CURRICULUM VITAE

Dr. Madhumita Sarkar
Designation: Assistant Professor
Department: Electronics and Communication Engineering

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Objective: Intend to build my career with leading academic organization of hi-tech environment with committed & dedicated people, which will help me to explore myself fully and realize my potential.

ACADEMIC PROFILE

Dedicated and passionate educator with experience in undergraduate and postgraduate teaching, curriculum development, and academic research. Research interests include communication systems, signal processing, and emerging wireless and optical network technologies.

EDUCATIONAL QUALIFICATIONS

Degree	***Specialisation***	***Year***	***Board/University***	***Institute***	***Marks(%)***
PhD.	Electronics & Communication Engineering	September, 2025	Maulana Abdul Kalam Azad University of Technology	….	Awarded
M. Tech	Radio Physics & Electronics	2006-2008	The University of Calcutta	Radio Physics & Electronics	70
B. Tech	Electronics & Communication Engineering	2002-2006	West Bengal University of Technology	Murshidabad College of Engg. & Technology	76.40

TEACHING EXPERIENCE

Type of Job	Organization	Designation	Duration
Academic	B.P. Poddar Institute of Management & Technology, Kolkata	Assistant Professor (ECE)	1st July,2010 to till date
	B.P. Poddar Institute of Management & Technology, Kolkata	Lecturer	13th June,2009 to 30th June,2010
	Gurunanak Institute of Engineering & Technology	Lecturer	27th March,2009 to 12th June,2009
Industry	Tech Mahindra Ltd., Pune	Assistance Trainee	10th October,2008 to 14th January 2009

- Courses taught: Basic Electronics (ES201), Electronics Device (EC-301), Signals & Systems (EC-303), Analog Digital Electronics (ESC-391), Computer Network (EC-602), Optical Communication (EC-801B), Artificial Intelligence (OE-EC-804A), Wireless Sensor Network ((PGIT(IoT)202))
- Prepared lecture plans, course materials, and assessments
- Conducted laboratory sessions: Basic Electronics Laboratory (ES201), Electronics Device (EC-301), Analog Digital Electronics (ESC-291), Computer Network (EC692), Wireless Sensor Network ((PGIT(IoT)292)
- Guided projects
- Evaluated students and contributed to academic activities:

RESEARCH EXPERIENCE

Research Areas: Optical Communication and its application in different networks.

- Studied and analysed OCDMA codes
- Designed Modified Walsh Code (MWC)
- Develop a security system using MWC
- Applied the designed code to analyse different networks compared the code with other existing OCDMA codes.
- Evaluated system performance using BER, SNR, Q-factor.
- Published research in reputed journals and International conferences.

PUBLICATIONS

International Journal:

1. **Madhumita Sarkar**, Shila Ghosh, "Implementation of Designed OCDMA Code in RoF for Future 5G Communication", Journal of Optics, 2024, April, Vol.:(0123456789) 1 3, *J Opt* https://doi.org/10.1007/s12596-024-01813-1.

2. Somali Sikder, **Madhumita Sarkar,** Shila Ghosh, "Design and Performance Analysis of BPON using Transposed Modified Walsh Code", *Optik,2022, April,* https://doi.org/10.1016/j.ijleo.2022.169047.

3. Madhumita Sarkar, Shila Ghosh, "Development of a secured optical code division multiple access system by implementing hybrid 2D modified Walsh code", Optical Engineering, Vol. 59(10), pp. 106107-1-106107-16, 2020, https://doi.org/10.1117/1.OE.59.10.106107.

4. S Nandi, A Nandi, N N Pathak, M Sarkar, "Performance analysis of Cyclic Prefix OFDM using adaptive modulation techniques", International Journal of Electronics, Electrical and Computational System IJEECS, ISSN 2348-117X Volume 6, Issue 8, August 2017.

5. S Nandi, **M Sarkar**, A Nandi, N N Pathak, "Performance analysis of the CO-OFDM system in a CR network", Computer, Communication and Electrical Technology – Guha, Chakraborty & Dutta (Eds) © 2017 Taylor & Francis Group, ISBN 978-1-138-03157-9.

6. S Nandi, **M Sarkar**, "Analytical Modeling of Triple Gate MOSFET", International Journal of Semiconductor Science & Technology (IJSST), ISSN 2250-1576 Vol. 3, Issue 4, Oct 2013.

7. S Nandi, **M Sarkar** and A Ghosal, "Monte Carlo Study of Hot Electron Transport in Bulk GaN", Journal of Electron Devices, Vol. 18, 2013, pp. 1501-1504 ©JED [ISSN: 1682-3427].

8. **Madhumita Sarkar**, Shovon Nandi and Aniruddha Ghosal, "I-V and Conductance Characteristics of Nano-Scale 1D GaAs FET", Journal of Electron Devices, Vol. 13, 2012, pp. 957-959 © JED [ISSN: 1682-3427].

9. Shovon Nandi and **Madhumita Sarkar**, "Theoretical Investigation of I-V and Mobility Characteristics of 2D GaAs Quantum Well", Journal of Electron Devices, Vol. 12, 2012, pp. 700-703 © JED [ISSN: 1682 -3427].

International Conference:

1. N. Balavenkata Muni; Bhargav H K; **Madhumita Sarkar**; Shovon Nandi; Sanjay Agal; Abhijit Vasmatkar,"Integrating Edge Computing with Swarm Intelligence for

Efficient IoT Device Management", 3rd International International Conference on Data Science and Information System (ICDSIS),2025, Hassan, India, DOI: 10.1109/ICDSIS65355.2025.11070424

2. **M. Sarkar** and S. Ghosh, "Performance Analysis of Radio over Fiber Technology for 5G Communication using Modified Walsh Code", 2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT), Delhi, India, 2023, pp. 1-5, DOI: 10.1109/ICCCNT56998.2023.10308064.

3. **Madhumita Sarkar**, Shovon Nandi, and Sayamuddin Ahmed Jilani "Implementation of IoT-Based Smart Healthcare Monitoring System", Internet of Things and its Application, Lecture Notes in Electrical Engineering vol. 825, https://doi.org/10.1007/978-981-16-7637-6.

4. **Madhumita Sarkar**, Somali Sikder, and Shila Ghosh "Transmission Analysis of Designed 2D MWC in Hybrid OCDMA System for Local Area Network Application", OWT 2020, Optical and Wireless Technologies, Lecture Notes in Electrical Engineering 771, https://doi.org/10.1007/978-981-16-2818-4_4.

5. A. Dey, S. Nandi and **M. Sarkar**, "Security Measures in IOT based 5G Networks", 3rd International Conference on Inventive Computation Technologies (ICICT), Coimbatore, India, pp. 561-566, doi: 10.1109/ICICT43934.2018.9034365, 2018.

6. **Madhumita Sarkar**, Somali Sikder, and Shila Ghosh "Development of Architecture for Secured Data Transmission in OCDMA System with Designed Modified Walsh Code", Wireless & Optical Communication Networks (WOCN,2018), West Bengal, Kolkata, 2-4th February'18.

7. Somali Sikder, **Madhumita Sarkar** and Shila Ghosh Optical Network Security using Unipolar Walsh Code", International Conference on Electrical, Electronics, Materials and Applied Science, AIP Conf. Proc. 1952, Published by AIP Publishing., ICEEMAS, Secunderabad, December'17, 020099-1–020099-4; https://doi.org/10.1063/1.5032061

8. **Madhumita Sarkar**, Somali Sikder, Shila Ghosh "Implementation and Performance Analysis of Designed 2D MWC in Hybrid OCDMA System", International Conference on Light- and Light-based Technologies (ICLLT-2016) at Tezpur University, Tezpur, Assam, Nov 26-28, 2016.

9. Somali Sikder, **Madhumita Sarkar**, Shila Ghosh "Theoretical Analysis and Simulation Investigation of designed 1-D and 2-D Modified Walsh Code (MWC) in Optical CDMA System", International Conference on Microwave, Optical and Communication Engineering (ICMOCE), 2015, http://dx.doi.org/10.1109/ICMOCE.2015.7489785.

National Conference:

1. M Sarkar, S Nandi, A Ghosal, "Study of mobility-temperature characteristics of 1D GaAs nano-scale FETs", Proceeding of National Conference on Emerging areas of Photonics and Electronics organized by Electronics and Communication Engg. Dept. of BPPIMT and SPIE Student Chapter, pp.104-108, on 30th-31st August,'13.

Student Paper (Conference):

1. Swarupa Das, **Madhumita Sarkar**, Shovon Nandi, "A Deterministic Study of Delta Modulation (DM) using Machine Learning Approach", 4th International Conference on Electronics, Materials Engineering and Nano-Technology (IEMENTech 2020), IEEE, ISBN : 978-1-7281-9286-4, 2-4th Oct'20, https://doi.org/10.1109/IEMENTech51367.2020.9270047.

2. Soumayan Mitra, Santanu Bhowmik, Satam Sinha Roy, Suman Maur and **Madhumita Sarkar**, "Prevention of SQL Injection and Security Enhancement in Cyber Networks, 5th International Conference on Electronics, Materials Engineering & Nano-Technology (IEMENTech), 24-26th September, 2021.

3. Raktima Deb Roy, Prama Singh, **Madhumita Sarkar**, Somali Sikder, "Study of unipolar and bipolar OCDMA codes", National Conference on Information, Photonics and Communication (IPC'17) at B.P. Poddar Institute of Management & Technology, Kolkata, 15th - 17th May'17.

Patent Publication:

Shovon Nandi, Madhumita Sarkar and 10 others, "Hybrid ai architecture for analysis of charging profile of electric vehicles", Application No.202131040276 A, Date of filing of Application :06/09/2021, Publication Date: 03/12/2021,

Book:

1. **Madhumita Sarkar**, "Study of 2-Dimensional Hot Electron Gas in Quantum-Well Structures", LAP Lambert Academic Publishing on April'13.

2. Shovon Nandi, **Madhumita Sarkar**, "Design of Low-Cost Home Security System Using 8085 Microprocessor", LAP Lambert Academic Publishing on July'16.

3. Shovon Nandi, **Madhumita Sarkar**, "Data security using LFSR: An advancement towards digital technology", LAP Lambert Academic Publishing on July'17.

PROJECTS SUPERVISED

- Guided the final year B.Tech (UG)students

Academic Year	Name of the Project	Name of Students	Type of Project	Domain of work
2025-2026	Ai Powered Smart Helmet For Two-Wheeler Safety	Adrija Ghosh	Software	AI-based
		Oindrilla Mishra		
		Sudiksha		
2024-2025		Anurag Ghosh	Software	

	Motion Sensor Security Camera With Notifications	Joydeep Das Anirban Kar Debojyoti Das		Network security
2024-2025	OptiCrypt: Secure Data Transmission via Optical Networks	Nidhi Keshri Aman Kumar Aakash Sarkar Raj Saha	Software	Optical Communication
2023-2024	Security Enhancement in Different Web Application	Aindrila Sarkar Khusi Kant Adarsh Thakur Niranjan Kumar	Software	Network security
2022-2023	Bank Network Using Cisco Packet Tracer	Debasmita Bag Ayan Chakraborty Diptarka Saha Abhishek Mishra	Software	Network security
2022-2023	Hybrid WDM & OCDMA Optical Network System	Sangram Chakraborty Tuhina Bhaumik Soumyadeep Dutta	Software	Optical Communication
2021-2022	Security Enhancement in Cyber Network to prevent SQL Injection	Soumayan Mitra Santanu Bhowmik Santam Singha Roy Suman Maur	Software	Network security
2020-2021	Design & Analysis of Different Parameters of an Optical Communication System	Soumili Sarkar Soumik Das Swagata Halder Papia Mondal	Software	Communication
2019-2020	Performance analysis of parameter for an optical code	Bhavya Kumari Promit Ganguly B. Ravi Rao	Software	Optical Communication
2018 -2019	Design of Audiometer using Arduino	Arghya Ghosh Arpan Kali Chandrayee Nandi Kaushik Majumder	Hardware + Software	Circuit design
2016 -2017	Device Control using Micro-Controller	Chirantan De Debanjan Roy Debanjan Ghosh Paramita Bhaumik Ishita Majumder Niket Kumar Mishra Abhishek Mitra	Hardware +Software	Communication

SKILLS

Technical Skills:

- Digital Communication, Signal Processing, Optical Communication

Software Tools:

- MATLAB, Simulink, OptiSystem

Teaching Skills:

- Mentoring, Outcome-Based Education (OBE)
- Acting as **Interviewer** in Mock Test of final year students
- Acting as **Reviewer** of conference papers.
- Coordinator of different Committee and cells.
- Laboratory in-charge of different laboratories.
- Acting as a Session chair in 1st International Conference for Women in Multifaceted Research (ICWMR)-2021.

CERTIFICATIONS / FDPs / WORKSHOPS

- FDP / Workshop Title – Institution – Year
- Certification – Platform – Year

PROFESSIONAL MEMBERSHIPS

- Fellow of IETE
- Life member of FOSET
- Life member of ISTE
- Life member of IET
- Life member of ISRD
- Life member of ISCA

ACHIEVEMENTS *(Optional)*

- Ph.D. awards on 18th September,2024
- Successfully completed the NPTEL Online Certification on **Responsible and Safe AI Systems** with 65% marks in the Odd semester of 2025-2026.

PERSONAL DETAILS

- Date of Birth: 23rd May, 1984
- Languages Known: English, Bengali and Hindi
- Nationality: Indian

DECLARATION

I hereby declare that the above information is true and correct to the best of my knowledge and belief.

Place: Kolkata
Date: 10th December,2025

Signature
(_____)