

**Dr. Rakesh Matam**  
Associate Professor  
PhD (IIT Patna)Department of Computer Science &  
Engineering

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Joined the Institute in July 2014

## About

I am currently working as Associate Professor in the Department of Computer Science and Engineering. I have joined IIT G in July 2014. I have completed my Phd from Indian Institute of Technology Patna in March 2014. Previously, I was associated with Jaypee University and Syntel Inc.

## Research Interests

My research interests are in the broad areas of:

- Internet of Things
- Wireless Networks
- Information and Network Security
- Cloud and Fog computing

## Research Projects

- **Title:** Development of MAC associated schemes for large IEEE 802.15.4 based networks, funded by SCIENCE & ENGINEERING RESEARCH BOARD (SERB), Department of Science & Technology, Government of India (Completed July 2020).
- **Title:** Design and Development of an Assistive Device for Persons with Motor Neuron Disease, TIDE, DST, Govt. of India. (Ongoing).
- **Title:** LogIT: A Federated Learning and Fog Computing based framework for IoT Security, MeitY (Cyber Security R&D Division), Govt. of India. (Ongoing).

## Teaching

1. Monsoon 2023: CS622-Cybersecurity
2. Monsoon 2023: CS353-Computer Networks Lab
3. Winter 2024: CS361-Computer Security
4. Winter 2024: CS111-Data Structures Lab

## Ph.D. Students

### Graduated:

- **Dr. Nikumani Choudhary**, Currently working as Assistant Professor at BITS Pilani, Hyderabad Campus.  
**Thesis Title:** Development of MAC associated schemes for large IEEE 802.15.4 Cluster-tree Networks;  
**Date of Ph.D. Viva Voce:** November 2020.

### Ongoing:

- **Mr. Mehbub Alam**, Full-time: (2019), Area: Fog & Cloud Computing, JRF IIT Guwahati. (Thesis Submitted).
- **Mr. Bishal Chhetry**, Full-Time:(2023), Area: IoT Security.
- **Mr. Arvind Kumar**, Part-time:(2016), Area: Concurrent Data Collection in IoT, Currently working as Assistant Professor at Jaypee University.
- **Mr. Rakesh Sehgal**, Part-time:(2018), Area: IoT Device Security, Currently working as Associate Director, C-DAC Mohali.
- **Ms. Rachna Shah**, Part-time:(2019), Area: Currently working as Scientist -B, NIC Uttarakhand.

## Consultancy Projects

Development of National Proactive Threat Hunting and Response System and  
Development of Intelligent Honeypot for NSCS, CDAC Noida.

## Publication

### Conference

- ④ Mehbub Alam, Nurzaman Ahmed, Rakesh Matam, Ferdous A Barbhuiya, "Fog: Prediction-based Fog Computing Architecture for Offline IoT", IEEE international conference on Wireless Communications and Mobile Computing (IWCMC 2021), (2021), ACM
- ④ Mithun Mukherjee, Vikas Kumar, Ankit Lat, Mian Guo, Rakesh Matam, Yunrong Lv, "Distributed deep learning-based task offloading for UAV-enabled mobile edge computing", IEEE INFOCOM 2020-IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), (2020), pages. 1208-1212, IEEE
- ④ Mithun Mukherjee, Vikas Kumar, Suman Kumar, Rakesh Matam, Constandinos X Mavroumoustakis, Qi Zhang, Mohammad Shojafar, George Mastorakis, "Computation offloading strategy in heterogeneous fog computing with energy and delay constraints", ICC 2020-2020 IEEE International Conference on Communications (ICC), (2020), pages. 1-5, IEEE
- ④ Mithun Mukherjee, Vikas Kumar, Dipendu Maity, Rakesh Matam, Constandinos X Mavroumoustakis, Qi Zhang, George Mastorakis, "Delay-sensitive and priority-aware task offloading for edge computing-assisted healthcare services", GLOBECOM 2020-2020 IEEE Global Communications Conference, (2020), pages. 1-5, IEEE
- ④ Mithun Mukherjee, Yejun Liu, Jaime Lloret, Lei Guo, Rakesh Matam, Mohammad Aazam, "Transmission and latency-aware load balancing for fog radio access networks", 2018 IEEE Global Communications Conference (GLOBECOM), (2018), pages. 1-6, IEEE
- ④ Arvind Kumar, Rakesh Matam, Shailendra Shukla, "Impact of packet dropping attacks on RPL", 2016 Fourth International Conference on Parallel, Distributed and Grid Computing (PDGC), (2016), pages. 694-698, IEEE
- ④ Nikumani Choudhury, Rakesh Matam, "Distributed beacon scheduling for IEEE 802.15.4 cluster-tree topology", 2016 IEEE Annual India Conference (INDICON), (2016), pages. 1-6, IEEE

- Mithun Mukherjee, Lei Shu, Vikas Kumar, Prashant Kumar, Rakesh Matam, "Reduced out-of-band radiation-based filter optimization for UPMC systems in 5G", 2015 international wireless communications and mobile computing conference (IWCMC), (2015), pages. 1150-1155, IEEE
- Rakesh Matam, Somanath Tripathy, "Provably Secure Routing Protocol for Wireless Mesh Networks.", Int. J. Netw. Secur.,vol. 16, no. 3, (2014), pages. 168-178,

## Journal

- Mithun Mukherjee, Rakesh Matam, Constandinos X Mavromoustakis, Hao Jiang, George Mastorakis, Mian Guo, "Intelligent edge computing: Security and privacy challenges", IEEE Communications Magazine, Vol 58, Issue 9, (2020), pages. 26-31, IEEE
- Nikumani Choudhury, Rakesh Matam, Mithun Mukherjee, Jaime Lloret, Ezhil Kalaimannan, "NCHR: A nonthreshold-based cluster-head rotation scheme for IEEE 802.15. 4 cluster-tree networks", IEEE Internet of Things Journal, Vol 8, Issue 1, (2020), pages. 168-178, IEEE
- Mithun Mukherjee, Suman Kumar, Constandinos X Mavromoustakis, George Mastorakis, Rakesh Matam, Vikas Kumar, Qi Zhang, "Latency-driven parallel task data offloading in fog computing networks for industrial applications", IEEE Transactions on Industrial Informatics, (2019), pages. 6050-6058, IEEE
- Nikumani Choudhury, Rakesh Matam, Mithun Mukherjee, Lei Shu, "Beacon synchronization and duty-cycling in IEEE 802.15. 4 cluster-tree networks: A review", IEEE internet of things journal, Vol 5, Issue 3, (2018), pages. 1765-1788, IEEE
- Mithun Mukherjee, Rakesh Matam, Lei Shu, Leandros Maglaras, Mohamed Amine Ferrag, Nikumani Choudhury, Vikas Kumar, "Security and privacy in fog computing: Challenges", IEEE Access, vol. 5, (2017), pages. 19293-19304, IEEE
- Rakesh Matam, Somanath Tripathy, "WRSR: wormhole-resistant secure routing for wireless mesh networks", EURASIP Journal on Wireless Communications and Networking, Vol 2013, Issue 1, (2013), pages. 1-12, SpringerOpen
- Rakesh Matam, Somanath Tripathy, "Improved heuristics for multicast routing in wireless mesh networks", Wireless networks, vol. 19, (2013), pages. 1829-1837, Springer US
- Mehbub Alam, Nurzaman Ahmed, Rakesh Matam, Ferdous A Barbhuiya, ""IEEE 802.11ah-Enabled Internet-of-Drone Architecture"", IEEE Internet of Things Magazine, (Accepted), (0),
- Mithun Mukherjee, Suman Kumar, Qi Zhang, Rakesh Matam, Constandinos X Mavromoustakis, Yunrong Lv, George Mastorakis, "Task data offloading and resource allocation in fog computing with multi-task delay guarantee", IEEE Access, vol. 7, (0), pages. 152911-152918, IEEE
- Nikumani Choudhury, Rakesh Matam, Mithun Mukherjee, Jaime Lloret, "LBS: A beacon synchronization scheme with higher schedulability for IEEE 802.15. 4 cluster-tree-based IoT applications", IEEE Internet of Things Journal, Vol 6, Issue 5, (0), pages. 8883-8896, IEEE
- Rakesh Matam, Somanath Tripathy, "Secure multicast routing algorithm for wireless mesh networks", Journal of Computer Networks and Communications, vol. 2016, (0), Hindawi

## Book Chapters

- Nikumani Choudhury, Rakesh Matam, Mithun Mukherjee, Lei Shu, "Adaptive duty cycling in IEEE 802.15. 4 cluster tree networks using MAC parameters", Proceedings of the 18th ACM International Symposium on Mobile Ad Hoc Networking and Computing, (2017), pages. 1-2,



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