

MADHUSUDHANAN. N

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Research Interests:

Wireless Communications: Cooperative Relaying Networks, Multiple-input-Multiple-Output (MIMO), Non-Orthogonal Multiple Access (NOMA), Channel Coding Techniques and Information Theory.

Professional Experience:

- Assistant Professor, Department of ECE, **Gayatri Vidya Parishad College of Engineering for Women**: July 2019 onwards.
- Assistant Professor; Department of ECE, **Anjalai Ammal - Mahalingam Engineering College**: July 2014 – May 2016.
- Lecturer; Department of ECE, **Anjalai Ammal - Mahalingam Engineering College**: May 2010 – May 2012.
- Lecturer; Department of ECE, **ARJ College of Engineering & Technology, Mannargudi**: Dec 2008 - Nov 2009.
- Lecturer; Department of Electronics and Communication Engineering, **Jayaram College of Engineering & Technology, Tiruchirappalli**: May 2008 - Dec 2008.
- GAPP Trainee; **Bharat Electronics Ltd., Bangalore**: Dec 2006 – Mar 2007.
- Associate Software Engineer in **iSOFT R & D Pvt Ltd., Chennai**: May 2005 - June 2006.

Education:

- PSG College of Technology (Anna University, Chennai), Coimbatore: Ph.D. (Thesis Submitted, April 2019), Duration: 2016-2019 (CGPA: 9.15).
- Pondicherry Engineering College, Puducherry, India: M.Tech in Wireless Communication, 2014 (CGPA: 8.37).
- P.R. Engineering College, Bharathidasan University, Tiruchirappalli, India: B.E. in Electronics and Communication Engineering, 2004 (72.68%).

Teaching:**Subjects taught at UG level:**

- Wireless Communication System
- Analog & Digital Communication Systems
- Optical Communication
- Radar Systems
- Measurements and Instrumentation
- Electronic Circuits
- Antennas and Wave Propagation
- Digital Electronics
- Microprocessors and Microcontrollers

Laboratory handled at UG level:

- Communication Systems
- Linear Integrated Circuit
- Digital Electronics
- Electronic Circuits
- Microprocessor and Microcontroller
- Optical Fiber and Microwave

Professional Affiliation:

- IEEE Society Member
- Member of Microwave Journal, Horizon House Society, Norwood, MA

Administrative Work:

- Department NBA coordinator, 2015-16.
- NBA audit and inspection committee member, 2010-2012.

Awards and Honors:

- NPTEL Online certification for the course **Introduction to Wireless and Cellular Communications** conducted by **IIT Madras** during July-October 2019.
- NPTEL Online certification for the course **Evolution of Air Interface towards 5G** conducted by **IIT Kharagpur** during February-April 2019.
- Secured second rank in **CENTAC-PG** Entrance Examinations conducted by Pondicherry Engineering College.
- Best Library user award during the academic year 2010-11.
- Obtained ‘A’ Grade for the full time course named “**FPGA BASED SYSTEM DESIGN**” coordinated by **NATIONAL INSTITUTE OF TECHNOLOGY, Tiruchirappalli**.

Reviewer:

- International Journal of Communication Systems (IJCS), John Wiley.
- Springer AISC book series.

List of Publication(s):

1. **N. Madhusudhanan** and L. Nithyanandan, “Compress-and-Forward Relaying with Polar Codes for LTE-A System”, in the proceedings of IEEE International Conference on Communication and Signal Processing ICCSP’14, pp.1497-1501, April, 2014.
2. Bhavani Sankar, A, **Madhusudhanan, N** and Arputha Vijaya Selvi, J, “Removal of Noise through ANFIS Filtering Technique”, International Journal of Applied Engineering Research, vol. 10, no. 51, pp. 209-214, May 2015.
3. Bhavani Sankar, A, **Madhusudhanan, N** and Arputha Vijaya Selvi, J, “Removal of Noise through ANFIS Filtering Technique”, in the proceedings of International Conference on Innovative Research in Electrical Sciences, May 2015.
4. **N.Madhusudhanan**, R.Venkateswari and Ajun Abraham, “Cooperative Communication for 5G Networks: A Green Communication Based Survey”, in the proceedings of International Conference on Renewable Energy and Materials for Sustainability (ICREMS), pp. 139-146, Nov. 2016.
5. **N.Madhusudhanan**, R.Venkateswari and Ajun Abraham, “Cooperative Communication for 5G Networks: A Green Communication Based Survey”, *International Journal of Information Science and Computing*, vol. 4, no. 2, pp. 65-78, Dec. 2017.
6. R.Venkateswari, **N.Madhusudhanan** and Ajun Abraham, “Bit Error Analysis on Incremental Hybrid Detect-Decode-and-Forward Cooperative Relaying Protocol”, *National Journal of Technology*, vol. 13, no. 4, Dec. 2017.
7. **N.Madhusudhanan** and R.Venkateswari, “Error Rate and Capacity Analysis for Incremental Hybrid DAF relaying using Polar Codes”, *ETRI Journal*, vol. 40, no. 3, June 2018.

8. **N.Madhusudhanan** and R.Venkateswari, “Performance Analysis of Polar Coded IHDAF relaying for Next Generation Cellular Networks” (Manuscript published in Advances in Intelligent Systems and Computing, Springer book series, ISSN: 2194-5357), Proceedings: International Conference on Computing, Communication and Signal Processing, ICCASP 2018, https://doi.org/10.1007/978-981-13-1513-8_33, Sep. 2018.
9. **N. Madhusudhanan** and R. Venkateswari, B. Karunamoorthy, and T. Rajarajeswari, ‘Soft Decode Compress and Forward Relaying Scheme using Polar Codes’, Proceedings of the National Conference on Micro Nano Electronics & Communication Systems (MECS), April 2019.
10. **N.Madhusudhanan** and R.Venkateswari, “Doppler Effect Analysis of Polar Code Based 5G Networks” (Proceedings of the International Conference on Computing in Engineering and Technology (ICCET 2019)), Aurangabad, Jan. 2019, ISBN 978-981-329-515-5, Oct. 2019.
11. **N.Madhusudhanan** and R.Venkateswari, “Outage Analysis of Opportunistic based Hybrid Decode-Amplify-Forward Relaying in polar code Environment, *International Journal of Communication Systems (IJCS)*, John Wiley, e4255, <https://doi.org/10.1002/dac.4255>, Dec. 2019

Lectures Delivered:

- A lecture on “Cooperative Communication and its Research Challenges” delivered in Electronics and Communication Engineering, PSG College of Technology during the TEQIP sponsored FDP on 9th September 2016.
- A lecture on “How femto based cells plays a vital role in cellular networks” delivered in Broadband Policy and Regulatory meet at IIT Delhi during 16th to 19th December 2016.

Project:

- Technical support for short term based project on LYNX UX weapon control Gun Fire Control Systems, Supported by Naval SBU, Bharat Electronics Ltd., Bangalore, 2006-2007.

List of Workshops/Conferences/Seminars attended:

- Participated in the Workshop on “**Engineering Exploration Project**” organized by **Jawaharlal Nehru Technological University Kakinada, Andhra Pradesh**.
- Attended six days TEQIP-III sponsored Faculty Development Programme on “**Research Trends in Multimedia and Multirate Signal Processing**” conducted by the **Department of ECE, National Institute of Technology Calicut, Kozhikode**.
- Presented a paper entitled “**Doppler Effect Analysis for Polar Code Based 5G Networks**” at the 4th International Conference on Computing in Engineering and Technology (ICCET 2019) at D.I.E.M.S., Aurangabad, Maharashtra.

- Attended GIAN course on **“Evolution of Wireless Communication Towards 5G”** at **IIT Kharagpur**.
- Participated in the TEQIP sponsored three days workshop on **“Wireless Networks for Smart City Applications”**, conducted by the Department of ECE, **PSG College of Technology, Coimbatore**.
- Presented a paper entitled **“Performance Analysis of Polar Coded IHDAF relaying for Next Generation Cellular Networks”** in the 3rd International Conference on Computing, Communication and Signal Processing (ICCASP 2018) at **Dr.BATU Govt. Tech. University, Lonere, Raigad, Maharashtra**.
- Attended five days MHRD sponsored **GIAN** Short term course on **“Open-Prototyping Methodologies for 5G Systems”** at **IIT Hyderabad**.
- Participated in the **2017 IEEE MINI POCO** at **College of Engineering, Guindy Campus, Anna University**, organized by **IEEE Madras Section**.
- Participated in IEEE Communications Society Bangalore Chapter one day workshop on **“Advances in 5G Networks and HetNet Technologies”** at **Indian Institute of Science, Bangalore**.
- Attended four days course on **“How to Engage in Broadband Policy and Regulatory Processes”** conducted by Bharti School of Telecommunications Technology and Management in coordination with LIRNEasia at **IIT Delhi**.
- Participated in TEQIP sponsored three days Faculty Development Programme on **“Relay Networks for Next Generation Wireless Standards”** in the Department of ECE at **PSG College of Technology, Coimbatore**.
- Attended MHRD sponsored Short term course on **“MIMO Wireless”** jointly organized by **College of Engineering, Guindy and Global Initiative of Academic Networks (GIAN)**.
- Participated in 3 days workshop on **“MIMO OFDM and Physical Layer Aspects of LTE”** organized by TIFAC – CORE in Wireless Technologies and Department of ECE, **Thiagarajar College of Engineering, Madurai**.
- Participated online course on MOOC on MOOC jointly organized by Centre for Development of Technical Education, **IIT Kanpur**, Commonwealth of Learning and Knowledge Incubation for Technical Education Quality Improvement Programme.
- Participated in the one week TEQIP sponsored Faculty Development Program titled **“Wireless Sensor Networks – Issues and Challenges”** organized by the **Department of ECE, Pondicherry Engineering College, Puducherry**.
- Attended the TEQIP-II sponsored one day seminar on **“Research Challenges in Cooperative Communication and Cognitive Radio Networks”** organized by **ECE Department, PSG College of Technology, Coimbatore**.
- Participated in the One-day workshop on **“LTE Multi Antenna Techniques using MATLAB”** conducted by TIFAC-CORE in Automotive Infotronics, **VIT University, Vellore**.

- Participated in the One-day workshop on **“Laboratory Instrument Service and Handling”** organized by the Dept. of ECE, **Pondicherry Engineering College, Puducherry.**
- Attended the Two-day workshop on **“Network Simulator”** conducted by the Dept. of Computer Technology, **Anna University, MIT Campus, Chennai.**
- Participated in the Two-day DRDO sponsored workshop on **“Software Defined Radio and Cognitive Radio – Academic, Industrial and Social Perspective”** organized by the Dept. of ECE, **PSG College of Technology, Coimbatore.**
- Attended a workshop on **“Implementation of Signal Processing Applications using Xilinx System Generator”** at **Karunya University, Coimbatore.**
- **ICTACT – NI** sponsored Faculty Development Programme on **“Embedded LabView”** organized by **Dhanalakshmi Srinivasan College of Engineering, Perambalur.**
- Attended the workshop on **“Recent Trends in Wireless Technologies”** conducted by **Sri Venkateswara College of Engineering, Sriperumbudur.**
- Attended the complimentary seminar on **“MATLAB & SIMULINK FOR ENGINEERING EDUCATION”** conducted by **The Mathworks, Inc.**
- Attended the Short term course on **“Cellular Technologies: 3G and Beyond”**, organized by **“Department of Electrical Engineering, IIT Kanpur & BSNL – IITK Telecom Centre of Excellence”** at **INDIAN INSTITUTE OF TECHNOLOGY, Kanpur.**
- Participated in the **“Workshop on VLSI”** organized by **BodhBridge Educational Services** at **INDIAN INSTITUTE OF TECHNOLOGY MADRAS, Chennai.**
- **AICTE – MHRD** sponsored Faculty Development Programme on **“ADVANCES IN WIRELESS COMMUNICATION AND NETWORKING”** organized by **NATIONAL INSTITUTE OF TECHNOLOGY CALICUT, Kozhikode.**
- Participated in **“THE IISc Centenary Conference”** held at the **INDIAN INSTITUTE OF SCIENCE, Bangalore.**
- Attended the workshop on **“ADVANCED ANALOG IC DESIGN”** conducted by **NATIONAL INSTITUTE OF TECHNOLOGY, Tiruchirappalli.**
- Attended the workshop on **“PERFORMABILITY ANALYSIS OF WIRELESS NETWORKS”** sponsored by **INDIAN INSTITUTE OF TECHNOLOGY, Delhi.**
- Attended the workshop on **“HAM RADIO”** conducted by **NATIONAL INSTITUTE OF TECHNOLOGY, Tiruchirappalli.**
- Presented a paper entitled **“DISTRIBUTED ARITHMETIC ALGORITHMS USING FPGA SIGNAL PROCESSING”** at **Sri Chandrasekharendra Saraswathi Viswa MahaVidhyalaya (Deemed University), Enathur, Kanchipuram.**

