

Samaresh Bera

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Indian Institute of Technology Jammu
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RESEARCH INTERESTS

Software-defined networking, Network function virtualization, 5G (and beyond), Cross-layer optimization, and Network slicing

EXPERIENCE

Assistant Professor, IIT Jammu

Dept. of Computer Science and Engineering

Dec. 2022 – Present

C. V. Raman Post-doctoral Research Fellow, IISc. Bangalore

Dept. of Electrical Communication Engineering

Jan. 2021 – Dec. 2022

Mentor: Prof. Neelesh B. Mehta

Post-doctoral Researcher, IISc. Bangalore

Centre for Networked Intelligence

Dec. 2020

Research Engineer, IISc. Bangalore

INRIA, Sophia Antipolis and Nokia Bell Labs, France

Jan. 2020 – Apr. 2020

PROJECTS/WORKSHOPS

- “Reliable and Secure Network Slicing in 5G and Beyond Networks”, Amount: INR 29.75 Lakhs, IIT Jammu, 2023-2026.
- “Reliability and Latency-Aware Network Slicing and Resource Allocation for uRLLC in 5G Networks” is accepted for funding by SERB, Govt. of India.
- "Indo-Taiwan Bilateral Workshop on Cyber Security", funded by DST, Govt. of India, 2023.

EDUCATION

PhD, Indian Institute of Technology Kharagpur

Thesis: Software-Defined Networking for Internet of Things: Rule Placement and Routing

2020

Supervisor: Prof. Sudip Misra

MS (by Research), Indian Institute of Technology Kharagpur

Thesis: Distributed Pricing Policy and Energy Management in Smart Grid

2015

Supervisor: Prof. Sudip Misra

BTech, West Bengal University of Technology

Electronics and Communication Engineering

2011

TEACHING

Instructor/Coordinator:

Introduction to Computer Systems (CSC005P1M)	IIT Jammu	Autumn 2023-2024
Operating Systems (CSC031U3M)	IIT Jammu	Autumn 2023-2024
Information Security (CSC050P1M)	IIT Jammu	Spring 2022-2023, 2023-2024
Fundamentals of SDN and NFV (CSC070P6G)	IIT Jammu	Spring 2023-2024

STUDENT GUIDED AS SUPERVISOR

- **PhD:** one (ongoing)
- **MTech:** one (ongoing)

PUBLICATIONS

Book

1. S. Misra and **S. Bera**, "Smart Grid Technology: A Cloud Computing and Data Management Approach", *Cambridge University Press*, Cambridge, UK, ISBN: 9781108566506, 2018 [⟨ link ⟩](#).

Journal

1. P. Khambooj, S. Pal, **S Bera**, S Misra, "QoS-aware Multipath Routing in Software-Defined Networks", *IEEE Trans. on Network Science and Engineering*, vol. 10, no. 2, pp. 723-732, 2023, [⟨link⟩](#).
2. C. R. Chowdhury, S Misra, C Mandal, **S Bera**, "SeamFlow: Seamless Flow Forwarding in Energy Harvesting-Enabled Access Points of SDWLAN", *IEEE Trans. on Sustainable Computing*, vol. 8, no. 1, pp. 94-108, 2023, [⟨link⟩](#).
3. **S. Bera**, S. Misra, N. Saha, and H. Sharif, "Q-Soft: QoS-aware Traffic Forwarding in Software-Defined Cyber-Physical Systems", *IEEE Internet of Things Journal*, 2021 (preprint), [⟨link⟩](#).
4. N. Saha, S. Misra, and **S. Bera**, "Q-Flag: QoS-Aware Flow-Rule Aggregation in Software-Defined IoT Networks", *IEEE Internet of Things Journal*, 2021 (preprint), [⟨link⟩](#).
5. **S. Bera**, S. Misra, and N. Saha, "Traffic-Aware Dynamic Controller Assignment in SDN", *IEEE Transactions on Communications*, vol. 68, no. 7, 2020, [⟨link⟩](#).
6. S. Misra and **S. Bera**, "Soft-VAN: Mobility-Aware Task Offloading in Software-Defined Vehicular Network", *IEEE Trans. on Vehicular Technology*, 2019, [⟨link⟩](#).
7. **S. Bera**, S. Misra, and A. Jamalipour, "FlowStat: Adaptive Flow-Rule Placement for Per-Flow Statistics in SDN", *IEEE Journal on Selected Areas in Communications*, vol. 37, no. 3, pp. 530-539, 2019 [⟨link⟩](#).
8. **S. Bera**, S. Misra, and M. S. Obaidat, "Mobi-Flow: Mobility-Aware Adaptive Flow-Rule Placement in Software-Defined Access Network", *IEEE Trans. on Mobile Computing*, 2018 [⟨link⟩](#).
9. N. Saha, **S. Bera**, and S. Misra, "Sway: Traffic-Aware QoS Routing in Software-Defined IoT", *IEEE Trans. on Emerging Topics in Computing*, 2018 [⟨link⟩](#).
10. **S. Bera**, S. Misra, S. K. Roy, and M. S. Obaidat, "Soft-WSN: Software-Defined WSN Management System for IoT Applications", *IEEE Systems Journal* vol. 12, no. 3, pp. 2074-2081, Sept. 2018 (**Best paper award 2019**) [⟨link⟩](#).
11. S. Misra, **S. Bera**, Achuthananda M.P., S. K. Pal, and M. S. Obaidat, "Situation-Aware Protocol Switching in Software-Defined Wireless Sensor Network Systems", *IEEE Systems Journal*, vol. 12, no. 3, pp. 2353-2360, Sept. 2018 [⟨link⟩](#).
12. **S. Bera**, S. Misra, and A. V. Vasilakos, "Software-Defined Networking for Internet of Things: A Survey", *IEEE Internet of Things Journal*, vol. 4, no. 6, pp. 1994-2008, Dec. 2017 [⟨link⟩](#).
13. **S. Bera**, S. Misra, and D. Chatterjee, "C2C: Community-Based Cooperative Energy Consumption in Smart Grid", *IEEE Transactions on Smart Grid*, vol. 9, no. 5, pp. 4262-4269, Sept. 2018 [⟨link⟩](#).
14. S. Misra, **S. Bera**, T. Ojha, H. T. Mouftah, and A. Anpalagan, "ENTRUST: Energy Trading Under Uncertainty in Smart Grid Systems", *Computer Networks* (Elsevier), vol. 110, pp. 232-242, Dec. 2016 [⟨link⟩](#).
15. A. Samanta, **S. Bera**, and S. Misra, "Link-Quality-Aware Resource Allocation With Load Balance in Wireless Body Area Networks", *IEEE Systems Journal*, vol. 12, no. 1, pp. 74-81, Mar. 2018 [⟨link⟩](#).
16. S. Misra, **S. Bera**, T. Ojha, and L. Zhou, "ENTICE: Agent-Based Energy Trading with Incomplete Information in the Smart Grid", *Journal of Network and Computer Applications*, Vol. 55, pp. 202-212, Sept. 2015, [⟨link⟩](#).
17. **S. Bera**, P. Gupta, and S. Misra, "D2S: Dynamic Demand Scheduling in Smart Grid Using Optimal Portfolio Selection Strategy", *IEEE Transactions on Smart Grid*, Vol. 6, No. 3, pp. 1434-1442, Apr. 2015, [⟨link⟩](#).

18. **S. Bera**, S. Misra, and J. Rodrigues, "Cloud Computing Applications for Smart Grid: A Survey", *IEEE Transactions on Parallel and Distributed Systems*, Vol. 26, No. 5, pp. 1477–1494, 2015, [link](#).
19. S. Misra, **S. Bera**, and T. Ojha, "D2P: Distributed Dynamic Pricing Policy in Smart Grid for PHEVs Management", *IEEE Transactions on Parallel and Distributed Systems*, Vol. 26, No. 3, pp. 702–712, Feb. 2015, [link](#).
20. S. Misra, **S. Bera**, and M. S. Obaidat, "Economics of Customer's Decisions in Smart Grid", *IET Networks*, Vol. 4, No. 1, pp. 37–43, January 2015, [link](#).
21. S. Misra, **S. Bera**, A. Mondal, R. Tirkey, H. C. Chao, and S. Chattopadhyay, "Optimal Gateway Selection in Sensor-Cloud Framework for Health Monitoring", *IET Wireless Sensor Systems*, Vol. 3, No. 4, pp. 61–68, December 2013, [link](#).

Conference & Workshop

1. **S. Bera**, "Availability-Aware VNF Placement for uRLLC Applications in MEC-Enabled 5G Networks", in *Proc. IEEE ANTS*, 2023.
2. **S. Bera** and N. B. Mehta, "Network Slicing in 5G Edge Networks with Controlled Slice Redistributions", in *Proc. IEEE/ACM/IFIP CNSM*, Oct. 2021, [link](#).
3. N. Saha, **S. Bera**, and S. Misra, "QoS-Aware Adaptive Flow-rule Aggregation in Software-Defined IoT", in *Proc. IEEE GLOBECOM*, Dec. 2018, [link](#).
4. **S. Bera**, S. Misra, and N. Saha, "DynamITE: Dynamic Traffic Engineering in Software-Defined Cyber Physical Systems", in *Proc. IEEE ICC Workshop*, May 2018, [link](#).
5. **S. Bera**, S. Misra, M. S. Obaidat, "Mobility-Aware Flow-Table Implementation in Software-Defined IoT", in *Proc. IEEE GLOBECOM*, Dec. 2016, [link](#).
6. **S. Bera**, T. Ojha, S. Misra, M. S. Obaidat, "Cloud-based Optimal Energy Forecasting for Enabling Green Smart Grid Communication", in *Proc. IEEE GLOBECOM*, Dec. 2015, [link](#).
7. T. Ojha, **S. Bera**, S. Misra, and N. S. Raghuwanshi, "Dynamic Duty Scheduling for Green Sensor-Cloud Applications", in *Proc. IEEE CloudCom*, pp. 841–846, Dec., 2014, [link](#).
8. **S. Bera**, S. Misra, and M. S. Obaidat, "Energy Efficient Smart Metering for Green Smart Grid Communication", in *Proc. IEEE GLOBECOM*, pp. 2466–2471, Dec., 2014, [link](#).
9. S. Misra, A. Mondal, S. Banik, M. Khatua, **S. Bera**, and M. S. Obaidat, "Residential Energy Management in Smart Grid: A Markov Decision Process Based Approach", in *Proc. IEEE iThings/CPSCoM*, Aug. 2013, [link](#).

Book Chapter

1. S. N. Das, **S. Bera**, S. Misra, S. K. Pal, "Introduction to Wireless Sensor Networks", in Book "Soft Computing Applications in Sensor Networks", Editors: Misra and Pal, CRC Press, 2016, [link](#).

INVITED TALKS

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- "Network slicing in 5G edge networks" at CNI, IISc Bangalore, India, Nov. 2021
 - "Software-defined networking for internet of things" at ICACIE, 2020
 - "SDN: Rule placement and routing" at AICTE-sponsored short-term training program on "Computer Networking with SDN", Bharati Vidyapeeth, Pune, India, 2020

HANDS-ON EXPERIENCE

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- OSM Hackfest 13 on "5G Core Onboarding using Magma", Jun. 13-17, 2022, Virtual.
 - OSM Hackfest 12 on "VNF Onboarding using Kamailio", Jan. 24-28, 2022, Virtual.
 - OSM Mid-Release 11 Hackfest on "On-boarding 5G core network functions using OAI and OSM", Sept. 13-17, 2021, Virtual.

AWARDS AND RECOGNITIONS

- **Senior Member**, IEEE
- **DST AWSAR** award, 2021
- Received **IEEE Richard E Merwin** Student Scholarship from the IEEE Computer Society, 2017.
- Selected as **Young Researcher** for attending 5th **Heidelberg Laureate Forum**, Germany, September 2017.
- Received **travel grant** from **Heidelberg Laureate Forum Foundation** to attend HLF 2017.
- Received **Merit Cum Means scholarship** from **Govt. of West Bengal**, 2007-2009.

OTHER ACTIVITIES

TPC Member	ICDCN-2020, IEEE TechSym-2016, IEEE ScalCom-2014
Reviewer (selected journals)	IEEE/ACM TNET, ACM CSUR, IEEE JSAC, IEEE TNSM, IEEE TCOMM, and IEEE TMC
IEEE Student Activity	Chair (2019), Vice-Chair (2017, 2018), Treasurer (2016) IEEE Student Branch, IIT Kharagpur
Membership	Member, IEEE, ACM, and IEEE Computer Society
Conference Org. Committee Member	IEEE TechSym (2014 and 2016)

DECLARATION

I hereby declare that the information furnished above are true to the best of my knowledge.

December 25, 2023

Samaresh Bera