

BIPLAB SIKDAR

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EMPLOYMENT

Head of Department, Department of Electrical and Computer Engineering, National University of Singapore, Singapore 07/2023 - present
Acting Head of Department, Department of Electrical and Computer Engineering, National University of Singapore, Singapore 08/2022 - 07/2023
Vice Dean (Research), College of Design and Engineering, National University of Singapore, Singapore 01/2022 - 07/2022
Vice Dean (Graduate Programs), Faculty of Engineering, National University of Singapore, Singapore 01/2020 - 12/2021
Professor, National University of Singapore, Singapore 01/2023 - present
Associate Professor, National University of Singapore, Singapore 07/2013 - 12/2022
Associate Professor, Rensselaer Polytechnic Institute, Troy, NY, USA 07/2007 - 06/2013
Assistant Professor, Rensselaer Polytechnic Institute, Troy, NY, USA 08/2001 - 06/2007

EDUCATION

Ph.D, Rensselaer Polytechnic Institute, Troy, NY, USA August 2001
M. Tech, Indian Institute of Technology, Kanpur, India May 1998
B. Tech, North Eastern Hill University, Shillong, India May 1996

VISITING APPOINTMENTS

Leiv Eiriksson Fellow, Simula Research Laboratories, Oslo, Norway 6/2011 - 8/2011
Visiting Professor, Massachusetts Institute of Technology, Boston, MA, USA 3/2011 - 5/2011
International Visiting Research Fellow, University of Sydney, Sydney, Australia 12/2010 - 2/2011
JSPS Fellow, Kansai University, Osaka, Japan 10/2010 - 11/2010
Visiting Professor, KTH Royal Institute of Technology, Stockholm, Sweden 8/2010 - 9/2010
Visiting Professor, Indian Institute of Technology, Bombay, India 6/2010 - 7/2010
Tan Chin Tuan Fellow, Nanyang Technological University, Singapore 7/2005 - 9/2005
Étudiant Visitant (Visiting Student), INRIA, Rocquencourt, France 5/2000 - 8/2000

RESEARCH INTERESTS

Internet-of-Things
Cyber-physical systems
Computer networks: Protocols and performance

RESEARCH GRANTS

1. **Title:** *Scalable Multi-Factor Authentication for the Internet of Intelligence in Next Generation Cellular Networks*, **Agency:** National Research Foundation, **Funds:** SG\$ 951,600 (US\$ 693,000), **Duration:** 2022-2025, **Role:** PI, **Share of funds:** 100%, SG\$ 951,600 (US\$ 693,000).
2. **Title:** *AI-Based GNSS Spoofing Detection*, **Agency:** Defense Science Organization, **Funds:** SG\$ 180,000 (US\$ 131,000), **Duration:** 2022-2024, **Role:** PI, **Share of funds:** 100%, SG\$ 180,000 (US\$ 131,000).
3. **Title:** *IT and OT Full-Stack Network Anomaly Detection (NAD) with Statistical and Machine Learning Techniques*, **Agency:** NCS Pte Ltd, **Funds:** SG\$ 600,000 (US\$ 440,000), **Duration:** 2022-2024, **Role:** PI, **Share of funds:** 100%, SG\$ 600,000 (US\$ 440,000).
4. **Title:** *Data Monetization in the 5G Ecosystem Through Privacy Preserving Synthetic Data Generation*, **Agency:** National Research Foundation, **Funds:** SG\$ 500,000 (US\$ 365,000), **Duration:** 2022-2024, **Role:** PI, **Share of funds:** 100%, SG\$ 500,000 (US\$ 365,000).
5. **Title:** *CRaaS: Turn-key Cyber Range for Smart Grid Security Research on National Cybersecurity Laboratory*, **Agency:** National Research Foundation Singapore, **Funds:** SG\$ 300,000 (US\$ 220,000), **Duration:** 2022-2024, **Role:** co-PI, **Share of funds:** 43%, SG\$ 130,000 (US\$ 95,000).
6. **Title:** *Proven Privacy Preserving Synthetic Data Generation Adversarial Networks and Differential Privacy*, **Agency:** Monetary Authority of Singapore and National Research Foundation Singapore, **Funds:** SG\$ 439,000 (US\$ 325,000), **Duration:** 2022-2025, **Role:** PI, **Share of funds:** 100%, SG\$ 439,000 (US\$ 325,000).
7. **Title:** *Symbolic Reasoning Based Resilience of Critical Infrastructure*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 653,000 (US\$ 486,000), **Duration:** 2022-2025, **Role:** PI, **Share of funds:** 65%, SG\$ 424,000 (US\$ 316,000).
8. **Title:** *Architecture and Protocols for the Quantum Internet*, **Agency:** National Research Foundation, Singapore, **Funds:** SG\$ 631,900 (US\$ 470,000), **Duration:** 2021-2024, **Role:** PI, **Share of funds:** 65%, SG\$ 410,000 (US\$ 305,000).
9. **Title:** *Cisco-NUS Accelerated Digital Economy Corporate Laboratory*, **Agency:** Agency for Science, Technology and Research, Singapore, **Funds:** SG\$ 53,990,000 (US\$ 39,944,000), **Duration:** 2021-2026, **Role:** PI and Lab Director, **Share of funds:** 15%, SG\$ 8,100,000 (US\$ 5,992,000).
10. **Title:** *Scalable Methodologies for Risk Assessment and Resilience of Critical Infrastructure During Pandemics*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 500,000 (US\$ 375,000), **Duration:** 2021-2024, **Role:** PI, **Share of funds:** 50%, SG\$ 250,000 (US\$ 188,000).
11. **Title:** *Electronic Health Records (EHR) Driven Privacy Preservation Techniques*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 150,000 (US\$ 111,000), **Duration:** 2019-2022, **Role:** PI, **Share of funds:** 100%, SG\$ 150,000 (US\$ 111,000).
12. **Title:** *Privacy and Security of Location Data for Use in Urban and Transport Planning*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 150,000 (US\$ 111,000), **Duration:** 2019-2022, **Role:** PI, **Share of funds:** 100%, SG\$ 150,000 (US\$ 111,000).
13. **Title:** *SOCURE: Assuring Hardware Security by Design in Systems on Chip*, **Agency:** National Research Foundation, Singapore, **Funds:** SG\$11,600,000 (US\$ 8,584,000), **Duration:** 2019-2024, **Role:** co-PI, **Share of funds:** 6%, SG\$ 678,760 (US\$ 502,000).

14. **Title:** *N-CRIPT: NUS Centre for Research in Privacy Technologies*, **Agency:** National Research Foundation, Singapore, **Funds:** SG\$ 12,000,000 (US\$ 8,880,000), **Duration:** 2018-2023, **Role:** co-PI, **Share of funds:** 4%, SG\$ 487,000 (US\$ 360,000).
15. **Title:** *Securing Cyber Infrastructure and Cyber-Physical Systems*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 110,000 (US\$ 81,000), **Duration:** 2018-2021, **Role:** PI, **Share of funds:** 33% SG\$ 37,000, (US\$ 27,000).
16. **Title:** *Industrial Internet of Things*, **Agency:** Agency for Science, Technology, and Research, Singapore, **Funds:** SG\$ 439,200 (US\$ 325,000) (NUS share of funds), **Duration:** 2017-2020, **Role:** co-PI (only PI from NUS), **Share of funds:** 100%, SG\$ 439,200 (US\$ 325,000).
17. **Title:** *SCENE: Ubiquitous Security from Chip End to Network End in Internet of Things*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 660,337 (US\$ 488,000), **Duration:** 2017-2020, **Role:** co-PI, **Share of funds:** 40%, SG\$ 264,000 (US\$ 195,000).
18. **Title:** *Malware Analysis of Pirated Software in South Asia*, **Agency:** Microsoft Corporation, Singapore, **Funds:** SG\$ 217,028 (US\$ 160,000), **Duration:** 2016-2017, **Role:** PI, **Share of funds:** 100%, SG\$ 217,028 (US\$ 160,000).
19. **Title:** *Toward an Open Secure Internet-of-Things Reference Platform*, **Agency:** NUS-Berkeley-Cambridge Global Alliance, **Funds:** SG\$ 124,075 (US\$ 90,000), **Duration:** 2016-2018, **Role:** PI, **Share of funds:** 60%, SG\$ 75,000 (US\$ 54,000).
20. **Title:** *Internet of Things and Industrial Control Systems Security*, **Agency:** National Research Foundation and Singtel, Singapore, **Funds:** SG\$ 3,204,712 (US\$ 2,372,000), **Duration:** 2016-2021, **Role:** Theme Leader (IoT and ICS security) NUS-Singtel corporate research laboratory, **Share of funds:** 48%, SG\$ 1,541,717 (US\$ 1,141,000).
21. **Title:** *Network Resilience for Secure Data Collection and Delivery in ITS*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 154,000 (US\$ 115,000), **Duration:** 2016-2019, **Role:** PI, **Share of funds:** 67%, SG\$ 103,000 (US\$ 76,000).
22. **Title:** *Piracy and Malware in Computer Hardware from Unsecured Supply Chains*, **Agency:** Microsoft Corporation, Singapore, **Funds:** SG\$ 262,567 (US\$ 207,000), **Duration:** 2013-2014, **Role:** PI, **Share of funds:** 100%, SG\$ 262,567 (US\$ 207,000).
23. **Title:** *Towards Green Networks: Solutions for Wireless Access*, **Agency:** Ministry of Education, Singapore, **Funds:** SG\$ 180,000 (US\$ 142,000), **Duration:** 2013-2016, **Role:** PI, **Share of funds:** 100%, SG\$ 180,000 (US\$ 142,000).
24. **Title:** *CURRENT: Center for Ultra-wide-area Resilient Electric Energy Transmission Networks*, **Agency:** National Science Foundation, USA, **Funds:** US\$ 2,000,000 (SG\$ 2,580,000), **Duration:** 2011-2016, **Role:** co-PI, **Share of funds:** 20%, US\$ 400,000 (SG\$ 516,000).
25. **Title:** *New York State Phasor Measurement Network*, **Agency:** New York State Energy Research and Development Agency, USA, **Funds:** US\$ 250,000 (SG\$ 340,000), **Duration:** 2010-2012, **Role:** co-PI, **Share of funds:** 50%, US\$ 125,000 (SG\$ 170,000).
26. **Title:** *Green Solutions for Wireless Network Access*, **Agency:** Research Council of Norway, **Funds:** US\$ 30,000 (SG\$ 39,000), **Duration:** 2011-2011, **Role:** PI, **Share of funds:** 100%, US\$ 30,000 (SG\$ 39,000).
27. **Title:** *WiMAX Application Performance and System Simulation*, **Agency:** WiMAX Forum, USA, **Funds:** US\$ 227,000 (SG\$ 361,000), **Duration:** 2006-2009, **Role:** PI, **Share of funds:** 100% US\$ 227,000 (SG\$ 361,000).
28. **Title:** *Biologically Motivated Models for Spatio-Temporal Behavior of Computer Networks: Performance, Growth and Pathological Behavior*, **Agency:** National Science Foundation,

USA, **Funds:** US\$ 402,000 (SG\$ 671,000), **Duration:** 2004-2010, **Role:** PI, **Share of funds:** 100%, US\$ 402,000 (SG\$ 671,000) (**NSF CAREER Award**).

29. **Title:** *Community Wireless Networks for Last-Mile Broadband Interconnectivity: An Experimental Research Program*, **Agency:** National Science Foundation, USA, **Funds:** US\$ 350,000 (SG\$ 585,000), **Duration:** 2004-2008, **Role:** co-PI, **Share of funds:** 50%, US\$ 175,000 (SG\$ 292,000).
30. **Title:** *Infrastructure Mesh Wireless Networks*, **Agency:** Intel Corporation, USA, **Funds:** US\$ 205,000 (SG\$ 342,000), **Duration:** 2004-2006, **Role:** co-PI, **Share of funds:** 50%, US\$ 102,500 (SG\$ 171,000).
31. **Title:** *High Performance Robust Network Management: Theoretical Foundations and Practical Design Tools*, **Agency:** RPI, USA, **Funds:** US\$ 50,000 (SG\$ 85,000), **Duration:** 2002-2002, **Role:** co-PI, **Share of funds:** 17%, US\$ 8,000 (SG\$ 14,000).
32. **Title:** *Scalable Online Network Modeling and Simulation*, **Agency:** Defense Advanced Research Project Agency (DARPA), USA, **Funds:** US\$ 950,000 (SG\$ 1,691,000), **Duration:** 2001-2004, **Role:** co-PI, **Share of funds:** 25%, US\$ 237,500 (SG\$ 423,000).

TEACHING AND CURRICULUM DEVELOPMENT

1. National University of Singapore

(a) Programs Developed:

- i. Undergraduate Major and Minor: Computing
- ii. Graduate Certificate: Internet of Things
- iii. Undergraduate Specialization: Internet of Things
- iv. Undergraduate Minor: Data Engineering

(b) Courses Taught:

- i. Computer Communication Networks II

(c) Courses Developed and Taught:

- i. Network Protocols and Applications
- ii. Data Science for the Internet of Things
- iii. Introduction to Cyber Physical Systems
- iv. Digital-Physical Integration in Industry 4.0 (Graduate)
- v. Communication Networking Fundamentals (Graduate)
- vi. Cellular and Mobile Communications (Graduate)
- vii. Cyber Security for Internet of Things (Graduate)
- viii. Cellular Networks (Graduate)

2. Rensselaer Polytechnic Institute

(a) Courses Taught:

- i. Broadband and Optical Networking (Graduate)
- ii. Computer Architecture, Networks and Operating Systems
- iii. Computer Communication Networks
- iv. Introduction to Engineering Design
- v. Probability for Engineering Applications

(b) Courses Developed and Taught:

- i. Modeling and Analysis of Computer Networks (Graduate)
- ii. Experimental Networking

STUDENTS

1. PhD Graduated: 25

- (1) **Jun Peng:** 2004, First Employment: Assistant Professor, University of Texas, Rio Grande Valley.
- (2) **Fengji Ye:** 2005, First Employment: Cisco systems, San Jose, CA.
- (3) **Hua Yang:** 2005, First Employment: Intel Research Laboratories, Shanghai, China.
- (4) **Shivani Deshpande:** 2007, First Employment: Packeteer Inc., San Jose, CA.
- (5) **Rajagopal Iyengar:** 2007, First Employment: Posdata-USA, San Jose, CA.
- (6) **Krishna Ramachandran:** 2007, First Employment: General Motors Research Laboratory, Bangalore, India.
- (7) **Haiming Yang:** 2008, First Employment: Cisco systems, San Jose, CA.
- (8) **Xiaobo Long:** 2008, First Employment: Goldman Sachs, New York, NY.
- (9) **Huijiang Li:** 2012, First Employment: Oracle Corporation, San Jose, CA.
- (10) **Muhammad Aman:** 2012, First Employment: Assistant Professor, National University of Computer and Emerging Sciences, Peshawar, Pakistan.
- (11) **Onkar Bhardwaj:** (co-advised with E. Anshelevich) 2015, First Employment: IBM T. J. Watson Research Center, Yorktown Heights, NY.
- (12) **Jie Chen:** 2015, First Employment: Post Doctoral Researcher, Hamad bin Khalifa University, Qatar.
- (13) **Seemita Pal:** 2016, First Employment: Pacific Northwest National Labs, Richland, WA.
- (14) **Vinay Chamola:** 2016, First Employment: Assistant Professor, Birla Institute of Technology, Pilani, India.
- (15) **Ajinkya Rajandekar:** 2017, First Employment: WhizSpace, Singapore.
- (16) **Vignesh Sivaraman:** 2021, First Employment: Post Doctoral Researcher, National University of Singapore.
- (17) **Abhishek Nalam:** (main supervisor, co-advised with T. J. Lim) 2021, First Employment: Post Doctoral Researcher, National University of Singapore.
- (18) **James Ranjith Kumar:** 2021, First Employment: Post Doctoral Researcher, Kansas State University.
- (19) **Uzair Javaid:** 2021, First Employment: Co-founder and CEO of BetterData, Singapore.
- (20) **Tianyi Feng:** (main supervisor, co-advised with L. Wong and S. Sun) 2021, First Employment: Huawei, Shenzhen, China.
- (21) **Bikalpa Upadhaya:** (co-advised with S. Sun) 2021, First Employment: Cequence security, Cincinnati, OH.
- (22) **Xiao Wei:** 2022, First Employment: Post Doctoral Researcher, National University of Singapore.
- (23) **Fang Qiang:** (co-advised with M. Alioto) 2023, First Employment: Advanced Micro Devices, Singapore.
- (24) **Xenia Santos:** (main supervisor, co-advised with K. Sivanand) 2023, First Employment: Agency for Science Technology and Research, Singapore.
- (25) **Abhijit Singh:** 2023, First Employment: Post Doctoral Researcher, Singapore-ETH Centre, Singapore.

2. Masters (with thesis) Graduated: 10

3. PhD Current: 16

- (1) **Xudong Hu:** Expected graduation 2023.
- (2) **Guihai Zhang:** Expected graduation 2024.
- (3) **Zhixiang Zhang:** Expected graduation 2024.

- (4) **Gaurang Bansal:** Expected graduation 2024.
- (5) **Rohini Poolat:** Expected graduation 2024.
- (6) **Takrit Tanasnitikul:** Expected graduation 2024.
- (7) **Vivek Rathore:** Expected graduation 2025.
- (8) **Varun Kohli:** Expected graduation 2025.
- (9) **Ullas Kumar:** Expected graduation 2025.
- (10) **Yuan Xun:** Expected graduation 2025.
- (11) **Umara Hanif:** Expected graduation 2026.
- (12) **Hongming Fei:** Expected graduation 2026.
- (13) **Yang Yang:** Expected graduation 2026.
- (14) **Xijia Feng:** Expected graduation 2026.
- (15) **Liu Han:** Expected graduation 2027.
- (16) **Najeeb Ullah:** Expected graduation 2027.

4. MS (with thesis) Current: 0

HONORS AND AWARDS

1. Distinguished Lecturer, IEEE Vehicular Technology Society, 2022.
2. Best Paper Award, IEEE International Conference on Smart Technologies for Power, Energy and Control, 2021.
3. Best Paper Award, IEEE International Conference on Sustainable Energy and Future Electric Transportation, 2021.
4. Distinguished Lecturer, IEEE Communications Society, 2021, 2024.
5. Best Paper Award, IEEE Consumer Electronics Magazine, 2020.
6. Distinguished Speaker, ACM, 2019.
7. Teaching Commendation List, NUS Faculty of Engineering, 2019.
8. Fellow, Institution of Engineers, Singapore, 2017.
9. Leiv Eiriksson Fellowship, Norway, 2011.
10. JSPS Fellowship, Japan, 2010.
11. Best Paper Award, IEEE GLOBECOM, New Orleans, LA, 2008.
12. Individual Contribution Award, WiMAX Forum, San Jose, CA, USA, 2008.
13. Teaching Excellence Award, School of Engineering, RPI, Troy, NY 2006.
14. Tan Chin Tuan Fellowship, Singapore, 2005.
15. National Science Foundation (NSF) CAREER Award, 2004.
16. Charles M. Close Doctoral Prize, RPI, Troy, NY
17. ECSE Departmental Service Award, RPI, Troy, NY
18. Founder's Award of Excellence, RPI, Troy, NY
19. Master Teaching Assistant, RPI, Troy, NY
20. Verifone Fellowship, IIT, Kanpur, India
21. State Scholarship, NEHU, Shillong, India
22. Eta Kappa Nu
23. Tau Beta Pi

PROFESSIONAL ACTIVITIES

Associate Editor:

- IEEE Open Journal of Vehicular Technology (2019-present).
- IEEE Internet of Things Journal (2021-2023).
- IEEE Transactions on Mobile Computing (2014-2017).
- IEEE Transactions on Communications (2008-2012).

Guest Editor (special issue):

- IEEE Consumer Electronics Magazine: Security, Trust and Privacy Solutions for Intelligent Internet of Vehicular Things, November 2022.
- IEEE Sensors Journal: Role of Smart Sensing Against Communicable Diseases, October 2022.
- IEEE Transactions on Industrial Informatics: Security and Privacy in 5G-enabled Industrial IoT, September 2022.
- IEEE Internet of Things Magazine: Internet-of-Drones: Novel Applications, Recent Deployments and Integration, December 2021.
- IEEE Sensors Journal: Smart Sensing for Agriculture, August 2021.

General Co-Chair:

- IEEE LANMAN 2020.

TPC Co-Chair:

- IEEE GLOBECOM, Smart Grid Communications Track, 2023.
- IEEE SmartGridComm, Cybersecurity and Privacy Symposium, 2022, 2024.
- IEEE LANMAN 2019.
- ACM SOICT, 2018.
- IEEE ICCS, Networks Track, 2014, 2016.
- IEEE GLOBECOM, Communications Software and Services Symposium, 2009.
- IEEE BROADNETS, Wireless Track, 2009.

Panelist: National Science Foundation.

External Reviewer: National Research Council of Canada, Austrian Science Fund, Czech Science Foundation, Netherlands Organisation for Scientific Research, National Institute of Information and Communication Technology (Japan), Israel Science Foundation, Christian Doppler Forschungsgesellschaft (Christian Doppler Research Association, Austria).

TPC member: IEEE INFOCOM (2003, 2004, 2008-2022), IEEE GLOBECOM (2002, 2005, 2007-2009, 2017-2022), IEEE VTC (2007, 2018), IEEE ICC (2005, 2007-2010, 2012, 2013, 2016-2022), ICMU (2004-2017), IEEE SmartGridComm (2012, 2013, 2017-2021) IEEE WCNC (2005, 2006, 2010, 2011, 2014, 2015).

Journal Reviews: IEEE Transactions on Computers, IEEE/ACM Transactions on Networking, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Transactions on Mobile Computing, IEEE Transactions on Signal Processing, IEEE Transactions on Vehicular Technology, IEEE Transactions on Multimedia, IEEE Transactions on Automatic Control, IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Network Science and Engineering, ACM Transactions on Sensor Networks, Computer Networks, Performance Evaluation, IEEE Communications Magazine, IEEE Communication Letters

Conference Reviews: IEEE INFOCOM, IEEE ICC, IEEE GLOBECOM, IEEE/IFIP MMNS, SPECTS, ICON, TRIDENTCOM, IEEE VTC, IEEE WSN, IEEE ISCC, ACM MSWIM, WiOpt

Government Advisory Committees:

- Infocomm Media Development Authority, Singapore (2021 – present): Communications and Connectivity Technical Committee.
- Infocomm Media Development Authority, Singapore (2016 – present): Telecommunications Standards Advisory Committee.
- Enterprise Singapore (2019 – present): Coordination Committee for Smart Nation.
- Infocomm Development Authority, Singapore (2014 – 2015): Information Technology Standards Committee.

KEYNOTES, PANELS AND TUTORIALS

Keynotes

1. *Machine Learning Based Security Solutions for Smart Grids: Challenges and Solutions*, Keynote at IEEE SmartGridComm, Singapore, October 2022.
2. *Security and Privacy for the Internet of Things*, Keynote at 12th IEEE International Conference on Electronics Information and Emergency Communication, Beijing, China, July 2022.
3. *Security and Privacy Challenges for the Internet of Things*, Keynote at 11th International Conference on Sensor Networks (SENSORNETS), Lisbon, Portugal, February 2022.
4. *Machine Learning Based Security for IoV: Opportunities and Challenges*, Keynote at IEEE GLOBECOM Workshop on AI and Blockchain-Enabled Secure and Privacy-Preserving Air and Ground Smart Vehicular Networks (SVNs), Madrid, Spain, December 2021.
5. *Security and Privacy for the Internet of Things*, Keynote at IEEE International Conference on Computer Communications and Networks Workshops, Athens, Greece, July 2021.
6. *Secure Communications in UAV Swarms*, Keynote at IEEE INFOCOM Workshop DroneCom: Workshop on Drone-Assisted Wireless Communications for 5G and Beyond, Montreal, Canada, June 2021.
7. *Defending Smart Grids against Cyber Attacks*, Keynote at IEEE SEFET, Hyderabad, India, January 2021.
8. *Security and Privacy for the Internet of Things*, Keynote at International Conference on Electrical Engineering, Computer Science and Informatics, Yogyakarta, Indonesia, September 2020.
9. *Privacy Issues in Smart Grid Communications*, Keynote at IEEE CCNC workshop on Cyber Physical Networking, Las Vegas, USA. January 2020.
10. *Securing Smart Grids: Attacks, Countermeasures and Defense Strategies*, Keynote at IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy, Cochin, India. January 2020.
11. *Cyber Security Challenges and Solutions for the Internet of Things*, Keynote at International Conference on Networking, Systems and Security and Khan-Bose Lecture (BUET), Dhaka, Bangladesh, December 2019.
12. *Secure Networking for the Internet of Things*, Keynote at IEEE ICC Workshop SecSDN: Secure and Dependable Software Defined Networking for Sustainable Smart Communities, Shanghai, China, May 2019.
13. *Cyber Security Challenges and Solutions for the Internet of Things*, Keynote at IEEE Malaysia International Conference on Communications, Johor Bahru, Malaysia, November 2017.
14. *Cyber-security for the IoT and Cyber-physical Systems: Challenges and Some Solutions*, Keynote at IEEE workshop on IoT and TV White Spaces, Pune, India, January 2017.
15. *Network Evolution for the Internet of Things*, Keynote at IEEE IACC, Bangalore, India, June 2015.
16. *Security for Sensor Networks*, Plenary talk at International Conference on Computational Intelligence, Cyber Security and Computational Models, Coimbatore, India, December 2013.

Invited Talks

1. *Cyber Security and Privacy for Smart Cities*, Invited talk at IEEE ComSoc School on Technologies for Enhancing Security and Privacy in Future Communication Networks, New Delhi, India, July 2022.

2. *Securing Machine Learning Applications for IoT from Attacks*, Invited talk at IEEE IoT World Forum, New Orleans, LA, July 2021.
3. *Cyber Security Challenges and Solutions for the Internet of Things*, Invited talk at ACM Future Worlds Symposium, Sacramento, CA, October 2020.
4. *Consumer Privacy in Smart Meter Data*, Invited talk at ACM SIGMETRICS Critical Infrastructure Network Security Workshop, Irvine, CA, June 2018.
5. *Consumer Privacy in Smart Grids*, Invited talk at IEEE ISGT Asia, Singapore, May 2018.
6. *Security Solutions for the Internet of Things*, Invited talk at IEEE IoT World Forum, Singapore, February 2018.
7. *Smart Grid Security through Synchrophasor Data: Real-time Detection of Attacks on AC State Estimation*, Invited talk at INFORMS Annual Meeting, Houston, TX, USA, October 2017.
8. *Solar-Powered Cellular Networks: Mathematical models for Design and Operation*, Invited talk at MADEV (Conference Internationale en Afrique sur les Mathematiques appliquees au developpement), Rabat, Morocco, October 2017.

Panels

1. *Machine Learning Based Security for Cyber Physical Systems*, Panelist, Panel on Cyber Security for Cyber Physical Systems, IEEE International Conference on Communications, Montreal, Canada, June 2021.
2. *Anomaly Detection in Cyber-Physical Systems: The Physical Law Approach*, Panelist, SUTD Secure Cyber-Physical Systems Week, Singapore, June 2017.
3. *Security for Synchrophasor Data*, Panelist, NSF Smart Grid Workshop, College Station, TX, USA, April 2017.

Tutorials

1. *Cyber Security for Smart Grids*, Tutorial at IEEE ONCON, online, December 2022.
2. *Cyber Security for Smart Grids*, Tutorial at IEEE ISIE, Kyoto, Japan, June 2021.
3. *Network Infrastructure for the Internet of Things and M2M Communications*, Tutorial at IEEE BlackSeaCom, Constanta, Romania, May 2015.
4. *Network Infrastructure for the Internet of Things and M2M Communications*, Tutorial at National Conference on Communications, IIT Bombay, India, February 2015.

PATENTS

1. **Network management and control using on-line collaborative simulations**, US Patent No. 7,363,285, April 2008, (with S. Kalyanaraman et al.).

PUBLICATIONS

Books

1. G. S. Aujla, S. Garg, K. Kaur and B. Sikdar (editors), *Software Defined Internet of Everything*, Springer, 2022.

Book Chapters

8. U. Javaid, M. Aman and B. Sikdar, "Hardware Primitive based Blockchain for IoT in Fog and Edge Computing," *Blockchain-enabled Fog and Edge Computing: Concepts, Architectures and Applications*, Taylor and Francis, 2020.

7. F. Jameel, U. Javaid, B. Sikdar, I. Khan, G. Mastorakis and C. X. Mavromoustakis, "Optimizing Blockchain Networks with Artificial Intelligence: Towards Efficient and Reliable IoT Applications," *Convergence of Artificial Intelligence and the Internet of Things*, Springer, 2020.
6. M. Aman, K. C. Chua and B. Sikdar, "Hardware Primitives-Based Security Protocols for the Internet of Things," *Cryptographic Security Solutions for the Internet of Things*, IGI Global, 2019.
5. X. Long and B. Sikdar, "Detection of Session Hijacks Using Received Signal Strength in Wireless Networks," *Security Engineering Techniques and Solutions for Information Systems: Management and Implementation*, IGI Global, 2013.
4. H. Li, N. Jaggi and B. Sikdar, "Cooperative Relay Scheduling in Energy Harvesting Sensor Networks," *GreenIT: Technologies and Applications*, Springer-Verlag, 2011.
3. X. Long and B. Sikdar, "MAC and Routing Protocols for Vehicle to Vehicle Networks," *Automotive Informatics and Communicative Systems: Principals in Vehicular Networks and Data Exchange*, IGI Global, 2009.
2. R. Iyengar, K. Kar, B. Sikdar and X. Luo, "Scheduling Algorithms for OFDMA based WiMAX Systems with QoS Constraints," *WiMAX: Technologies, Performance Analysis and QoS, Part I: Technologies*, CRC Press, 2007.
1. S. Kalyanaraman and B. Sikdar, "Protocol Design Concepts, TCP/IP, and the Network Layer," *IP over WDM: Building the Next-Generation Optical Internet*, Sudhir Dixit (Editor), Wiley, April 2003.

Journals (accepted and published)

155. A. Iqbal, M. Aman and B. Sikdar, "A Deep Learning based Induced GNSS Spoof Detection Framework," accepted for publication in *IEEE Transactions on Machine Learning in Communications and Networking*.
154. V. Kohli, M. Aman and B. Sikdar, "An Intelligent Fingerprinting Technique for Low-power Embedded IoT Devices," accepted for publication in *IEEE Transactions on Artificial Intelligence*.
153. P. Singh, R. Dasgupta, A. Singh, H. Pandey, V. Hassija, V. Chamola and B. Sikdar, "A Survey on Available Tools and Technologies Enabling Quantum Computing," accepted for publication in *IEEE Access*.
152. S. Sai, U. Yashvardhan, V. Chamola and B. Sikdar, "Generative AI for Cyber Security: Analyzing the Potential of ChatGPT, DALL-E and Other Models for Enhancing the Security Space," accepted for publication in *IEEE Access*.
151. B. Bera, A. Bisht, A. Das, B. Bhargava, D. Yau, P. Lorenz and B. Sikdar, "BioKA-ASVN: Biometric-Based Key Agreement Scheme for Air-Smart Vehicular Networks Using Blockchain Service," accepted for publication in *IEEE Transactions on Vehicular Technology*.
150. G. Bansal and B. Sikdar, "Achieving Secure and Reliable UAV Authentication: A Shamir's Secret Sharing Based Approach," accepted for publication in *IEEE Transactions on Network Science and Engineering*.
149. V. Chamola, S. Sai, R. Sai, A. Hussain and B. Sikdar, "Generative AI for Consumer Electronics: Enhancing User Experience with Cognitive and Semantic Computing," accepted for publication in *IEEE Consumer Electronics Magazine*.
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