

# Dr. Manju K. Chattopadhyay

Professor  
School of Electronics  
Devi Ahilya University, Indore  
MP, India

## Qualifications:

Ph. D (Computer & Electronic Science), Devi Ahilya University, Indore, 2008

*Doctoral Thesis: Analytical Modeling and Characterization of AlGaIn/GaN High Mobility Electron Transistors (HEMTs)*

M.Tech. (Embedded Systems), Devi Ahilya University, Indore, 2013 (85.17%)

M. Sc. (Electronics), Banasthali Vidyapith, Raj, 2000 (Gold Medal, 83.1%)

B. Sc. (Honors) Physics, University of Delhi, 1998

## Specialization:

Semiconductor Device Modeling and Simulation, ARM Microcontrollers, Embedded Systems

Tools and languages: Keil uVision IDE, ARM Mbed OS, Cadence EDA tool, Tanner EDA Tool, Silvaco's ATLAS device simulator, MathCAD, Matlab, LabVIEW, VHDL, C/ C++, Arduino, ARM Assembly Language

## Work Experience

- Professor, School of Electronics, Devi Ahilya University, Indore November 2022 - Present
- Associate Professor, School of Electronics, Devi Ahilya University, Indore November 2019–October 2022
- Assistant Professor, School of Electronics, Devi Ahilya University, Indore Nov 2016 – Oct 2019 (Stage 3), Nov 2011 – Oct 2016 (Stage 2), Nov 2007 – Oct 2011 (Stage 1)
- Lecturer (Contract), School of Electronics, Devi Ahilya University, Indore Aug 2006 – Oct 2007
- Lecturer SRPA Adarsh Bhartiya College, Pathankot (Aug 2000 – Feb 2001 )
- Lecturer Government Engineering College, Jabalpur (Aug 2001 – Oct 2001 )

## Research & Project Experience

1. Compact Modeling and Simulation of AlScN/GaN Heterostructure Based Devices for High Voltage Applications. Research Project under ANRF-PAIR Scheme in collaboration with IIT Indore. Amount Sanctioned: ~Rs 35 Lakhs, May 2025
3. Seed money for Project on 'Analytical Modelling of AlScN based High Electron Mobility Transistors (HEMTs) for High power and High Frequency Applications', granted by Devi Ahilya University. Amount Sanctioned: Rs 03 Lakhs, May 2024
4. Coordinator, Infrastructure grant for setting up Microelectronics & VLSI Design Lab (MVDL) Sponsored by: Dept. of Electronics & IT (DEITy), Amount: Rs 10 lacs for 04 years (2016-20)
5. Design and Analysis of Low Power Capacitorless DRAM using Gallium /Nitride (GaN) FETs, Devi Ahilya Vishwavidyalaya for seed grant vide letter no. Dev-III/Seed Money/Proposal/ 2015/507, 2015-17, Grant-Rs 60,000/-
6. Secured 10 Ph.D. fellowships under prestigious Visvesvaraya PhD Scheme for Electronics and IT for candidates to pursue part time Ph.D. Proposal accepted by Department of Electronics and Information Technology (DEITy), June 2019, 05 years, Grant- Rs. 10 lakhs
7. M.Tech. Major Project: 'Design and Analysis of Capacitorless DRAM using GaN SH-FETs', with Dr. Raj Kamal, School of Electronics, Devi Ahilya University, Indore (Supervisor) and Dr. S. K. Vishvakarma, IIT Indore (Co-supervisor)

8. Project 'Analytical modeling of AlGaIn/GaN HEMT' as UGC-Junior Research Fellow under Prof. R. S. Gupta, Semiconductor Device Research Lab, Dept. of Electronic Science, University of Delhi (South Campus), Delhi, Oct 2001 -Feb 2003.
9. Project 'PC Based Data Acquisition System', Project Trainee at Raja Ramanna Centre for Advanced Tech. (D.A.E.), Indore (MP), Jan - June 2000.
10. M.Sc. Minor project: 'Fabrication of Amplitude Modulation & Freq. Modulation Transmitter', Banasthali Vidyapith, Rajasthan, India, 1999
11. B.Sc. -Minor project: 'To Design a RC Coupled Amplifier Circuit' at Ramjas College, University of Delhi, Delhi, 1998.

### Teaching Experience

M.Tech. (Embedded Systems) since July 2007, M.Tech. (Spatial Information Tech.) Since Jan 2008, M.Tech. (Mobile Computing Tech.) since July 2008

M.Sc. Electronics & M. Sc. Electronics & Communication since Jan 2006, in School of Electronics, Devi Ahilya University, Indore

B.E. (Computer Science) July-Dec 2008 in IET, DAVV, Indore

B.E. (IT) Aug- Oct 2001 in Govt. Eng College, Jabalpur

B.Sc. (Electronics) Aug 2000-Feb 2001 in SRPA Adarsh Bhartiya College, Pathankot

B.Sc. (Electronics, Physics, Mathematics) Nov 2020-Dec 2022

B.Sc. (Electronics, Computer Science, Mathematics) Nov 2021- present

### Subjects Taught

Advanced Embedded Microcontrollers – ARM uCs, Embedded Microcontrollers – 8051uC, VLSI Design Methodologies, Electromagnetic Theory, Programming in C, Remote Sensing, Analog Electronics, Basic Electronics, Network Theory, Microwave Engineering, Internet of Things.

### List of Publications

#### Patents

1. Applicants: R. Karothia, **Manju K. Chattopadhyay**  
Title: Integrated Portable Agricultural Monitoring System with Smart Sensor Gateway and Digital Twin for Smart Farming, Application no. 202421040118 A, India  
Granted on 12 Feb 2025, Published on 28 June 2024

#### Refereed International Journals

1. Mobility-compatible cache controlled cluster networking protocol, P. Sunhare, **Manju K. Chattopadhyay**, International Journal of Communication Systems, John Wiley & Sons Ltd, 25 Jan 2025, <https://doi.org/10.1002/dac.5960> [Scopus indexed] Impact Factor: 1.8
2. Developing a Digital Twin Framework and Smart Sensors Gateway for Monitoring Soil and Environmental Conditions to Detect Anomalies and to Predict Crop Health, R Karothia, **Manju K Chattopadhyay**, [Scopus indexed] SN Computer Science, Communicated, 2025
3. ConvoluLeaf: Enhancing Soybean Leaf Disease Multi-Class Classification Model using Convolutional Neural Network, R Karothia, **Manju K Chattopadhyay**, SN Computer Science , [Scopus indexed] Communicated, 2025

4. Optimizing AlInGaN/GaN HEMTs for pH Sensing: A Temperature-Dependent Modeling Approach, **Manju K Chattopadhyay** et al., Wiley's *Physica Status Solidi A: Applications and Materials Science*, [Scopus indexed] Communicated, 2025, Impact Factor: 1.9
5. P. Sunhare, **Manju K. Chattopadhyay** , Mobility-compatible cache controlled cluster networking protocol. *Int J Commun Syst.* 2024; e5960. doi:10.1002/dac.5960 Accepted, available online doi:10.1002/dac.5960 Scopus indexed IF: 1.7
6. R. Karothia and **Manju K. Chattopadhyay** , Review of Various Technologies Involved in Precision Farming Automation, Book chapter in book 'Precision Agriculture for Sustainability- Use of Smart Sensors, Actuators, and Decision Support Systems, Apple Academic Press, CRC Press (Taylor & Francis Group), USA', 2024, 01 Ed., Pages: 18, eBook ISBN9781003435228
7. N. Pande, K. T. Upadhyay and **Manju K. Chattopadhyay** , Schottky Barrier Dependent 2DEG model for GaN/AlInGaN/AlN/GaN Heterostructure, *NanoWorld Journal* 10(S1): S212-S217, March 19, 2024 doi: 10.17756/nwj.2024-s1-038. Scopus indexed
8. P. Sunhare, **Manju K. Chattopadhyay** , Cache Controlled Cluster Networking Protocol, *Elsevier's International Journal of Intelligent Networks*, Vol. 4, 2023, pp 182-192, ISSN 2666-6030, <https://doi.org/10.1016/j.ijin.2023.07.003>. Scopus indexed
9. P. Sunhare, **Manju K. Chattopadhyay** , Relative Evaluation of Mobility Assistance in Wireless Sensor Network. In: Das, S., Saha, S., Coello, C.A.C., Rathore, H., Bansal, J.C. (eds) *Advances in Data-Driven Computing and Intelligent Systems. ADCIS 2023. Lecture Notes in Networks and Systems*, vol 890. Springer, Singapore. [https://doi.org/10.1007/978-981-99-9531-8\\_7](https://doi.org/10.1007/978-981-99-9531-8_7) Scopus indexed
10. V. Sharma, **Manju K. Chattopadhyay** , Implementation of Novel 2x2 Vedic Multiplier using QCA Technology, *IOP Journal of Physics: Conf. Series*, 2603012045, 2023, DOI: 10.1088/1742-6596/2603/1/012045 1742-6596. Scopus indexed
11. K. T. Upadhyay, N. Pande, **Manju K. Chattopadhyay** , Modelling of AlInGaN/GaN HEMT with temperature dependence for pH sensing applications" *Physica Status Solidi A: Applications and Materials Science*, Communicated. Scopus indexed
12. R. Karothia, **Manju K. Chattopadhyay** , Internet of thing (IoT) enabled smart sensor node (SSN) to measure the soil and environmental parameters for smart farming. *CSIT* 12, 119–135 (2024). <https://doi.org/10.1007/s40012-024-00402-8>
13. Priyank Sunhare, **Manju K. Chattopadhyay** , Cache Controlled Cluster Networking Protocol, *Elsevier's International Journal of Intelligent Networks*, Volume 4, 2023, Pages 182-192, ISSN 2666-6030, <https://doi.org/10.1016/j.ijin.2023.07.003>. Scopus indexed
14. K. T. Upadhyay, **Manju K. Chattopadhyay** , Sensor applications based on AlGaIn/GaN heterostructures, *Elsevier's Materials Science and Engineering: B*, Vol. 263, 2021, 114849, <https://doi.org/10.1016/j.mseb.2020.114849>, [Scopus Indexed, IF: 4.051 (2020)]
15. K. T. Upadhyay, **Manju K. Chattopadhyay** , A new analytical model for sensing response of AlGaIn/GaN based pH sensor, *Springer Journal of Computational Electronics*, 20, 1400–1410 (2021)<https://doi.org/10.1007/s10825-021-01687-7>, [Scopus Indexed, IF: 1.807 (2020)]
16. K. T. Upadhyay, **Manju K. Chattopadhyay** , A composition dependent unified analytical model for quaternary InAlGaIn/GaN HEMTs for pH sensing, *Springer Journal of Electronic Materials*, 50, 3392–3405 (2021). <https://doi.org/10.1007/s11664-021-08836-5>, [Scopus Indexed], IF: 1.938 (2020)]
17. **Manju K. Chattopadhyay** , K. T. Upadhyay, Unified Analytical Model for Charge Density and Plasmonic Waves in the Quaternary AlInGaIn/AlN/GaN Heterostructures. In: Biswas, A., Saxena, R., De, D. (eds) *Microelectronics, Circuits and Systems. Lecture Notes in Electrical Engineering*, vol 755. Springer, Singapore, (2021). [https://doi.org/10.1007/978-981-16-1570-2\\_16](https://doi.org/10.1007/978-981-16-1570-2_16) Scopus indexed
18. K. T. Upadhyay, **Manju K. Chattopadhyay** , Al Composition and AlxInyGazN Layer Thickness Dependent New Analytical Model for I-V Characteristics of AlxInyGazN /GaN HEMTs, *Elsevier's Materials Today*:

Proceedings, Volume 19, Part 2, 2019, pp. 205-208, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2019.06.700>. Scopus indexed

19. R R Chowdhary, **Manju K. Chattopadhyay**, Raj Kamal, IoT based battery temperature and health monitoring system using electric vehicle like mobile robots, Journal of Advancements in Robotics (eISSN: 2455-1872), 2019.
20. P. Sunhare, R R Chowdhary, **Manju K. Chattopadhyay**, 'Internet of Things and Data Mining: An Applications Oriented Survey', Elsevier's JKSU - Computer and Information Sciences, Volume 34, Issue 6, Part B, 2022, Pages 3569-3590, ISSN 1319-1578, <https://doi.org/10.1016/j.jksuci.2020.07.002>. Scopus indexed
21. R R Chowdhary, **Manju K. Chattopadhyay**, Raj Kamal, 'Comparative study of orchestrated, centralized and decentralised approaches for orchestrator based task allocation and collision avoidance using network controlled robots', Elsevier's JKSU - Computer and Information Sciences, 2018. Scopus indexed
22. P. K. Mishra, **Manju K. Chattopadhyay**, 'Design of Efficient Mirror Adder in Quantum- Dot Cellular Automata', IOP Conf. Ser.: Mater. Sci. Eng. 331, 012010, 2018. Scopus indexed
23. A. Thakur, Manju K Chattopadhyay, 'Design and Implementation of Viterbi Decoder Using VHDL', IOP Conf. Ser.: Mater. Sci. Eng. 331, 012009, 2018. Scopus indexed
24. Rameez Raja Chowdhary, **Manju K. Chattopadhyay**, Raj Kamal, 'Orchestration of Robotic Platform and Implementation of Adaptive Self-Learning Neuro-Fuzzy Controller'. Journal of Electronic Design Technology, 8(3): 17–29p, 2017
25. A Priydarshi, Manju K Chattopadhyay, 'Low-Power and High-Speed Technique for logic Gates in 20nm Double-Gate FinFET Technology', IOP Publishing: Journal of Physics: Conference Series, 755, 012055, 2016. Scopus indexed
26. **Manju K. Chattopadhyay**, Raj Kamal, 'Emerging Technologies in Random Access Memories', Int. J. of Advances in Engineering Science and Technology, 2(1), pp.84-88, 2013.
27. **Manju K. Chattopadhyay**, S. Tokekar 'Thermal Model for DC Characteristics of AlGaIn/GaN HEMTs Including Self-heating Effect and Non-linear Polarization' Elsevier's Microelectronics Journal, Vol. 39, Issue 10, October 2008, Pages 1181-1188, 2008. Scopus indexed, I.F: 1.9
28. **Manju K. Chattopadhyay**, S. Tokekar 'Analytical Model for Transconductance of microwave Al<sub>m</sub>Ga<sub>1-m</sub>N/GaN HEMTs Including Non-Linear Macroscopic Polarization and Parasitic MESFET Conduction'. Microwave and Optical Technology Letters, Vol. 49, pages 382-389, 2007. Scopus indexed, I.F: 1.0
29. **Manju K. Chattopadhyay**, S. Tokekar 'Temperature and Polarization Dependent Polynomial Based Non-Linear Analytical Model for Gate Capacitance of Al<sub>m</sub>Ga<sub>1-m</sub>N/GaN MODFET'. Elsevier's Solid State Electronics, Vol 50, pages 220-227, 2006. Scopus indexed, I.F: 1.9
30. **Manju Korwal**, S. Haldar, M. Gupta, R. S. Gupta. 'Parasitic Resistance and Polarization Dependent Polynomial Based Non-Linear Analytical Charge-Control Model for AlGaIn/GaN MODFET for Microwave Frequency Applications'. Microwave and Optical Technology Letters, Vol. 38, pages 371-78, 2003. Scopus indexed, I.F: 1.0

#### Conference/ Seminar

1. COI-LEACH: Cache Oriented Improved LEACH Protocol, P Sunhare, **Manju K Chattopadhyay**, International Conference on VLSI, Signal Processing, Power Electronics, IoT, Communication and Embedded Systems, 06 Feb 2025
2. Analytical Model for Plasmonic Waves and Charge Density in Ternary AlScN/AlN/GaN heterostructures, N Pande, KT Upadhyay, **Manju K Chattopadhyay**, Asia-Pacific Conference on Condensed Matter Physics 2024
3. Priyank Sunhare, **Manju K. Chattopadhyay**, Relative Evaluation of Mobility Assistance in Wireless Sensor Network, 2nd International Conference on Advances in Data-driven Computing and Intelligent Systems, 2023.

4. N. Pande, K. T. Upadhyay and **Manju K. Chattopadhyay**, Schottky Barrier Dependent 2DEG model for GaN/AlInGaN/AlN/GaN Heterostructure, 2023 Global Conference on Recent Advancements in Sustainable Materials (GC-RASM 2023) | Namakkal, India, 27 - 28, July 2023.
5. Vijay Soni, R Karothia, **Manju K. Chattopadhyay**, Implementation of LPG Gas Monitoring, Control and Alert System Using ARM Microcontroller, International Conference on Innovation and Challenges in Engineering Sciences (ICICES) 2023, IET, Devi Ahilya University, Indore. 17th – 18th March, 2023
6. Virat Sharma and **Manju K. Chattopadhyay**, Implementation of Novel 2x2 Vedic Multiplier using QCA Technology, National Conference on Physics and Chemistry of Materials (NCPCM 2023), March 16-18, 2023, Indore.
7. N. Pande and **Manju K. Chattopadhyay**, presented a poster in the conclave on 'Fabless and Fab Semiconductor Ecosystem' under MPVS-2021 jointly organized by IIT Indore, MPCST and Vigyan Bharti, 22-25 Dec 2021
8. R. R. Chowdhary and **Manju K. Chattopadhyay**, Orchestration of Automated Guided Mobile Robots for transportation Task in a Warehouse like Environment, Emerging Trends in Industry 4.0 (ETI 4.0), IEEE Xplore, Dec 2021 10.1109/ETI4.051663.2021.9619354
9. R. R. Chowdhary, **Manju K. Chattopadhyay**, Orchestration of Automated Guided Mobile Robots for Transportation Task in a Warehouse like Environment, IEEE International Conference on Emerging Trends in Industry 4.0 (ETI 4.0), OP Jindal University, Raigarh, Chhattisgarh, India, 19 - 21, May 2021.
10. R. Karothia, **Manju K. Chattopadhyay**, Convolutional Neural Networks Based Vigorous Deep Learning Model, IEEE-EDS Delhi Chapter supported MICRO-2020: 7th International Conference on Microelectronics, Circuits and Systems, Organized by Delhi Technological University, Delhi, India, 25-26 July 2020.
11. Rameez Raja Chowdhary, **Manju K. Chattopadhyay**, Raj Kamal, IoT based State of Charge and temperature monitoring system for mobile robots" 8th "International Conference on Innovations in Electronics & Communication Engineering" (ICIECE-2019), Hyderabad, 02-03 Aug, 2019.
12. Rameez Raja Chowdhary, **Manju K. Chattopadhyay**, Raj Kamal, Orchestrator Controlled Navigation of Mobile Robots in a Static Environment, 8th "International Conference on Innovations in Electronics & Communication Engineering" (ICIECE-2019), Hyderabad, 02-03 Aug, 2019.
13. D. Dhote and **Manju K. Chattopadhyay**, An Approach for Real-Time Indoor Localization Based On Visible Light Communication System, 8th "International Conference on Innovations in Electronics & Communication Engineering" (ICIECE-2019), Hyderabad, 02-03 Aug, 2019.
14. P. Goutam, Rameez Raja Chowdhary, **Manju K. Chattopadhyay**, 8th "International Conference on Innovations in Electronics & Communication Engineering" (ICIECE-2019), Hyderabad, 02-03 Aug, 2019.
15. T. Khan and **Manju K. Chattopadhyay**, "Smart health monitoring system," 2017 IEEE Int. Conf. on Information, Communication, Instrumentation and Control (ICICIC), Indore, pp. 1-6, 2017
16. G. Parmar, S. Lakhani and M. K. Chattopadhyay, "An IoT based low cost air pollution monitoring system," 2017 IEEE Int. Conf. on Recent Innovations in Signal processing and Embedded Systems (RISE), Bhopal, India, pp. 524-528, 2017.
17. R. Bhadoria, **Manju K. Chattopadhyay** P. W. Dandekar, Low Cost IoT for Lab Environment, IEEE Symposium on Colossal Data Analysis and Networking (CDAN'16), Medi Caps Group of Institutions, Indore, 18-19 March, 2016. Available on IEEE Xplore.
18. **Manju K. Chattopadhyay** R. Barche, TOQ Based Intelligent Monitoring and Control System Using ARM Microcontrollers, IETE Int. Conf. on Robotics and Automation (ICRA-16), Trivandrum, 19-21 Feb 2016.
19. R.R Chowdhary, **Manju K. Chattopadhyay** Raj Kamal, 'Study of an Orchestrator for Centralized and Distributed Networked Robotic Systems', International Conference on Computing Paradigms, Don Bosco College, Guezou Nagar, India, 24-25 July 2015

20. A. Priyadarshi, **Manju K. Chattopadhyay** 'Performance Analysis of Encoder in Different Logic Techniques for High-Speed & Low-Power Application', Int. Conf. on Innovative Trends in Engg. Science & Management -2015 (ITESM), Indore, 13-14 March 2015. (Best Student Paper Award)
21. A. Priyadarshi, **Manju K. Chattopadhyay** 'Low Power And Noise Margin Study of Decoder in Different Logic Techniques Using Tanner EDA Tools', Nat. Conf. on "Striving & Thriving Towards Diffusion of Student-driven Research in Sc. & Tech. for Inspired Learning", Maharaja Agrasen College, University of Delhi, N. Delhi, 16 - 17 October 2014 .
22. **Manju K. Chattopadhyay** D. Sharma, S. K. Vishvakarma, Raj Kamal, 'Design of Capacitorless Memory Cell Based on GaN/AlGa<sub>N</sub>/Ga<sub>N</sub> heterostructures', Int. Conf. on Emerging Trends in Instrumentation, Communication, Electrical & Electronics engineering (ICE-ICEE), Indore, 23-25 Jan, 2014
23. **Manju K. Chattopadhyay** 'Thermal Model for AlGa<sub>N</sub>/Ga<sub>N</sub> HEMTs Including Self-Heating Effect and Non-linear Polarization' IEEE Int. Conf. Recent Advances in Microwave Theory and Applications (Microwave – 2008), Nov 21-24, 2008, Jaipur. Available on IEEE Xplore.
24. **Manju K. Chattopadhyay** S. Tokekar, 'Analytical Model for the Gate Capacitance of Al<sub>m</sub>Ga<sub>1-m</sub>N/Ga<sub>N</sub> HEMTs Including Non-linear Polarization'. Int. Conf. Computers and Devices for Communication (CODEC-06) Dec 18 - 20, 2006, Kolkata.

### Books

1. Smart Controlling of Home Appliances using CortexM3 Based Giant Gecko, Lambert Academic Publishing, and (July 5, 2017) ISBN -13: 9783330347137.
2. Intelligent Automation and Security System Using LabView, Lambert Academic Publishing , (21 June 2016), ISBN-13: 978-3659893438
3. Design of Capacitorless Memory Cell Based on Ga<sub>N</sub> heterostructures, Publisher: Lambert Academic Publishing (20 Mar, 2014) ISBN-13: 978-3659105562
4. Device Modeling Of AlGa<sub>N</sub>/Ga<sub>N</sub> High Electron Mobility Transistors (HEMTs): - An Analytical Approach. Publisher: Lambert Academic Publishing (October 29, 2010), ISBN-13: 978-3838396293

### Book Chapter

1. R. Karothia and **Manju K. Chattopadhyay** , Review of Various Technologies Involved in Precision Farming Automation, Book chapter in book 'Precision Agriculture for Sustainability- Use of Smart Sensors, Actuators, and Decision Support Systems, Apple Academic Press, CRC Press (Taylor & Francis Group), USA', 2024, 01 Ed., Pages: 18, eBook ISBN9781003435228

### Copyright

1. "Krishiview: Mobile Application for Android", Copyright registered, R. Karothia and **Manju K. Chattopadhyay** Diary Number - 1067/2023-CO/SW, granted by Copyright Office, Government of India, 2023, National.
2. "Mobile App for Smart Health Monitoring System", Copyright registered, T. Khan and **Manju K. Chattopadhyay** , Diary number – 5365/2018-CO/SW, granted by Copyright Office, Government of India, 2018 Copyright Office, Government of India. National

### Award, Honours and Special Achievements

1. First Prize with Certificate of Appreciation for Research Contribution in the years 2022 and 2023 among Associate Professors in the Faculty of Engineering Science, 26 January 2024
2. Senior IEEE membership (Number: 90419121)
3. Concept Note "Environment and Soil Monitoring of Agricultural Farm using IoT Enabled Smart Device" selected among top five in AgriEnlcs Grand Challenge -2022 by CDAC Kolkata

4. Best paper Award, 2022 International Conference on Recent Advances in Engineering Materials (ICRAEM -2022)
5. Certificate of Appreciation for 'Fostering the ecosystem bridging Government, Academia and Industry' by AICTE and Texas Instrumentation, 2021
6. Certificate of Appreciation for research and academic Contributions in the year 2018 among University Assistant Professors, Devi Ahilya University, January 2019
7. Gold Medal, M.Sc. (Electronics), Banasthali Vidyapith, Rajasthan, India, 2000
8. UGC JRF-NET, 2000
9. Merit Scholarship for standing first in all the M.Sc. 1<sup>st</sup> year courses (Electronics/Maths/CS) of AIM & ACT Dept., Banasthali Vidyapith, 1999
10. Certificate of Appreciation by Head of the department for dedicated work, 2010.
11. Reviewer:
  - i. Solid State Electronics (Elsevier)
  - ii. IEEE Transactions on Device and Materials Reliability
  - iii. International Journal of Numerical Modeling: Electronic Networks, Devices and Fields (Wiley Electrical Engineering)
  - iv. Iranian Journal of Electrical and Computer Engineering (IJECE)
  - v. Frontiers of Information Technology & Electronic Engineering
  - vi. Springer Journal of Supercomputing
  - vii. Elsevier Journal of King Saud University- Computer and Information Sciences.
  - viii. Journal of The Electrochemical Society (JES)
  - ix. IEEE Access
  - x. IEEE International Conference on Computational Techniques in Information and Communication Technologies (ICCTICT), 11-13 March 2016.
  - xi. International Conference on "Advances in Computing, Control and Communication Technology" (IAC3T-2016), Mar 25-27, 2016

### Other Information

- Coordinator, Doctoral Entrance Test-2024, 2025, Devi Ahilya University
- Officiating Head of the Department, Sep 2023, Dec 2024, June 2025
- Member, Organizing Committee, Doctoral Entrance Test-2023, 2022, Devi Ahilya University
- 2. Nodal Officer, Visvesvaraya PhD Scheme for Electronics and IT, Department of Electronics and Information Technology (DEITy) Phase –II since 2023.
  - a. Grants received under Visvesvaraya Ph.D. Scheme by Ministry of Electronics & Information Technology (MeitY) 2025: (i) One Post doctoral Fellowship with total outlay of Rs 16,10,716.00 for 01 year (ii) 02 Full time PhD Fellowships and research grants with total outlay of Rs 72,61,600.00 for 05 years 2025-30 (iii) 01 Part time PhD fellowship and research grants worth Rs 3 Lakhs. 2025-30
  - b. Grants received under Visvesvaraya Ph.D. Scheme by Ministry of Electronics & Information Technology (MeitY) 2025: 02 Full time PhD Fellowships and research grants with total outlay of Rs 72,61,600.00 for 05 years 2024-2029
- University Coordinator, Visvesvaraya PhD Scheme for Electronics and IT, Department of Electronics and Information Technology (DEITy). Funds handled ~ Rs. 73 Lakhs, 2015-21
- Member, Board of Studies, Faculty of Engineering Sciences, Subject : Electronics, 2022-23, Devi Ahilya University
- Member, Organizing Committee, Doctoral Entrance Test-2022, Devi Ahilya University

- University Coordinator, Visvesvaraya PhD Scheme for Electronics and IT, Department of Electronics and Information Technology (DEITY). Funds handled ~ Rs. 63 Lakhs, 2015-2020
- Member, IQAC Task Group for CR7- Energy and Environment Management, 2021-24
- Member, Faculty of Engineering Science, Devi Ahilya University, 2022
- Member, Board of Studies, Electronic Science Department, Holkar College, Indore.
- Member, Departmental Admission Committee, Anti Ragging Committee, Girls grievance committee
- Coordinator, DQAC, School of Electronics.
- Member, Research Advisory Committee, Subject: Electronics, Engineering Sciences, Devi Ahilya University (2017)
- Gold Medal Distribution Committee, Convocation-2018, Devi Ahilya University
- Departmental Coordinator for Plagiarism Check of M.Tech. Thesis using Urkund software
- Member, Departmental Admission Committee since 2007.
- Member, Non-CET Admission Committee, 2018
- Member, Committee for Criteria – V, NAAC Preparation, DAVV, 2018
- Course Coordinator & Mentor: M.Tech. (Embedded Systems) Since 2013
- Course Coordinator: B.Sc.(Electronics, Computer Science, Mathematics) since 2020-23 batch
- Course Coordinator: B.Sc.(Electronics, Physics, Mathematics) since 2020-23 batch
- Recommended by the University as Subject Expert to Electronics Department of Government Holkar Science College

#### Ph.D. Guidance

1. Analytical Modeling and Simulation of FETS Based on III-V Compound Semiconductors, Neha Pande, Ph.D. Degree awarded, 2025
2. Cloud Assisted Algorithm Design for Information Centric Services over Internet of things, Priyank Sunhare, Ph.D. Degree awarded, 2024
3. Design and Analysis of Internet of Things (IoT) Based Systems for Precision Agriculture, Rajeev Karothia, Ph.D. Thesis Submitted, 2024
4. Analytical Modeling and Simulation of Gallium Nitride Devices for Sensors Applications, Kavita Upadhyay, Ph.D. Degree awarded, 2023
5. Dynamic Orchestration of Networked Robotic Systems, Rameez Raja Chowdhary (as Co-Supervisor), Ph.D. Degree awarded, 2019
6. Optimizing Gallium Nitride Heterostructures for Improved Performance in High-Frequency Applications- Design and Parametric Analysis, Ashish Mangain, PhD Fellow under Visvesvaraya PhD Scheme, since Sep 2024 Pursuing Ph.D.
7. Simulation and modeling of ScAlN based heterostructures, Ritika Nair, Pursuing Ph.D., 2024

#### M. Tech. Major Project Guidance: 23

1. Internet of Things (IoT) based Hydroponic Agriculture, Shiwani Mourya, Major Project, M.Tech. (ES) 2024-25.
2. Intelligent Indoor Air Quality Monitoring System, Prabhanshu Bangar, Major Project, M.Tech. (ES) 2020-22.
3. AI based smart Pole systems, Shubham Chakravarty, Major Project, M. Tech. (ES) 2019-21
4. AI Based Air Quality Monitoring Device, Rohit Borkar, Major Project, M.Tech. (ES) 2019-21
5. Indoor Positioning Based on Visible Light Communication using Embedded System Approach, Dharmendra Dhote, Major Project - M.Tech (Embedded Systems) 2017-18.

6. Efficient Digital Implementation of Convolution Encoder & Viterbi Decoder using VHDL, Akash Thakur, Major Project - M.Tech (Embedded Systems) 2016-17.
7. Logic Device Implementation using Quantum Dot Cellular Automata, Prashant Kumar Mishra, Major Project - M.Tech (Embedded Systems) 2016-17.
8. Framework for IoT based Pollution Monitoring System, Gagan Parmar, Major Project - M.Tech (Embedded Systems) 2016-17.
9. Smart Health Monitoring System Using Arduino Uno, Tarannum Khan, Major Project - M.Tech (Embedded Systems) 2016-17.
10. Nirmal. K.Thomas, "Physical Simulation and Modeling of GaN HEMT's" , Major Project - M. Tech. (VLSI), Department of Electronics and Communication, Amity School of Engineering and Technology, Amity University Uttar Pradesh Noida, 2013.
11. Touch screen based wireless data transmission through ARM Processor, Arpit Gupta, Major Project - M.Tech (Embedded Systems) 2014-15.
12. Speaker recognition using digital signal processor starter kit (TMS320C6416), Vineeta Choukikar, Major Project - M.Tech (Embedded Systems) 2014-15.
13. Advanced patient monitoring system using ARM7, Abhishek Sharma, Major Project - M.Tech (Embedded Systems) 2014-15.
14. ARM Microcontroller based Automatic Control System for Agriculture, Umang Agarwal, Major Project - M.Tech (Embedded Systems) 2014-15.
15. Modeling, Analysis and Optimization of Multicast Device-to-Device Transmissions, Rama Pandole, Major Project - M.Tech (Mobile Computing Technology) 2014-15.
16. RF Technology Based Health Monitoring System, Pallavi Chandelkar, Major Project - M.Tech (Embedded Systems) 2015-16.
17. Smart Health Monitoring System Using Arduino Uno, Tushar Jain, Major Project - M.Tech (Embedded Systems) 2015-16.
18. An RFID Based Robot Navigation System Using ARM Controller, Lalit Kumar Mishra, Major Project - M.Tech (Embedded Systems) 2013-14.
19. Automatic Accident Detection and Driving Alert System, Ravi Parmar, Major Project - M.Tech (Mobile Computing Technology) 2015-16.
20. Smart Irrigation Control System for Efficient Use of Resources Using an Android App, Rajesh Damor, Major Project - M.Tech (Embedded Systems) 2015-16.
21. Designing Framework for IoT Based Application, Rahul Bhadoria, Major Project - M.Tech (Embedded Systems) 2015-16 (Co-Supervisor with Prof. P.W. Dandekar)
22. An Intelligent Monitoring and Control System Based on ARM Controller, Rewa Shankar, Major Project - M.Tech (Embedded Systems) 2013-14.
23. Design and Implementation of ARM uC Based Remote Home Security System using GSM Technology, Dharamraj Kanade, Major Project - M.Tech (Embedded Systems) 2013-14.

#### **M.Sc. Major Project Guidance: 25**

1. Development of Digital Thermometer using ARM Microcontroller and Mbed Programming, Chetali Palewar, Major Project, M.Sc. (Electronics) 2019-21 (Completed)
2. Digital Thermostat using ARM Microcontroller, Vibhanshu Lodhi, Major Project, M.Sc. (Electronics) 2019-21 (Completed)
3. Analytical model for charge density and Plasmon modes in doped and undoped gated InAlGaN/AlN/GaN HEMTs, Vikas Kumar and Vivekanand, Major Project - M.Sc. (Electronics), 2017
4. 'Smart Controlling of Home Appliances using ARM CortexM3 based Giant Gecko Kit, Himali Mundra and Merlyn Sylvester, Major Project - M.Sc. (Electronics & Communication) 2017.

5. Logic Device Implementation using Quantum Dot Cellular Automata, Kesari Nandan Pandey, Major Project - M.Sc. (Electronics), 2016
6. Comparative Study of Different Ten Transistor Full Adders, Ashish Mamgain, Jitendra Kumar, Neha Pandey, Major Project - M.Sc. (Electronics & Communication) 2016.
7. Simple as possible (SAP1) FPGA Design Using VHDL, Chhaya Patidar, Ajay Patel, Gaurav Kumar, Major Project - M.Sc. (Electronics & Communication) 2015.
8. Intelligent Automation and Security System using LABVIEW, Sandeep Solanki, Iti Sarin, Neha Maheshwari, Major Project - M.Sc. (Electronics & Communication) 2015.
9. Evaluation of Different Logic Techniques, Achintya Priyadarshi, Major Project - M.Sc. (Electronics & Communication) 2014.
10. Comparative Study of Different Logic Techniques, Dilip Kumar, Major Project - M.Sc. (Electronics & Communication) 2014.
11. Smart Home Watcher, Gyan Datt Pathak, Madan Kumar, Mukesh Asthana, Major Project - M.Sc. (Electronics & Communication) 2014.
12. Simulation of Hamming Code based Error –Detector using Tanner Tools' by Pawan Pareta & Rajiv Goswami, M.Sc.(Electronics & Communication) Major Project, 2012
13. Error Detection Code Processor (Hamming Code using VHDL), Banmali Bhandari and Hritika Sharma, M.Sc.(Electronics & Communication) Major Project, 2011
14. Parity Bit Generator (Even) using Tanner Tools, Swarna B. Gupta, M.Sc.(Electronics & Communication) Major Project, 2011

#### **B.Sc. Major Project Guided: 12 students**

1. "Vibration Analysis For Anomaly Detection in Small Machines", Gaurav Saxena, Major Project, B.Sc. (Electronics, Computer Science, Mathematics) Batch 2022-25
2. "Multimodel Sentiment Analysis for Helpdesk Services Using Speech and Facial Recognition", Kratika Sharma, Prince Tiwari, Major Project, B.Sc. (Electronics, Computer Science, Mathematics) Batch 2022-25
3. "Fusion: Your Virtual Friend", Ayush Kourav and Siddharth Yadav, Major Project, B.Sc. (Electronics, Computer Science, Mathematics) Batch 2022-25
4. "Design and Implementation of Various QCA Technology Circuits", Virat Sharma, Major Project, B.Sc. (Electronics, Physics, Mathematics) Batch 2020-23
5. 'Smart Support System for Crop Disease Detection', Mohit Payasi and Sachin Shukla, Major Project, B.Sc. (Electronics, Computer Science, Mathematics) Batch 2020-23
6. 'Image Processing Using MathCAD', Ajay Kumar Vaishya, Major Project, B.Sc. (Electronics, Physics, Mathematics) Batch 2020-23
7. 'Envirosense', Suyam Chanderiya, Ambika Rathore, Ishita Awasthi, Major Project, B.Sc. (Electronics, Computer Science, Mathematics) Batch 2020-23

#### **Expert Lectures Delivered**

1. Expert lecture delivered on Sensors based on Gallium Nitride in AICTE ATAL FDP on the title "Design and simulation of next-generation Semiconductor Devices and its Applications for Bio-sensing", 01 January 2024
2. Session Coordinator, Thematic Session 3: Research and Innovation Ecosystem, UGC Zonal conference on Implementation of NEP 2020, 02 Dec 2024.
3. Conducted Workshop on "Introduction to Arduino" at Department of Electronics, PMB Gujarati Science College, Indore (M.P.) on 24 April 2023
4. Session Chair, National Conference on the Physics and Chemistry of Materials, Department of Physics & Electronics at Govt. Holkar Science College, Indore, March 16, 2023

5. Expert Lecture on *Gallium Nitride Devices for Sensor Applications*, at AICTE sponsored STTP on 'Design and Development of System on Chip using Low Power VLSI' organized by SGSITS, Indore. 26 November 2019
6. Delivered expert Lecture on *Internet of Things*, organized by Holkar Science College, Indore. 26 November 2019
7. Expert Lecture on *Communication Systems*, Holkar Science College, 29 March 2019
8. Expert Lecture on *Microcontrollers*, Holkar Science College, 10 Feb 2018
9. *Hands on practice session on 8051 Programming*, Prestige Institute of Engineering Management and Research, Indore, 13 April 2018.
10. *Overview of School of Electronics* in Brain Storming Session on Industry –Institute Collaboration, UGC-DAE –CSR, Indore, 06 Oct 2017
11. *Embedded Systems*, EC Department, Acropolis Technical Campus, 22 Sep 2017

#### Workshops/ FDPs / STTP/ Expert Lectures Organized

1. Organized a Workshop on Introduction to Latex, Speakers: Mr Anish Makhija and Ms Kritika Dua, School of Electronics, Devi Ahilya University, 31 Jul 2024.
2. Coordinated the Student participation in the Launching Ceremony of the VLSI Society of India (VSI) Madhya Pradesh Chapter organized at IIT Indore, 19 March 2023.
3. Organized an Expert lecture on 17 Sep 2022 by Professor K. N. Guruprasad on the occasion of World Ozone Day.
4. Student Coordinator, 10 hours session of the program 'Kona Shiksha', Conducted by National Institute of Securities Markets (NISM) under the aegis of CSR program of Kotak Securities Limited, 25-31 Dec 2021
5. Local Coordinator, Summer course on VLSI Chip Design - Hands on using open source EDA at School of Electronics, Devi Ahilya University in collaboration with E& ICT Academy, IIIT DM, Jabalpur, 08 July - 12 Jul 2019
6. Coordinator, 3- Days Training on Cadence Custom IC Design flow, School of Electronics, 08-10 Jan 2018
7. Coordinator, 5- Days Training on Cadence Custom IC Design flow (Analog Flow) and ASIC Design flow (Digital flow), School of Electronics, 08-12 Jan 2019
8. Workshop Coordinator of a six days Workshop on ARM Microcontroller programming and Interfacing – (WAMPI 2015) during 29 June to 04 July 2015 for Teachers of Engineering colleges and M.Tech/M.E. Students. 33 registered participants from colleges of Vidisha, Bhopal, Ujjain, and IIT Indore took part.
9. Workshop Coordinator of a one day Workshop on Intel Galileo boards and Grove Sensor kit, 06 April 2015.
10. Convener, IEEE and UGC sponsored "Short Term Training Programme in Embedded System Programming (SESP - 2012)", School of Electronics, DAVV Indore, 24-26 Feb 2012.
11. Member Organizing Committee, National Conference on "Emerging Electronic and Computing Systems" NCEECS- 2010, 29th March – 03rd April, 2010. Organized By: School of Electronics Devi Ahilya University, Indore
12. Member Organizing Committee, Architecturing Future IT Systems " organized by School of Computer Science & Information Technology jointly with School of Electronics, Devi Ahilya University, Indore[M.P.] from 17-18 October 2008.

#### Workshops/ FDPs / STTP Attended in last five years

1. VLSI to System Design: Silicon to End Application Approach, Online by AICTE Training And Learning (ATAL) Academy, ARM education and STMicroelectronics, 31 July- 04 Aug 2023
2. Workshop on "Restructuring Curricula Aligned on Outcome Based Education as Envisioned in NEP 2020" IQAC, Devi Ahilya University, Indore, 21-22 July 2023

3. NEP 2020 Orientation and Sensitization Programme under MM-TTP, Devi Ahilya University, 05- 14 June 2024
4. Webex meeting on "IET Connect: Empowering Engineers With Communities", Organized by IIT Indore on 16 May 2024
5. Live telecast of Prime minister's Launch of Semiconductor Mission, Government of India, 12 March 2024
6. AICTE ATAL FDP on the title "Design and simulation of next-generation Semiconductor Devices and its Applications for Bio-sensing", 01-06 January 2024
7. **Workshop on MOOC and Digital Education** by Consortium for Educational Communication, N Delhi and Educational Multimedia Research Centre (EMRC), 01-02 June 2023
8. **Launching Ceremony of the VLSI Society of India (VSI) Madhya Pradesh Chapter** organized at IIT Indore, 19 March 2023.
9. Workshop on "**Designing and Modeling of IoT, AI & ML Systems**" from 01 -05 Aug 2022 organized by AICTE, AICTE Training And Learning (ATAL) Academy, ARM education and STMicroelectronics (01 week).
10. INUP-i2i **Familiarization Workshop on Nanofabrication Technologies** (Online mode - through Microsoft Teams), to be conducted from 12 - 14 September 2022, by Centre for Nano Science and Engineering, IISc, Bengaluru and supported by MEITY, Gol
11. **Online familiarization workshop on 2D Semiconductor Nano devices & Simulations**, at the Centre for Nanotechnology, IIT Guwahati from 08-12-2022 to 10-12-2022
12. **TCAD-Circuit Simulation Workshop** (August 1-5, 2022), jointly organized by IITB INUP-i2i and Synopsys.
13. Learn Quest's free training webinar, **Machine Learning Basics**, 28 July 2022
14. Webinar on Student Learning Assessment-PARAKH on 29-03-2022 (PARAKH)
15. Participated in a one day workshop on 'Research to Entrepreneurship – The need of Century', 29 Jan 2022
16. Awarded Microsoft in Education certificate in recognition of membership in 'Certified Microsoft Innovative Educator', 18 Feb 2022
17. Training on AZ900: Microsoft Azure Fundamentals, 19 Feb 2022
18. Participated in AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Advanced Cloud Computing Technologies and Its Benefits for Engineering College Faculties" from 13 -17 Sep 2021 at INFLIBNET Centre, An IUC of University Grants Commission.
19. Participated in AICTE Training and Learning (ATAL) Academy Online Elementary FDP on "Embedded Design and Development using Free/ Open source Tools", 09-13 Aug 2021 at Centre for Development of Advanced Computing.
20. Participated in Workshop on "Embedded Systems – An Application Driven Approach" organized by AICTE Training and Learning (ATAL) Academy, STMicroelectronics and ARM Education, 25-27 Aug 2021.
21. State-wise Webinar on NEP- Madhya Pradesh, 13 Nov 2021
22. Webinar on AICTE AQIS Schemes to include Review Portal, 09 Dec 2021
23. AICTE Training And Learning (ATAL) Academy Online FDP on "Quantum Computing" from 05 Oct 2020 to 09 Oct 2020 at Centre for Development of Advanced Computing (C-DAC), Mohali.
24. TI MOOC on Embedded System Design using MSP430 MCU.
25. AICTE Training and Learning (ATAL) Academy Online Elementary FDP on "Serverless IoT for societal products" from 24 May 2021 to 28 May 2021 at Indian Institute of Information Technology Kottayam.
26. Online Summer School-cum-FDP on 'Advances in Signal Processing and Machine Learning' Jointly organized by MHRD-Institution Innovation Council, DDUC Chapter, Department of Electronic Science, University of Delhi & National Academy of Sciences India (NASI) – Delhi Chapter Supported By IEEE Electron Device Society (EDS), Delhi Chapter 20-26 July 2020.
27. Students Humanitarian Technology Conference (SHTC) 2021, IEEE Kerala Section, 1-2 May 2021.
28. 'The Guinness World Record Event –Most users to take an online computer programming lesson in 24 hours' on 24-25 April 2021.

29. National Supercomputing Mission's 'Workshop on ARM based HPC' organized by C-DAC and the NSM Nodal centres for training in HPC and AI, 02-03 March 2021.
30. INUP Hands-on Training Workshop on Nanofabrication Technologies, Mumbai, 11-15 Sep 2017, IIT Bombay
31. FDP on "ANN and Deep Learning" , 11-15 June 2018, Jointly organized by Electronics and ICT Academies through National Knowledge Network, PDPM IIITDM, Jabalpur
32. Training on Cadence Custom IC Design flow (Analog Flow) and ASIC Design flow (Digital flow) Indore 08-12 Jan 2019, School of Electronics, Devi Ahilya University
33. FDP on "VLSI Chip Design Hands-on using open-source EDA" Indore 08-12 July 2019, Jointly organized by Electronics and ICT Academies through National Knowledge Network, IIT Guwahati.
34. Scilab Workshop, IPS Academy, 04 May 2019
35. One-day workshop on Examination Reforms for Teachers, by AICTE at Shri G.S. Institute of Technology and Science, 09 May, 2019
36. Training Programme on MATLAB Software, School of Computer Science & Information Technology, Devi Ahilya University, 10-11 August, 2018.
37. National workshop on Intellectual Property Rights, School of Data Science and Forecasting, Devi Ahilya University, 01 Dec 2018.

### Personal Information

Date of Birth: 20<sup>th</sup> July 1977

Father's name: Col. (Dr.) R. L. Jat

Marital Status: Married

Husband: Dr. M. K. Chattopadhyay, Scientific Officer 'H', Raja Ramanna Centre for Advanced Technology (RR CAT), Department of Atomic Energy, Indore

### Contact Information

Dr. Manju K. Chattopadhyay

Professor

School of Electronics, Devi Ahilya University,  
Takshashila Campus, Khandwa Road, Indore (MP)-452001

Mobile - +91 99261 01942

E-mail - [mchattopadhyay.elex@dauniv.ac.in](mailto:mchattopadhyay.elex@dauniv.ac.in), [mkorwal@yahoo.com](mailto:mkorwal@yahoo.com), [manju.elex@gmail.com](mailto:manju.elex@gmail.com)