CURRICULUM VITAE

Dr. Vikash Sachan

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Job Objective

To achieve a challenging position in academic field, work towards perfection with responsibility entrusted upon and seek research excellence in all endeavors, assisted by the right opportunity.

Education

- Doctor of Philosophy (Wireless Communication) from N.I.T, Patna-15th October 2020.
- Master of Technology (Communication System) from N.I.T, Patna India - June 2015 with CGPA of 7.98.
- Bachelor of Technology (Electronics & Communication Engineering) from U.I.E.T, CSJM University, Kanpur, India – June 2008 with percentage of 68.80.

Experience Summary

- 1 Years & 6 months of experience as a Guest Lecturer in Electronics & Communication Engineering Department in U.I.E.T, Kanpur, Kanpur.
- Working as Assistant Professor in Electronics Engineering Department, Dr. AITD Kanpur from 16/09/2021 to till date.

Career Profile

University Institute of Engineering and Technology, Kanpur from June, 2011 to December 2012

Responsibilities:

- Session july 2011-december 2011
  Basic Electrical & Electronics Engineering
- Session January 2012-june 2012
  Digital Electronics, Antenna microwave Engineering
- Session july 2012-december 2012
  Basic Electrical & Electronics Engineering,
  Measurement & Instrumentation Engineering

Teaching Assistant in N.I.T Patna **2013-2015**

Electronics & Communication Engineering Department, N.I.T Patna

- Conducted UG Analog Electronic Circuits Laboratory.
- Conducted UG Basic Electrical &Electronics.

Teaching Assistant in N.I.T Patna **2015-2020**

Electronics & Communication Engineering Department, N.I.T Patna

- Conducted UG Digital Communication Lab.
- Conducted PG and PhD Advance Communication Lab

Professional Services

Reviewer- International conference on control, communication and computing (ICCC2023)

Reviewer-Tencon 2019

Reviewer-Journal of Defense Modeling and Simulation

Reviewer- IEEE Transactions on Aerospace and Electronic Systems

B.Tech Project

Reasonable Optical Near Joint Access (RONJA) **2007-2008**

This is the topic of my B.Tech. project. The project is based on Free Space Optics (FSO) which shows the basic concept of optical communication in which laser light is used as an optical source. It is a “User Controlled Technology” of optical point to point data link. We are transmitting the data from the transmitter side wirelessly. Both the transmitter and receiver sections are interfaced with the two computers respectively with the interfacing ports. The optical communication has been shown successfully.

Supervisor: Dr. Vishal Awasthi, H.O.D, Electronics & Communication Engineering Department, U.I.E.T, Kanpur.

M.Tech Thesis

Bio-inspired Learning Algorithm for Routing Protocol in Wireless Sensor Network 2014-2015

In wireless sensor networks (WSNs), due to the limitation of nodes' energy, energy efficiency is an important factor should be considered when the protocols are designing. As a typical representative of hierarchical routing protocols, LEACH Protocol plays an important role. In response to the uneven energy distribution that is caused by the randomness of cluster heads forming, this paper proposes a new improved algorithm of LEACH protocol (LEACH-TLCH) which is intended to balance the energy consumption of the entire network and extend the life of the network. The new algorithm is emulated by Matlab simulation platform, the simulation results indicate that both energy efficiency and the lifetime of the network are better than that of LEACH Protocol. Cluster-based routing protocol is always a hot research area in wireless sensor networks. Classical LEACH protocol has many advantages in energy efficiency, data aggregation and so on, so it is widely used until now.

Supervisor: Dr. Bikash Chandra Sahana, Associate Professor, Electronics & Communication Engineering Department, N.I.T Patna.

PhD Thesis

Performance Analysis of MIMO Cooperative Relaying Networks for Wireless Communication 2015-2020

- Performance Analysis of Multiple Input Multiple Output (MIMO)–Space Time Block Code (STBC) based single relay and multi-Relay cooperative communication over various fading channels.
- Performance analysis of symbol error rate (SER) of selective decode-forward (DF) relaying based multiple input multiple output (MIMO) orthogonal space time block coded (OSTBC) cooperation network, considering channel estimation error using Nakagami-m fading channel.
- To improve the performance of the relaying network by using cooperative communication in conjunction with STBC and MIMO because at present, it is significantly challenging to implement massive MIMO in mobile scenarios and further research is necessary before it can be successfully implemented in mobile cooperative communication systems.
- To improve the performance of relaying network, using antenna selection (transmit antenna, receive antenna or relay selection).
- To improve the performance of Spatially modulated MIMO Cooperative System.
- Uplink Sum Rate and Capacity of Hybrid Precoding mmWave Massive MIMO System.

Supervisor: Dr. Ritesh Kumar Mishra, Associate Professor, Electronics & Communication Engineering Department, N.I.T Patna.

Short Tem Courses

1. Attended FDP on "**V2X and UAV Communications in 6G: Recent Trends and Enabling Technology**" from 24th to 28th February 2025 Organised by NIT Patna.
2. Attended FDP on **"Assistive Technology for Equitable and Inclusive Education**" from 23rd to 27th July 2024 Organised by Dr. AITD Kanpur.
3. Attended FDP on **"Design and Implementation issues in 5G/6G Wireless Communication Networks**" from 20th to 25th December 2023 Organised by Rajkiya Engineering College Kannauj.
4. Attended Short term training program on "**Network Simulator 2 & IPv6**"from 13th to 17th October 2014 Organised by Department of Mathematics and Computer Applications at MANIT, Bhopal
5. Attended Short term training program on " **Recent Trends in Speech and Image Processing**" from 23rd to 27st June 2015 Organised by Department of Electronics and Communication Engineering at NIT Patna
6. Attended Short term training program on "**MIMO- OFDM Wireless Communications**" from 19th to 21st February, 2016 by Department of Electrical Engineering at IIT Kanpur
7. Attended Short term training program on "**Cognitive Radio and Wireless Communication-Theory, Practice and Security**" from 1th to 10st September, 2016 by Department of Electrical Engineering at IIT Kanpur
8. Attended Short term training program on "**Advance Topics in Coding Theory** " from 13th to 22nd October, 2016 Organised by Department of Electrical Engineering at IIT Kanpur
9. Attended Short term training program on "**Signal Processing for 5G Massive MIMO Wireless Systems** " from 28th to 30th January, 2017 Organised by Department of Electrical Engineering at IIT Kanpur
10. Attended Short term training program on "**5G secure smart city**" from 20th to 21st March 2017 Organised by Department of Electronics and Communication Engineering at NIT Patna
11. Attended Short term training program on "**Cooperative 4G/5G MIMO Wireless Communication** " from 27th to 29th May, 2017 Organised by Department of Electrical Engineering at IIT Kanpur
12. Attended Short term training program on "**MIMO, Massive MIMO and OFDM 4G/5G Wireless Technologies**" from 20th to 23rd June, 2017 by Department of Electrical Engineering at IIT Kanpur
13. Attended Short term training program on "**Massive MIMO and Millimeter Wave (mm Wave) MIMO Technologies for 5G Networks**" from 3rd to 6th July, 2019 by Department of Electrical Engineering at IIT Kanpur

Journals

1. M. Premkumar, R. Prasanna, Vikash Sachan, **“Assessing Wireless Communication Systems Performance Metrics Using Artificial Neural Networks: A Modelling and Simulation Approach.” Instrumentation, Mesures, Métrologies (Scopus),** Vol. 22, No.6, pp. 223-229, December, 2023.
2. M. Premkumar, Vikash Sachan, B.R Singh, " **Data Transmission and Reception in Spatial Modulation MIMO Wireless Systems and Analysis in Nakagami-m Fading channels"Traitement du Signal (SCIE),**Vol. 40, No. 1, pp. 401-406, February, 2023.
3. Priya, S. Sathiya, M. Premkumar, M. Arun, and Vikash Sachan. **"Artificial Neural Networks Oriented Testbed for Multi antenna Wireless Application." Instrumentation, Mesures, Métrologies (Scopus),** Vol.21, No.1, 2022.
4. M Premkumar, S Sathiyapriya, M Arun, Vikash Sachan**," Medical Signal Processing via Digital Filter and Transmission Reception Using Cognitive Radio Technology", Traitement du Signal (SCIE),** Vol. 39, No. 4, pp. 1357-1362,Aug. 2022.
5. Vikash Sachan and Ritesh Kumar Mishra. "**Uplink Sum Rate and Capacity of Hybrid Precoding mmWave Massive MIMO System”,Traitement du Signal(SCIE)**, Vol. 36, No.2, pp. 155-160, April 2019.
6. Vikash Sachan and Ritesh Kumar Mishra, “**Pairwise Error Probability Performance of SM-MIMO and Spatially Modulated Cooperative Communication Employing SDF Protocol”, International Journal of Engineering and Advanced Technology (Scopus)**, Vol. 8, No. 6, pp. 4755-4761, August 2019.
7. Vikash Sachan, Indrajeet Kumar, Ravi Shankar, Ritesh Kumar Mishra , “**Analysis of transmit antenna selection based selective decode forward cooperative communication protocol**”, **Traitement du Signal (SCIE)**, Vol. 35, No. 1, pp.47-60, December 2018.
8. Indrajeet Kumar, Vikash Sachan, Ravi Shankar, Ritesh Kumar Mishra, “**An investigation of wireless S-DF hybrid satellite terrestrial relaying network over time selective fading channel**”, **Traitement du Signal (SCIE)**,Vol. 35, No. 2, pp. 103-120, December 2018.
9. Shankar, R., Sachan, V., & Mishra, R. K, “**Performance of MIMO-STBC Decode and Forward Cooperative Communications with Channel Estimation Error over Nakagami-m Fading Channels”**, **International Journal of Control Theory and Applications (Scopus)**. 9(18), pp.8985-8993,2016.
10. R. Shankar, V. Sachan and Ritesh Kumar Mishra, “**MIMO STBC Multi Node Selective C(0) Protocol Based Cooperative Wireless Communication over Nakagami-m Fading**

Channel Considering the Effect of Channel Estimation Error", **Journal of Engineering and Applied Sciences (Scopus)**, 12(7) , 2017 .

11. Vikash Sachan, Ravi Shankar and Ritesh Kumar Mishra. "**Selective Decode-Forward Cooperative Communication over Nakagami-m Fading Channel with Channel Estimation Error", Journal of Telecommunication, Electronic and Computer Engineering (Scopus),** Vol. 9, no. 2-6, pp. 85-90, 2017.

Conferences

1. Bachchh Raj Singh, Niraj Kumar, Vikash Sachan, Richa Verma, M.Premkumar, "**Investigation of MIMO Cooperative Relaying Systems Employing Space Time Block Code",International Conference on Recent Advances in Emerging Computing and Communiction Technologies (ICRAECCT-2025),** 11-12 April 2025.
2. Vikash Sachan, Rohan Kumar, Riya Sachan, Arjun Jaiswal, Guddu Sahani, Shweta Tripathi, B.R Singh, **"Investigation of Pairwise Error Probability of α-μ Fading Channel in Spatially modulated MIMO System," 2022 2nd International Conference on Emerging Frontiers in Electrical and Electronic Technologies (ICEFEET),**2022, pp. 1-4, doi: 10.1109/ICEFEET51821.2022.9847749.
3. Vikash Sachan, Indrajeet Kumar, Lokesh Bhardwaj, Ritesh Kumar Mishra, "**Pairwise Error Probability Analysis of SM-MIMO System Employing k-μ Fading Channel**", **Procedia Computer Science (Elsevier)**, Vol. 167, pp. 2516-2523, 2020.
4. Indrajeet Kumar, Vikash Sachan, Ravi Shankar, Ritesh Kumar Mishra, **"Performance Analysis of Multi-User Massive MIMO Systems with Perfect and Imperfect CSI", Procedia Computer Science (Elsevier)**, Vol. 167, pp. 1452-1461, 2020.
5. Vikash Sachan, Ravi Shankar, Indrajeet Kumar and Ritesh Kumar Mishra, "**Performance Analysis of SM-MIMO System Employing Binary PSK and M'ary PSK Techniques Over Different Fading Channels", Procedia Computer Science (Elsevier)**, Vol. 152, pp. 323-332, 2019.
6. Shankar, R., Kumar, G., Sachan, V. & Mishra, R. K, "**An Investigation of Two Phase Multi-Relay S-DF Cooperative Wireless Network Over Time-Variant Fading Channels with Incorrect CSI**", **Procedia Computer Science (Elsevier)**, Vol. 125, pp. 871-879, 2018.
7. Vikash Sachan, Ravi Shankar and R.K. Mishra, "**End to End Outage Probability Analysis of MIMO-STBC based Cooperation Protocol over Time Selective fading", in Proc. International Conference on Computing and Sensor Networks** Kolkata, India, vol. 1, pp.83-91, December 2017.
8. Shankar, R., Pandey, K. N., Kumari, A., Sachan, V., & Mishra, R. K, **"C (0) protocol based cooperative wireless communication over Nakagami-m fading channels: PEP and SER**

analysis at optimal power", CCWC, 2017 IEEE 7th Annual IEEE. 1-7, LasVegas, USA,January 9-11, 2017.

9. Ravi Shankar, Vikash Sachan, R. K Mishra, "**New Space Time Block Code for Wireless"**, **IEEE ICACSE** pp**.** 3-6, October 14-16,2016.

Academic Qualification Details

Examination	Board/University	Year	CGPA / %	Subject
PhD	N.I.T Patna	2020	-	Wireless Communication
M.Tech	N.I.T Patna	2015	7.98	Communication Systems
B.Tech	U.I.E.T Kanpur	2008	68.80	Electronics & Comm.

Academic Achievements

- Qualified **GATE** exam **2011**
- Qualified **GATE** exam **2012**
- Qualified **GATE** exam **2013**
- Qualified **GATE** exam **2014**
- Qualified **GATE** exam **2015**
- Qualified **GATE** exam **2016**
- Qualified **GATE** exam **2017**

About Myself

Hobbies

- I love yoga
- I love watching movie.

Personal Details

Name	**:** Dr. Vikash Sachan
Father's Name	**:** Sri Narayan Sachan
Mother's Name	**:** Pushpa Sachan
Sex	**:** Male
Nationality	**:** Indian
Marital Status	**:** Married
Email Address	**:**vsnitp83@gmail.com

References

Dr. R.K Mishra
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Dr. Manish Singh Rajput
Assistant Professor & HOD (Biotech), AITD Kanpur
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Declaration

I consider myself to be familiar with the various aspects of Electronics and Communication Engineering. I hereby declare that the above information given is true to the best of my knowledge.

PLACE : KANPUR **(VIKASH SACHAN)**