

Dr. Alakesh Kalita, SMIEEE

[EMAIL](#)[WEBSITE](#)[LINKEDIN](#)[GOOGLE SCHOLAR](#)

RESEARCH INTERESTS

Internet of Things, Computer Networks, Edge Computing

WORK EXPERIENCE

OCT'23-AUG'24



University Lecturer

Singapore University of Technology and Design (SUTD)

Courses:

- Python Programming Language [⟨Students' Feedback⟩](#)
- Computer System and Engineering (Lab + Theory)
- Data-Driven World

APR'22-OCT'23



Research Fellow

National University of Singapore, Singapore

Supervisor: Dr. Mohan Gurusamy

JUL'17-DEC'17



Junior Research Fellow

Indian Institute of Information Technology Guwahati, India

AUG'16-JUN'17



Research Scientist

North Eastern Hill University, Meghalaya, India

EDUCATION

JAN'18 - MAY'22



Doctor of Philosophy

Indian Institute of Technology Guwahati, India

Department: Computer Science and Engineering

Thesis: Adaptive Resource Allocation for Faster Formation of 6TiSCH IoT Network. [PDF](#)

Supervisor: Dr. Manas Khatua

🏆 **Innovative Student Projects Award'22** from Indian National Academy of Engineering, India ([Indian National Award](#))

JULY'14 - MAY'16



Master in Technology

Assam Central University, India

Department: Computer Science and Engineering

🏆 **University Rank -2**

JUNE'08 - JUNE'12



Bachelor in Technology

Assam Don Bosco University, India

Department: Computer Science and Engineering

PUBLICATIONS

JOURNALS

14. A. Kalita, and M. Gurusamy, "On-the-Fly Autonomous Slot Allocation in 6TiSCH-based Industrial IoT Networks", *IEEE Transactions on Industrial Informatics*, IF-12.34, 2024, (Accepted). [PDF](#)
13. A. Hazra, A. Kalita, and M. Gurusamy, "Distributed Service Provisioning with Collaboration of Edge and Cloud in Industry 5.0", *IEEE Internet of Things Journal*, I.F: 10.6, vol. 11, no. 12, pp. 21885-21894, 2024. [PDF](#)
12. A. Hazra, A. Kalita, and M. Gurusamy, "Meeting the Requirements of Internet of Things: The Promise of Edge Computing", *IEEE Internet of Things Journal*, I.F: 10.6, vol. 11, no. 5, pp. 7474 - 7498, 2024. [PDF](#)
11. A. Hazra, P. Maurya, A. Kalita, S. Deb, M. Gurusamy, and V. G. Menon, "Cognitive Computing and Machine Intelligence in Fog-Cloud Infrastructure for Industry 5.0" in *IEEE Consumer Electronics Magazine*, I.F: 4.5, 2024 (Accepted). [PDF](#)
10. A. Kalita, A. Hazra, and M. Gurusamy, "Parrando's Paradox based Enhanced Beacon Transmission in 6TiSCH Networks", *IEEE Networking Letters*, IF-NA, vol. 5, no. 4, pp. 204-207, 2023. [PDF](#)
9. A. Kalita, M. Gurusamy, and M. Khatua "A Gaming and Trust Model based Counter Measure for DIS Attack on 6TiSCH IoT Networks", in *IEEE Internet of Things Journal*, IF=10.6, vol. 10, no. 11, pp. 9727-9737, 2023. [PDF](#)
8. A. Kalita and M. Khatua, "Time-Variant RGB Model for Minimal Cell Allocation and Scheduling in 6TiSCH Networks," in *IEEE Transactions on Mobile Computing*, IF-7.9, vol. 23, no. 2, pp. 1803 - 1814, 2023. [PDF](#)
7. A. Kalita and M. Khatua, "6TiSCH – IPv6 Enabled Open Stack IoT Network Formation: A Review," in *ACM Transactions on Internet of Things*, IF-2.7, vol. 3, no. 24, pp. 1-36, 2022. [PDF](#)
6. A. Kalita, A. Brighente, M. Khatua, and M. Conti, "Effect of DIS Attack on 6TiSCH Network Formation," in *IEEE Communications Letters*, IF-3.55, vol. 26, no. 5, pp. 1190-1193, May, 2022. [PDF](#)
5. A. Kalita and M. Khatua, "A Non-cooperative Gaming Approach for Control Packet Transmission in 6TiSCH Network," in *IEEE Internet of Things Journal*, IF=10.6, vol. 9, no. 5, pp. 3954-3961, 2022. [PDF](#)
4. A. Kalita and M. Khatua, "Adaptive Control Packet Broadcasting Scheme for Faster 6TiSCH Network Bootstrapping," in *IEEE Internet of Things Journal*, IF=10.6, vol. 8, no. 24, pp. 17395-17402, 2021. [PDF](#)
3. A. Kalita and M. Khatua, "Autonomous Allocation and Scheduling of Minimal Cell in 6TiSCH Network," in *IEEE Internet of Things Journal*, IF=10.6, vol. 8, no. 15, pp. 12242-12250, 2021. [PDF](#)
2. A. Kalita and M. Khatua, "Opportunistic Transmission of Control Packets for Faster Formation of 6TiSCH Network," in *ACM Transactions on Internet of Things*, IF-2.7, vol. 2, no. 1, pp. 1-29, 2021. [PDF](#)
1. A. Kalita and M. Khatua, "Channel Condition Based Dynamic Beacon Interval for Faster Formation of 6TiSCH Network," in *IEEE Transactions on Mobile Computing*, IF-7.9, vol. 20, no. 7, pp. 2326-2337, 2021. [PDF](#)

CONFERENCES

13. P. Joshi, A. Kalita, M. Gurusamy, "Securing the Skies: An IRS-Assisted AoI-Aware Secure Multi-UAV System with Efficient Task Offloading" in IEEE 99th Vehicular Technology Conference (VTC), 2024, Accepted. [PDF](#)
12. V. Tummala, A. Hazra, A. Kalita, M. Gurusamy, "Efficient Task Offloading through Federated Learning in UAV-Assisted Edge Networks" in IEEE 99th Vehicular Technology Conference (VTC), 2024, Accepted.

11. A. Kalita, A. Hazra, and M. Gurusamy, 'RIM: Reputation-Based Incentives for Optimizing Service Pricing in Metaverse', In Proc. of IEEE Future Networks World Forum, USA, Baltimore (FNWF), 2023. [PDF](#)
10. V. Sebastiani*, A. Kalita*, and M. Gurusamy, 'Dynamic Resource Allocation and Pricing for Edge-Assisted Metaverse', In Proc. of IEEE Future Networks World Forum, USA, Baltimore (FNWF), 2023. [PDF](#)
9. A. Hazra, B. Mali, A. Kalita, and M. Gurusamy, 'Federated Learning for Cost Optimized Offloading in Edge-enabled Industrial Internet of Things', In Proc. of IEEE Future Networks World Forum, USA, Baltimore (FNWF), 2023. [PDF](#)
8. A. Hazra, A. Kalita, and M. Gurusamy, 'A Combined Approach of Industrial Edge Computing and Machine Learning for Predictive Maintenance', In IEEE GLOBECOM WKSHPS: AI/ML for Edge/Fog Networks program (GLOBECOM - A4E), 2023. [PDF](#)
7. A. Kalita, A. Hazra, and M. Gurusamy, "Efficient Schemes for Improved Performance in 6TiSCH Networks", In IEEE INFOCOM WKSHPS: The 10th International Workshop on Computer and Networking Experimental Research using Testbeds (INFOCOM - CNERT), 2023, [PDF](#).
6. A. Kalita and M. Khatua, "Opportunistic Priority Alternation Scheme for Faster Formation of 6TiSCH Network," In Proc. of the International Conference on Distributed Computing and Networking (ICDCN), 2020. [PDF](#)
5. A. Kalita and M. Khatua, "Faster Joining in 6TiSCH Network using Dynamic Beacon Interval", In Proc. of the International Conference on Communication Systems Networks (COMSNETS), 2019. [PDF](#)
4. A. Kalita, N. Ahmed, H. Rahman, and M. I. Hussain, "A QoS-aware MAC protocol for large-scale networks in Internet of Things," In Proc. of the International Conference on Advanced Networks and Telecommunications Systems (ANTS), 2017. [PDF](#)
3. A. Kalita, K. Ray, A. Biswas, and M. A. Hussain, "A topology for network-on-chip", In Proc. of the International Conference on Information Communication and Embedded Systems (ICICES), 2016. [PDF](#)
2. K. Ray, A. Kalita, A. Biswas, and M. A. Hussain, "A multipath networkon-chip topology", In Proc. of the International Conference on Information Communication and Embedded Systems (ICICES), 2016. [PDF](#)
1. A. Biswas, M. A. Hussain, and A. Kalita, "An improved congestion free modified fat tree network", In Proc. of the International Conference on Signal Processing, Communication, Power and Embedded System (SCOPES), 2016. [PDF](#)

PRE-PRINT

1. J. Poorvi, A. Kalita, and M. Gurusamy, "Reliable and Efficient Data Collection in UAV-based IoT Networks", arXiv, 2024. [PDF](#)
2. A. Kalita and M. Gurusamy, "D2R2: Distributed and Dynamic Reputation based Resource Allocation in Metaverse", TechXiv, 2022. [PDF](#)

UNDER REVIEW

1. J. Poorvi, A. Kalita, and M. Gurusamy, "Reliable and Efficient Data Collection in UAV-based IoT Networks", [IEEE Communications Surveys & Tutorials](#). (under major revision)

TECHNICAL REPORT

1. A. Kalita, "Contiki-NG, CC2650 IoT devices, and FIT IoT-LAB." [PDF](#)

SIMULATOR

1. A. Kalita, "6TiSCH Cell Allocation Simulator" [<GitHub>](#)

AWARDS AND HONORS

- Received Annual Performance Bonus (\$8000 SGD) from NUS, Singapore.
- Received Indian National Academy of Engineering (INAE) Innovative Student Projects Award (equivalent to best thesis) for Ph.D. Thesis work.
- Received travel grant to attend ICDCN'2020 conference from IIT Guwahati, India.
- Qualified UGC-NET (National Eligibility Test) for Assistant Professor (India).
- Received travel grant to attend COMSNETS'2019 conference from the conference organizer.
- Received MHRD scholarship during Ph.D. (2018-2022).
- Bagged second prize in Regional Innovators Conclave conducted by Government of Meghalaya for "Smart Lighting Model", Meghalaya, India 2017.
- Qualified GATE'2017.
- Secured First Class 2nd position with distinction in Master of Technology.
- Received TEQIP-II scholarship during M-Tech (2014-2016).
- Bagged first prize in line follower robotics competition in Assam University, India 2016.
- Awarded with *Anandaram Boruah Student Award*, 2006 for performance of 10th standard board examination by State Government of Assam, India.

MENTORSHIP

- Valensia Sebastiani, MSc, NUS-ECE
- Joshi Poorvi, MSc, NUS-ECE
- Wu Xiaoxi, MSc, NUS-ECE

PROFESSIONAL SERVICE

Resource Person

- Delivered a keynote on "How to make the resource-constrained IoT networks more efficient?" at the Workshop on LPWAN-Based LEO Satellite Communication for 6G: Challenges, Innovations, and Future Directions, VTC 2024, Marina Bay Sands Hotel located at 10 Bayfront Avenue, Singapore, on 24 June, 2024
- Delivered an expert talk on "A Tutorial on 6TiSCH IoT Network", at the workshop on "Recent Trends in Information Technology, Networking, Communication and Healthcare" held in the department of CSE, Tezpur University, Assam, India, on 11-12 March, 2023.
- Delivered an expert talk on "Internet of Things", for the Project based Industrial Training on Blockchain, IoT and Machine Learning using Python, jointly organized by Central Institute of Technology Kokrajhar and NIELIT Guwahati, Assam, India, on 4 August, 2022.

Technical Program Committee Member

- 2nd International Conference on Intelligent Computing Systems and Applications (ICICSA-2023), NIT Silchar, Assam, India
- 21st IEEE International Conference on Pervasive Intelligence and Computing (IEEE PICom 2023); Special Session on Distributed Machine Learning for Edge/Fog Computing: Challenges and Future Directions
- 1st IEEE International Conference on Computational Intelligence, Networks and Security (ICCINS-2023), Mylavaram, AP, India

Reviewer

- IEEE Transactions on Mobile Computing
- IEEE Internet of Things Journal
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Service Computing
- IEEE Engineering Management Review
- IEEE Communications Standards Magazine
- Wireless Communication and Networking (Springer)