

VINAY SHARMA

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Summary

- Doctoral researcher working on the design of the antenna and passive planar circuits in technologies such as RF front-end, handheld portable devices.

Education

Shiv Nadar University (India) PhD in Electronics and Communication Engineering Specialized in Antenna design. <ul style="list-style-type: none">• Thesis title “Antenna design for MIMO applications”• Research Advisor: Dr. Madhur Deo Upadhayay, Associate Professor• Research Co-Advisor: Dr. Atul Vir Singh, Associate Professor	2016-2021 CGPA: 8/10
Thapar University (India) Masters in Electronics and Communication Engineering Specialized in Audio Signal Processing <ul style="list-style-type: none">• Thesis title “A novel audio watermarking technique using data dependent decomposition and quantization” resulting in a publication.• Research Advisor: Prof. Kulbir Singh	2013-2015 CGPA: 7.6/10
Punjab technical University (India) Bachelors’ in Electronics and Communication Engineering Graduated with honors’	2009-2012 Marks: 82.31%
Rayat polytechnic (India) Diploma in Electronics and Communication	2006-2009 Marks: 74.17%

Research Experience

Doctoral Researcher at Shiv Nadar University. <ul style="list-style-type: none">• Fabricated more than 100 planar devices such as antennas, filters, phase shifters using the process of photolithography.• Designed test setups for testing and characterization of antennas, passive microwave device and MIMO systems.• Supervised and collaborated with nine undergraduate students on research projects.• Successfully procured surface mounted radio frequency components and cables for microwave lab.	Jan 2016 – Dec 2021
Graduate Researcher at Thapar University. As part of master’s research designed technique for audio watermarking <ul style="list-style-type: none">• The technique uses empirical mode decomposition to decompose audio signal and quantization index modulation is used to embed the watermark.• The mathematical model is derived on basis of adaptive digital signal processing with simulation in Mat Lab.	Aug 2013 – Aug 2015

Teaching Experience

Teaching Assistant in the Department of Electrical Engineering,
(During doctoral studies) at Shiv Nadar University.

Jan 2016 – Present

- Conducted lab course for 400 students on topics such as:
 - Communication Engineering (EED205) **Spring 2019 to 2021.**
 - Optical Fiber Communication (EED376) **Monsoon 2019 to 2021.**
 - Antenna & Wave propagation (EED373) **Monsoon 2019 to 2021.**
 - Communication Networks (EED304) **Monsoon 2016 to 2017.**
 - Analog Electronic Circuits (EED204) **Spring 2017 to 2019.**
 - Digital Electronics (EED206) **Monsoon 2018.**
 - Digital Signal Processing (EED305) **Monsoon 2017.**
 - Intro. to Electrical Engg. (EED101) **Spring 2016 to 2017**
 - Basics of Electrical & Electr. Engg. (EED103) **Monsoon 2016, 2021.**
- Taught CST microwave studio and antenna fabrication and testing to undergraduate students for the course on Antenna theory during Aug-Dec (2019, 2020) (fall semester) for 35 students.
 - Ran tutorials for Signals and Systems
 - Graded assignments, quizzes and tutorial homework for the course.

Teaching Assistant in the department of electronics

Aug 2013 to May 2015

& Communication engineering, at Thapar University during Master's.

- Lab course: Signals and Systems, Digital Signal Processing, Antenna Theory.
- Tutorial: Signals and Systems.
- Graded assignments, quizzes and tutorial homework for the course.

Exams

Gate 2013

Score 372, rank-16324, Electronics and Communication

CBSC-UGC NET 2016

Score 64%, Eligible for Assistant Professor

Publications

Journal:

1. **Vinay Sharma**, Madhur Deo Upadhyay, and Atul Vir Singh, "Travelling Wave Antenna Based MIMO for 5GHz WLAN Band Application with Pattern Diversity," International journal of Electronics (Taylor and Francis), Sep. 2021 doi: 10.1080/00207217.2021.2001867. (**SCI, Impact factor 1.336**).
2. **Vinay Sharma**, Madhur Deo Upadhyay, Atul Vir Singh, and Jitendra Prajapati, "Hammer-Shaped Element-Based Compact MIMO Antenna for WLAN Application," Progress In Electromagnetics Research Letters, Vol. 97, 121-130, 2021. doi:[10.2528/PIERL21031604](https://doi.org/10.2528/PIERL21031604) (**SCI-E, Impact factor 1.898**)
3. **Vinay Sharma**, Ananya Goel, Madhur Deo Upadhyay, and Atul Vir Singh, "A Pi-Shaped Slot Antenna for 5.2 GHz WLANMIMO Application," IETE J. Res. (Taylor and Francis), pp. 1–13, Jan. 2021, doi:1080/03772063.2021.1873201. (**SCI, Impact factor 1.125**)
4. Raasi Chenna, Vijayadithya Doddi, Sumanth Gurram, Vinay Sharma, Madhur Deo Upadhyay "UWB filter with DMS for Wi-Fi Applications," Asian Journal for Convergence in Technology, 2019.

International Conference:

1. **Vinay Sharma**, Madhur Deo Upadhayay and Atul Vir Singh, “Design of Two-Element Antipodal MIMO Antenna for ISM Band Application,” *2021 IEEE Indian Conference on Antennas and Propagation (InCAP)*, Dec. 2021, MNIT Jaipur, India.
2. **Vinay Sharma**, Madhur Deo Upadhayay and Atul Vir Singh, “Compact antenna for multi-input-multi-output applications at 5.8 GHz ISM band,” In proceedings of Role of Electronics Engineers in Current Societal Changes, 2020, Gwalior, India.
3. Hritik Singhal, Ashwin S, **Vinay Sharma**, Jitendra Prajapati and Madhur Upadhayay “High Gain Hexagonal Patch Antenna for V2V Communication,” 7th International Conference on Signal Processing and Integration Networks, Noida, India, 2020.
4. P. Harshini Rao, **Vinay Sharma**, Madhur Deo Upadhayay, Atul Vir Singh “Dual Band Slot Antenna for MIMO Applications,” 6th International Conference on Signal Processing and Integration Networks, Noida, India, 2019.
5. Parul Garg, **Vinay Sharma**, Madhur Deo Upadhayay, Atul Vir Singh “Dual Band Butterfly Planar Antenna for WLAN Applications,” 6th International Conference on Signal Processing and Integration Networks, Noida, India, 2019.
6. Raasi Chenna, Vijayadithya Doddi, Sumanth Gurram, **Vinay Sharma**, Madhur Deo Upadhayay “Compact Edge and End Coupled Wide Band Filter with Notch at 5GHz,” 1st International Conference on Sustainable Energy and Future Electric Transportation, Hyderabad, India, 2019.
7. Raasi Chenna, Vijayadithya Doddi, Sumanth Gurram, **Vinay Sharma**, Madhur Deo Upadhayay “Tunable Notch Wide Band Filter Using Stubs,” 4th International Conference for convergence in technology, Pune, India, 2019.
8. **Vinay Sharma**, Madhur Deo Upadhayay and Atul Vir Singh, “Dumbbell Shaped MIMO Antenna,” 3rd International Conference for convergence in technology, 2018, Pune, India.
9. **Vinay Sharma**, Madhur Deo Upadhayay and Atul Vir Singh, “Step Shape Antenna for MIMO Applications,” Proceedings of the International Symposium on Antenna and Propagation, 2017, Phuket, Thailand.
10. Padarthi Sindhuja, **Vinay Sharma**, Madhur Deo Upadhayay and Atul Vir Singh, “Simulation and Analysis of Actuation Voltage of Electrostatically Actuated RF MEMS Cantilever and Fixed- Fixed Beam Parameters,” Proceedings of the International Conference on Micro- Electronics and Telecommunication Engineering, 2016, Ghaziabad, India.
11. Manpreet Singh, **Vinay Sharma**, “Audio watermarking for temper detection,” Proceedings of 2nd International Conference on Recent Advances in Engineering & Computational Sciences (RAECS), 2015, Chandigarh, India.

Academic Projects

During PhD

Tattoo Antenna (April 2018): A wearable antenna was simulated in CST microwave Studio for IOT applications. The design was fabricated on a transparency using conductive ink and the prototype tested using Vector Network Analyzer.

Horn and Coil Antenna Design (April 2018): Two horn antennas and a coil antenna were designed for S-frequency Band. The antenna was designed using waste material and tested using Vector Network Analyzer.

Planar device design (Jan 2017): A Patch Antenna, uniform phased array and 90° phase shifter for 5.2 GHz resonance frequency were designed using CST microwave Studio. Experimental study was conducted on the antenna resonance by using combination of different reactive loads along with a defected ground. The structures are fabricated on FR4 material using Photo Lithography. The prototype was tested using Vector Network Analyzer.

Masters Projects:

Fuzzy inference system (Jan 2015): Fuzzy Logic was used to find dependencies of five interdependent systems. The outcome of the system was correlated to formulate probability models for each system, simulation was conducted using MATLAB.

Audio Watermarking via EMD (Dec 2014): A research paper is implemented in MATLAB with detailed mathematical modelling for understanding empirical mode decomposition (EMD).

Noise removal from received QPSK signal using Adaptive filtering (Oct 2014): Formulate mathematical model and simulate in MATLAB. This project was part of Coursework in Adaptive Digital Signal Processing.

Bachelors' Projects

Electronic Voting Machine (Jan 2012): A microcontroller 8051 based electronic voting machine was designed for the final year major project.

Temperature measurer and controller (Jun 2010): A microcontroller-based system used in chemical boilers. The main objective of this project was to sense the temperature in the boiler and control the heat inside the boiler.

Diploma Project

Ultrasonic Distance Meter (April 2009): A microcontroller 8051 based project to measure distance using ultra sonic sensors for final year diploma project.

Skills

- **RF Tools:** CST Studio, Agilent Advanced Design Systems (ADS)
- **Simulation Packages:** MATLAB, Xilinx Vivado, LT Spice.
- **Programming Language:** Verilog, Python
- **Process:** Photolithography planar fabrication, Antenna testing.
- **Equipment:** Vector Network Analyzer (NI PXle-5632), Real-Time Spectrum Analyzer (RSA306b), Digital Storage Oscilloscope, Signal Generator, Calibration kit (SOLT).

Presentations/Workshops/Seminars

Presentations:

1. Presented a paper in the 3rd International Conference for convergence in technology held at Pune, India from 6th- 9th April 2018.
<https://ieeexplore.ieee.org/document/8529562/keywords#keywords>
2. Presented a poster in **International symposium on antennas and propagation** held in Phuket, Thailand from 30 Oct- 2 Nov 2017. <https://ieeexplore.ieee.org/document/8229013/>

3. Presented at the International Conference on Micro- Electronics and Telecommunication Engineering, at Ghaziabad on Sep 2016.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=7938566>.
4. Presented a paper in the International Conference on Recent Advances in Engineering and Computational Sciences held in Chandigarh, India Dec 2015
<https://ieeexplore.ieee.org/document/7453353>
5. Presented a paper at ISF paper presentation organized by IETE student forum on 21st April 2011.
6. Presented a paper organized by IETE Chandigarh chapter on 2nd Nov 2010.

Workshops and Seminars:

1. Participated in Short term course on “Challenges and opportunities in Engineering after Covid-19” Under Technical Education Quality Improvement Program (TEQIP-III) organized by the Department of Electrical Engg., Maharaja Pratap University of Agricultural and technology, Udaipur during 29th June -03 July 2020.
2. Participated in webinar on Satellite Antenna characterization, Test & design by IEEE MTTs and AP-S branch (Jaipur) at Manipal University Jaipur on 7th July 2020
3. Participated in the 4-day webinar on "Evolution of RF technology-Role of Academia and Industry" by Dept. of Electrical & Electronics Engineering, JSS Academy of Technical Education, Noida, during 22- 25 June 2020.
4. Participated in a webinar on Effective manuscript writing by IEEE MTTs and AP-S branch (Jaipur) at Manipal University Jaipur on 16 June 2020.
5. Participated in webinar on “Art and Challenges of writing papers for IEEE transactions” by IEEE Bangalore section on 8th June 2020.
6. Participated in Two-day webinar on MIMO antenna for 5G Communications using **CST microwave studio suite** by IEEE AP-S chapter (Delhi) at Delhi University (South Campus) from 5-6 June 2020.
7. Participated and volunteered in faculty development program on **Antenna trends**, sponsored by Ministry of Electronics and information technology, conducted from 01-05 July 2019 at Shiv Nadar University.
8. Worked as an instructor for a 3-day **MATLAB** workshop organized by IEEE student chapter at Shiv Nadar University from 23-25 Aug 2017.
9. Attended workshop on **Use of EM beams for the efficient simulation of antenna and scattering problem** in International symposium on antennas and propagation held in Phuket, Thailand from 30 Oct- 2 Nov 2017.
10. Participated in national workshop on **RF and Microwave Design using Agilent Advanced Design Systems (ADS)** at GLA University Mathura in March 2016.
11. Participated in UGC sponsored seminar on “**MIMO Wireless Communication Systems**” at Thapar University, Patiala.

Affiliations/Society membership

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| • IEEE Microwave and theory techniques: Graduate Student member | 2016-Present |
| • Reviewer: IEEE Access, IET MAP | 2017-Present |

References

- Dr. Madhur Deo Upadhyay (Ph.D Supervisor)
Associate Professor, Department of Electrical Engineering,

Shiv Nadar University

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- Dr. Atul Vir Singh (Ph.D Co-Supervisor:
Associate Professor, Department of Electrical Engineering,
Shiv Nadar University, Dadri, Uttar Pradesh, India.
E-Mail: atul.singh@snu.edu.in