

Dr. Preeti Rani (Assistant Professor) (World's Top 2% of Scientist)

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Google Scholar <https://scholar.google.com/citations?user=wSbDJrAAAAAJ&hl>

Education **SRM Institute of Science and Technology**, Modinagar Ghaziabad, India
Ph.D., Thesis Title: A Reliable 5G-Enabled Internet Of Vehicles (IOV) Framework For Intelligent Transport System In Smart Cities Environment

Banasthali Vidyapeeth, Rajasthan, India
M. Tech, Remote Sensing, May 2014
Dissertation Title: Mesoscale eddies and its relationship satellite derived chlorophyll pigment concentration in Bay of Bengal.

Raj Kumar Goel Institute of Technology for Women, Ghaziabad, India
B. Tech, Electronics & Communication Engineering (ECE), May 2012
Major Project: Wireless Home Security System

Summary of Accomplishments

- **Research Outcome:** 9 Book Chapters, 3 Patents, 18 Journal Papers, and 5 Conference Papers (mostly in reputed journals and conferences). Google Scholar citations: 2277, h-index: 24, i-10 index: 26.
- **Teaching/Industry Experience:** With ten years of experience in teaching, industry, and research. I have taught a variety of courses in wireless networks and their security aspects, Machine Learning, Data communication network, cybersecurity, and the Internet of Things (IoT) for B.Tech students. I have organized and supervised lab sessions in computer networks using the NETSIM Simulator and have advised B.Tech students on their major projects in collaboration with local industry. Experienced in utilizing NS2, NS3, MATLAB, and Simulink for diverse industry and academic projects, I have developed and implemented advanced solutions in smart metering, smart grids, and energy management systems. Skilled in CFR data reporting with PowerSCAD, I ensure precise and efficient data management, driving innovation and optimizing performance across energy systems.
- **Professional Activities:**
Served as Editorial member in: Scientific Reports, Discover Computing, Contemporary Mathematics, Discover Sustainability, Journal of Computer Science
Served as Reviewer in: ACM transactions on autonomous and adaptive systems; Automatika, Computer communications, Engineering applications of artificial intelligence, IEEE transactions on consumer electronics, IEEE transactions on industrial informatics IEEE transactions on mobile computing, IET image processing, IEEE transactions on Intelligent transportation systems, International journal of communication systems, International journal of system assurance engineering and management, International journal of web information systems, Internet technology letters, PLoS one, Scientific reports, The Scientific World journal, Transactions on emerging telecommunications technologies, Wireless personal communications.

Professional
Experience
Academic

Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

Assistant Professor, College Of Computing Sciences & IT (CCSIT) **Sept 24-Present**

- Instructed undergraduate and graduate courses including
 - EAI504: Introduction To Machine Learning
 - EAI553: Machine Learning Using Python Lab
 - ECS716: Digital Image Processing and Computer Vision
 - ECS756: Digital Image Processing Using SCI (Lab)
 - MCS128: Digital Image Processing
 - Data Warehousing And Data Mining Using R (Subject/Lab)
 - EAI602: Genetic Algorithm
 - BCADA240301: Data Warehouse and Mining
 - MCA342: Data Warehouse and Mining
 - MCA119: Computer Organization and Architecture

SRM Institute of Science and Technology, Modinagar Ghaziabad, India

Research Scholar

Jan 21- May 24

- Delivered lectures to B.Tech students on wireless networks and their security aspects, computer network communication, cybersecurity, and the Internet of Things (IoT).
- Organized and supervised lab sessions in computer networks using the NETSIM Simulator.
- Advised B.Tech students on their major projects in collaboration with local industry.
- Conducted and managed research in areas including the Internet of Vehicles (IoV), vehicular networks, clustering techniques in wireless sensor networks, 5G communication, cybersecurity, intrusion detection systems, malicious activity detection, and the integration of machine learning with AI technology. Recently, I have focused on data analytics with machine learning, intelligent transportation systems, smart cities, smart grids, and cybersecurity systems.

Work Experience
Industrial/
Research

WAPCOS Limited, (A Government of India Undertaking), Gurgaon

Top Level Expert (TLE)

Jan 21 – July 21

- Collaborated with cross-functional teams to gather project requirements and ensure that geospatial solutions met specific business needs.
- Implemented quality control processes to ensure data accuracy and precision, resulting in reliable GIS data, maps, and analysis results.
- Conducted in-depth spatial analysis and geospatial modeling, providing critical insights to support strategic decision-making within the organization.

DP Project Development Pvt. Ltd., Vaishali Ghaziabad

Project Manager

Feb 16 - Dec 20

- Managing cross-functional teams, providing leadership and guidance to deliver various research projects on time and within budget while meeting defined project objectives.
- Efficiently overseeing project timelines, budgets, and resource allocation to achieve high-quality results in projects.
- Worked on Designed, developed and Simulation various project on Network Simulator

(NS2), Network Simulator (NS3), MATLAB, SIMULINK, and NETSIM.

Nex-G Mobility, Noida, India

Innovation Engineer

July 14 - Dec 15

- Worked on GPS communication system design on Simulink.
- Work on various simulations for communication models, cognitive radio, networks and measured their performance on Matlab.
- Implement C++ software program for WAN simulation.

CSIR-National Institute of Oceanography, Dona Paula, North Goa

Research Trainee

July 13 - May 14

- Conducted in-depth research to investigate the correlation between mesoscale eddies in the Bay of Bengal and the satellite-derived chlorophyll pigment concentration.
- Collected and analyzed geospatial data from multiple sources, including satellite imagery, to study the distribution and movement of mesoscale eddies.
- Prepared detailed reports and presentations summarizing the findings, including maps and data visualizations to communicate research outcomes effectively.

Publications Journals

1. **Preeti Rani et al.**, "An Implementation of Modified Blowfish Technique with Honey Bee Behavior Optimization for Load Balancing in Cloud System Environment." **Wireless Communications and Mobile Computing** 2022. (Scopus Indexed).
2. **Preeti Rani et al.**, "A Deep Comprehensive Research Architecture, Characteristics, Challenges, Issues, and benefits of Routing Protocol for Vehicular Ad-Hoc Networks", **International Journal of Distributed Systems and Technologies (IJDST)**, 13(4), (2022). (Scopus Indexed).
3. **Preeti Rani et al.**, "Simulation of the Lightweight Blockchain Technique Based on Privacy and Security for Healthcare Data for the Cloud System, **International Journal of E-Health and Medical Communications (IJEHMC)**, 13(4), (2022). (Scopus Indexed).
4. Nitin Kumar, **Preeti Rani**, Vinod Kumar, Shashikant V. Athawale, Deepika Koundal, "THWSN: Enhanced energy-efficient clustering approach for three-tier heterogeneous wireless sensor networks", **IEEE Sensor Journal**, 2022. (SCI-4.3).
5. Bholu, Biswaranjan, Raghvendra Kumar, **Preeti Rani**, Rohit Sharma, Mazin Abed Mohammed, Kusum Yadav, Shoayee Dlaim Alotaibi, and Lulwah M. Alkwai. *Quality-enabled decentralized dynamic IoT platform with scalable resources integration*. **IET Communication**, (2024), (SCI-1.5).
6. **Preeti Rani**, Rohit Sharma, "Intelligent transportation system for internet of vehicles based vehicular networks for smart cities", **Computers and Electrical Engineering**, (2023). (SCI-4.3).
7. Nitin Kumar, **Preeti Rani**, Vinod Kumar, Pawan Kumar Verma, Deepika Koundal, "TEEECH: Three-Tier Extended Energy Efficient Clustering Hierarchy Protocol for Heterogeneous Wireless Sensor Network", **Expert Systems with Applications**, (2023). (SCI-8.5).
8. Satya Prakash Yadav, Muskan Jindal, **Preeti Rani**, Victor Hugo C de Albuquerque, Caio dos Santos Nascimento, Manoj Kumar, "An improved deep learning-based optimal object detection system from images", **Multimedia Tools and Applications**, (2023). (SCI-3.6).
9. **Preeti Rani et al.**, "Federated Learning-based Misbehaviour detection for the 5G-enabled Internet of Vehicles". **IEEE Transactions on Consumer Electronics**, (2023), (SCI-4.3)
10. Navin kumar Agrawal, Rijwan Khan, **Preeti Rani**, Ajeet Kumar Srivastava, Rohit Sharma, Kusum Yadav, Ahmed Alkhayyat, and Arwa N. Aledaily. "TFL-IHOA: Three-Layer Federated Learning Based Intelligent Hybrid Optimization Algorithm for Internet of

- Vehicle.* **IEEE Transactions on Consumer Electronics** (2023), (SCI-4.3).
11. **Preeti Rani**, Rohit Sharma. "Intelligent Transportation System Performance Analysis of Indoor and Outdoor Internet of Vehicle (IOV) Applications towards 5G" **Tsinghua Science and Technology** (2024), (SCI-6.6).
 12. Singh, Avaneesh, **Preeti Rani**, Janjhyam Venkata Naga Ramesh, Shashikant V. Athawale, Ahmed Hussein Alkhayyat, Arwa N. Aledaily, Thomas André Prola, and Rohit Sharma "Blockchain-Based Lightweight Authentication Protocol for Next Generation Trustworthy Internet of Vehicles Communication. **IEEE Transactions on Consumer Electronics**, (2023), (SCI-4.3).
 13. Verma, Sonia, **Preeti Rani**, Shelly Gupta, Richa Sharma, Kusum Yadav, Arwa N. Aledaily, and Meshal Alharbi, Thomas André Prola, and Rohit Sharma "An Automated Face Mask Detection System Using Transfer Learning Based Neural Network To Preventing Viral Infection. **Expert Systems**, (2024), (SCI-4.3).
 14. Singh, Avaneesh, Mohammad Zia Ur Rahma, **Preeti Rani**, Rohit Sharma, and Elham Kariri. "Smart traffic monitoring through real-time moving vehicle detection using deep learning via aerial images for consumer application." **IEEE Transactions on Consumer Electronics** (2024), (SCI-4.3).
 15. **Preeti Rani** and Mohammed Hussien Falaah. "Real-Time Congestion Control and Load Optimization in Cloud-MANETs Using Predictive Algorithms." *NJF Intelligent Engineering Journal* 1.1 (2024): 66-76.
 16. **Preeti Rani**, Umesh Chandra Garjola, and Haider Abbas. "A Predictive IoT and Cloud Framework for Smart Healthcare Monitoring Using Integrated Deep Learning Model." *NJF Intelligent Engineering Journal* 1.1 (2024): 53-65.
 17. Singh, Avaneesh, Atul Raj, **Preeti Rani**, Ali Khatibi, Horiya Aldeeb, Piyush Kumar Shukla, Ayman Sabry, and Mohamed M. Hassan. "Resilient wireless sensor networks in industrial contexts via energy-efficient optimization and trust-based secure routing." **Peer-to-Peer Networking and Applications** 18, no. 3 (2025): 1-17.
 18. Majeed, M., Ashfaq, M., **Preeti Rani**, Hussain, A., & Azam Zia, M. (2025). "AI-Driven Anomaly Detection and Traffic Management in Software-Defined IoT Networks for Smart Agriculture". *Transactions on Emerging Telecommunications Technologies*, 36(12).

Publications
Book Chapter

1. Naziya Hussain, and **Preeti Rani**. "Comparative studied based on attack resilient and efficient protocol with intrusion detection system based on deep neural network for vehicular system security." *Distributed Artificial Intelligence*. pp. 217-236. CRC Press, 2020, (Scopus Indexed).
2. **Preeti Rani**, Naziya Hussain, Rais Abdul Hamid Khan, Yogesh Sharma, and Piyush Kumar Shukla. "Vehicular Intelligence System: Time-Based Vehicle Next Location Prediction in Software-Defined Internet of Vehicles (SDN-IOV) for the Smart Cities." *In Intelligence of Things: AI-IoT Based Critical-Applications and Innovations*, pp. 35-54. Springer, Cham, 2021. (Scopus Indexed).
3. Naziya Hussain, **Preeti Rani**, Harsha Chouhan, and Urvashi Sharma Gaur. "Cyber Security and Privacy of Connected and Automated Vehicles (CAVs)-Based Federated Learning: Challenges, Opportunities, and Open Issues." *In Federated Learning for IoT Applications*, pp. 169-183. Springer, Cham, 2022. (Scopus Indexed).
4. **Preeti Rani**, Devendra Singh Mohan, Satya Prakash Yadav, Gaurav Kumar Rajput, and Mohammed Al Farouni. "Sentiment Analysis and Emotional Recognition: Enhancing Therapeutic Interventions." *In Demystifying the Role of Natural Language Processing (NLP) in Mental Health*, pp. 283-302. IGI Global Scientific Publishing, 2025.
5. **Preeti Rani**, Satya Prakash Yadav, Prem Narayan Singh, and Muntather Almusawi. "Real-World Case Studies: Transforming Mental Healthcare With Natural Language Processing." *In Demystifying the Role of Natural Language Processing (NLP) in Mental Health*, pp. 303-324. IGI Global Scientific Publishing, 2025.

6. **Preeti Rani**, Kaleem ur Rehman, Satya Prakash Yadav, and Laith Hussein. "**Deep Learning and AI in Behavioral Analysis for Revolutionizing Mental Healthcare.**" In Demystifying the Role of Natural Language Processing (NLP) in Mental Health, pp. 263-282. IGI Global Scientific Publishing, 2025.
7. Singh, Nidhi, **Preeti Rani**, Smriti Sachan, Satya Prakash Yadav, and Mohammed Al-Farouni. "**Digital Watermarking Using Machine Learning and Artificial Intelligence: Methodologies, Challenges, and Future Directions.**" In Digital Watermarking in Cloud Environments For Copyright Protection, pp. 261-284. IGI Global Scientific Publishing, 2026.
8. **Rani, Preeti**, et al. "**Testifying the Criticality of the Internet of Things (IoT), 5G and AI: A Perfect Combination for Battery Management.**" Artificial Intelligence Technologies for Smart and Sustainable Urban Transportation: Integrated Platforms and Use Cases (2025): 71-87.
9. **Rani, Preeti**, et al. "**Decoding the Aspects of Intelligent Traffic Management.**" Artificial Intelligence Technologies for Smart and Sustainable Urban Transportation: Integrated Platforms and Use Cases (2025): 287-300.

Publications Conference

1. **Preeti Rani**, Rohit Sharma, "*An Experimental Study of IEEE 802.11 n Devices for Vehicular Networks with Various Propagation Loss Models*", **International Conference on Signal Processing and Integrated Networks (SPIN 2022)**. (https://doi.org/10.1007/978-981-99-1312-1_11).
2. Ghazala Ansari, **Preeti Rani**, Vinod Kumar, "*A Novel Technique of Mixed Gas Identification Based on the Group Method of Data Handling (GMDH) on Time-Dependent MOX Gas Sensor Data*", **Proceedings of International Conference on Recent Trends in Computing (ICRTC 2022)**. https://doi.org/10.1007/978-981-19-8825-7_55.
3. **Preeti Rani**, Rohit Sharma. "IMFOCA-IOV: Intelligent Moth Flame Optimization based Clustering Algorithm for Internet of Vehicle." **2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT). IEEE, 2023**. <https://doi.org/10.1109/ICCCNT56998.2023.10307646>
4. **Rani, Preeti**, et al. "EECP2-IOT: Energy-Efficient Clustering Protocols for Performance Optimization of Internet of Things-Based Heterogeneous and Homogeneous Wireless Sensor Networks." **International Conference on Internet of Things, Communication and Intelligent Technology. Singapore: Springer Nature Singapore, 2024**. https://doi.org/10.1007/978-981-96-2771-4_50
5. Rehyadd, Rahmy, and **Preeti Rani**. "**Sign-Based Encryption-Enabled Reliable Data Communication for Mobile Ad Hoc Networks.**" 2025 International Conference on Next Generation of Green Information and Emerging Technologies (GIET). IEEE, 2025. <https://doi.org/10.1109/GIET65294.2025.11234764>.

Workshops/Short Courses/Training

1. Training and Certificates the practical training includes in the B. Tech course is from the *MTNL (Shadipur) Delhi*, during 20 June to 30 July, 2011 on **GSS (NSS and BSS) Technology**.
2. Completed a basic course on "Remote Sensing, **Geographical Information System and Global Positioning System**" conducted by *IIRS Dehradun* during 06 August to 05 October, 2012.
3. Completed an advance course on "**Geoweb Services-Technology and Applications**" conducted by *IIRS Dehradun* during 11 February to 15th March, 2013.
4. Completed a workshop on "**Image Processing Robotics by Mazatron Enterprise-2013**" during 9-10th March, 2013 at *Banasthali Vidyapith, Rajasthan, India*.
5. Attended a conference "**User interaction meet-2013**" conducted at *IIRS Dehradun* during 11-12th March, 2013.

6. Attended a " MAYUK-2013" at *Banasthali Vidyapith* as a Technical Coordinator during 22-23rd March, 2013.

Faculty
Development
Program (FDP)
Attended

1. Attended One week FDP on "**Industry 4.0: Digitization, Sensorization & Optimization**" held on from 15/11/2021 to 19/11/2021 at *Manav Rachna International Institute of Research & Studies*.
2. Attended One week FDP on "**Smart City and Internet of Things (IoT)**" held on from 22/11/2021 to 26/11/2021 at *Tripura University*.
3. Attended One week FDP on "**5G and IoT applications**" held on from 06/12/2021 to 10/12/2021 at *National Institute of Technology, Srinagar*.
4. Attended One week FDP on "**IoT: Design Challenges and Emerging System Applications**" held on from 13/12/2021 to 17/12/2021 at *Indian Institute of Information Technology Kalyani*.

Professional
Activities

• **Editorial member**

- Scientific Reports, Discover Computing, Contemporary Mathematics, Discover Sustainability, Journal of Computer Science

• **Journal Reviewing**

- Automatika, Cluster computing, Computer communications, Discover Applied Sciences, Engineering applications of artificial intelligence, Geo-spatial information science, Geocarto international, IEEE transactions on consumer electronics, IEEE transactions on industrial informatics, IEEE transactions on mobile computing, IET image processing, IEEE transactions on Intelligent transportation systems, International journal of communication systems, International journal of machine learning and cybernetics, International journal of system assurance engineering and management, International journal of web information systems, Internet technology letters, Iranian journal of science and technology. Transactions of electrical engineering, Journal of cloud computing, Journal of network and systems management, Mathematics, Peer-to-peer networking and applications, PloS one, Scientific reports, Symmetry, The International journal of networked and distributed computing, The journal of supercomputing, The Scientific World journal, Transactions on emerging telecommunications technologies, Wireless personal communications.