013)
- Conducted classes on Mobile Handset Repairing in PMKVY course in Dept of ECE, Haldia Institute of Technology during Jan to Dec. 201
- Departmental member- 'students' monitoring and counselling committee
- Departmental Academic Committee Member
- Lab-in Charge Design Lab (2018-2020)
- Anti-ragging Hostel Monitoring

Participation in FDP/AICTE QIP/ ATAL/ Online course/ Workshop [Selected]

- **Stanford University:** statement of accomplishment 'GPS: An Introduction to Satellite Navigation, with an interactive Worldwide Laboratory using Smartphone', 13th October-9th December, 2014
- **John Hopkins University:** statement of accomplishment 'University Teaching 101' (Foundational knowledge of the science of teaching and learning as well as skills and strategies for teaching at the university level)', 16th March – 26th April, 2015 (Coursera)
- SERB Sponsored workshop on, 'Emerging tolls and techniques foe 6G wireless communication', organized by Dept. of EEE, **ABV-IIITM Gwalior**, from 21st to 25th February, 2025.
- **AICTE ATAL FDP** on AI Enabled Collaborative Learning in 6G and Beyond, from 20-25th January, 2025 at **Manipal University, Jaipur**.

- **AICTE ATAL FDP** on **Generative AI – Democratization of AI, Responsible AI**, from 17-22nd Feb., 2025 at Bapuji Institute of Engineering and Technology (VTU), Karnataka.
- Technical Education Quality Improvement Programme), **CDTE IIT Kanpur, Commonwealth of Learning (COL): Certification of Participation with Distinction**, ‘MOOC on MOOC – Massive Open Online Course for Development’, 5th September, 2014 – 12th October, 2014 (MOOKIT).
- **University of California San Diego** ‘Internet of Things’, completed 2nd Feb, 2016, verified certificate (Coursera).
- **AICTE ATAL FDP** on Intellectual Property Rights in Academia: Creation, Protection, and Commercialization from 7.2.2022 to 11.2.2022 at **Andhra University**.
- **AICTE Sponsored QIP** Short Term Course on Cyber Security for next generation Technologies: Challenges and Solutions by Dept. of CSE, **IITDM Kancheepuram**, Chennai, 7.3.22 to 12.3.22.
- **AICTE ATAL FDP** on Industry 4.0 from 31.1.22 to 4.2.22 at ACS College of Engineering.
- **AICTE ATAL FDP** on DCS-Switching and Routing from 17.01.2022 to 21.01.2022 at **Goa University**.
- Workshop on Innovations in IOT for Emerging Applications, by **ABV-IIITM Gwalior**, from 12.2.2022 to 16.2.2022.
- **AICTE sponsored QIP** short term course on Integrated Navigation of Flight Vehicles, July 9-13, 2012 organized by Prof. Hari Hablani, Dept. of Aerospace Engineering, **IIT Bombay**.
- **Yonsei University, South Korea**: ‘Wireless Communication for Everybody’-6 weeks, completed 17.6.18.-verified certificate (Coursera).
- **Yonsei University, South Korea**: ‘Smartphone emerging technologies’-6 weeks, completed 17.2.16. –verified certificate (Coursera).
- One Week FDP on Bridging gap between Academia & Industry Certificate of participation, **IIPC and TPO Cell, Haldia Institute of Technology**, February 5-11, 2015

Professional Membership

- International Association of Engineers (**IAENG**) Hong Kong, Member ID: 144573

Practical Exposure and Certification:

Qualified Cisco Certified Network Associate (CCNA) Oct. 2005.

Vocational training BSNL (Habra Telephone Exchange, N 24 Pgs, West Bengal) on 5ESS, CDOT, WLL, Transmission. During June, 2004.
Language: C., C++.

OS: Windows, Ubuntu, Red Hat Linux (System administration)

RDBMS: Oracle

Electronics/ Computing / Programming language: Matlab, VHDL.

Network Simulator: Boson Network simulator, NS2/3, GNS3, GloMoSim

Subjects of Teaching Expertise/ previous teaching assignment:

Operating System, Embedded System, Telecommunication System, Mobile Communication, Optical Fibre Communication, Computer Network, Computer Architecture, Communication Engineering (CS/IT)

Embedded System Lab (PG), Digital Electronics Lab, IOT Lab, Basic electronics Engineering lab, Computer network lab.

Current Teaching Assignment:

IoT, Computer Network, Computer Architecture.

Abridged Personal Profile

Gender:	Male
Languages known:	Bengali, Hindi, English
Nationality:	Indian.

I, Sri. Suman Paul, do hereby declare that all the information stated herein above are true to the best of my knowledge and belief.

Date: The 17th March, 2025 at HIT, Haldia.



(Dr. Suman Paul)