

# Alakesh Kalita, Ph.D.

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## Education







- **Ph.D. in Computer Sc. and Engg.**, Indian Institute of Technology Guwahati, India, 2022.  
🏆 Received INAE Best Project (thesis) Award 2022; (Indian National Award).
- **M.Tech in Computer Sc. and Engg.**, Assam Central University, India, 2016.
- **B.Tech in Computer Sc. and Engg.**, Assam Don Bosco University, India, 2012.





## Research Interests

- Internet of Things
- Metaverse
- Edge and Cloud Computing







## Publications

### Journals

1. A. Kalita, A. Hazra, and M. Gurusamy, "Parrando's Paradox based Enhanced Beacon Transmission in 6TiSCH Networks", *IEEE Networking Letters*, IF-NA, 2023, (Accepted). 
2. 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-6.07, 2023, (Accepted). 
3. 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-11.7, vol. 10, no. 11, pp. 9727-9737, 2023. 
4. A. Kalita and M. Khatua, "6TiSCH – IPv6 Enabled Open Stack IoT Network Formation: A Review," in *ACM Transactions on Internet of Things*, IF-NA, vol. 3, no. 24, pp. 1-36, 2022. 
5. 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. 
6. A. Kalita and M. Khatua, "A Non-cooperative Gaming Approach for Control Packet Transmission in 6TiSCH Network," in *IEEE Internet of Things Journal*, IF-11.7, vol. 9, no. 5, pp. 3954-3961, 2022. 

7. A. Kalita and M. Khatua, "Adaptive Control Packet Broadcasting Scheme for Faster 6TiSCH Network Bootstrapping," in *IEEE Internet of Things Journal*, IF-11.7, vol. 8, no. 24, pp. 17395–17402, 2021. 
8. A. Kalita and M. Khatua, "Autonomous Allocation and Scheduling of Minimal Cell in 6TiSCH Network," in *IEEE Internet of Things Journal*, IF-11.7, vol. 8, no. 15, pp. 12242–12250, 2021. 
9. A. Kalita and M. Khatua, "Opportunistic Transmission of Control Packets for Faster Formation of 6TiSCH Network," in *ACM Transactions on Internet of Things*, IF-NA, vol. 2, no. 1, pp. 1–29, 2021. 
10. A. Kalita and M. Khatua, "Channel Condition Based Dynamic Beacon Interval for Faster Formation of 6TiSCH Network," in *IEEE Transactions on Mobile Computing*, IF-6.07, vol. 20, no. 7, pp. 2326–2337, 2021. 

## Conference Proceedings

1. 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 (CNERT)*, 2023, (Accepted).
2. 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. 
3. 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. 
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. 
5. 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. 
6. 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. 
7. 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. 

## Under Review

1. A. Kalita, A. Hazra, and M. Gurusamy, "RIM: Reputation-Based Incentives for Optimizing Service Pricing in Metaverse", (Journal).

2. A. Hazra, A. Kalita, and M. Gurusamy, "Potential of Zero-Touch Network Management in Industry 5.0: A Future Prospect", (Journal).
3. A. Hazra, A. Kalita, and M. Gurusamy, "Distributed Service Provisioning with Collaboration of Edge and Cloud in Industry 5.0", (Journal).
4. A. Hazra, A. Kalita, and M. Gurusamy, "Meeting the Requirements of Internet of Things: The Promise of Edge Computing" (Journal)
5. A. Kalita, and M. Gurusamy, "On-the-Fly Autonomous Slot Allocation in 6TiSCH-based Industrial IoT Networks" (Conference)
6. V. Sebastain, A. Kalita, and M. Gurusamy, "Dynamic Resource Allocation and Pricing for Edge-Assisted Metaverse" (Conference)
7. A. Hazra, A. Kalita, and M. Gurusamy, "Predicting Machine Downtime in Edge-Enabled Industrial Internet of Things" (Conference)

## Research Experience

- Research Fellow, National University of Singapore, Singapore, April 2022 - Till now.
- Senior Research Fellow, Indian Institute of Technology Guwahati, India, Jan 2020 - April 2022.
- Junior Research Fellow, Indian Institute of Technology Guwahati, India, Jan 2018 - Jan 2020.
- Junior Research Fellow, Indian Institute of Information Technology Guwahati, India, July 2017 - Dec 2017.
- Research Scientist, North-Eastern Hill University, India, Aug 2016 - June 2017.

## Teaching Assistance

- Indian Institute of Technology Guwahati, India, 2018 - 2022.
- Assam Central University, India, 2015 - 2016.

## Academic Awards

- 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 10<sup>th</sup> standard board examination by State Government of Assam, India.

## Professional Service

### Resource Person

- 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

### Reviewer

- IEEE Transactions on Mobile Computing
- IEEE Internet of Things Journal
- IEEE Transactions on Vehicular Technology
- Wireless Communication and Networking (Springer)