PUSHPENDU KAR

FHEA(UK), FERCIM(EU), SMIEEE(US)

Contact number (China): +86 15257438124
Contact number (India): +91 9830323127
Skype ID: pushpendu.kar123

url: https://pushpendukar.github.io/

Email: pushpendu.kar@nottingham.edu.cn
pushpendu.kar@gmail.com

Present Address: School of Computer Science, University of Nottingham Ningbo China, PMB 448, Sir Peter Mansfield Building, 199 Taikang East Road, Ningbo 315100, China.

Permanent Address: Pushpendu Kar**,** C/o: Mihir Kumar Kar**,** Sonajhil, Sonarpur**,** 24–Parganas (South), Kolkata-700150, West Bengal, India.

Career Objective

To be an asset to the organization through the knowledge, skill, and experience acquired during my professional sojourn.

Research Interests

Wireless Sensor Networks, Internet of Things, Content Centric Networking, BigData, Blockchain.

Academic Qualifications

- **Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India 721302**
  Doctor of Philosophy (PhD), Computer Science and Engineering,
  Jan 2012 – Jan 2016.
  - Thesis title: *Temporary Node-Misbehavior in the Presence of Environmental Effects in Wireless Sensor Networks*
- **Jadavpur University, Kolkata, West Bengal, India 700032**
  Master of Engineering (M. E.), Computer Science and Engineering,
  Jul 2008 – Jun 2010
  - Thesis title: *Implementation of a Jini Based Service Framework in a Mobile Ad-Hoc Network*
- **University of Kalyani, Kalyani, Nadia, West Bengal, India 741235**
  Bachelor of Technology (B.Tech), Computer Science and Engineering,
  Jun 2000 – May 2004
  - Thesis title: *Online Blood Pressure Measurement System*

Professional Qualifications

1. Sun Certified Java Programmer (SCJP) 5.0, 2009
2. Completed eight weeks (21st May 2006 – 14th July 2006) Finishing School program form *NIT Durgapur, Durgapur, India* conducted by MHRD in consolation with *AICTE, Department of IT, NASSCOM & IIT Roorkee, 2006*
3. Six months course on J2EE from *"STG International (Regional Office)", Minto Park, Kolkata, India, 2005*
4. Three months course on JAVA (Core & Advance) from *"CMC Ltd.", Gariahat, Kolkata, India, 2005*
5. Three weeks (4th – 23rd January 2010) UGC sponsor refresher course on Wireless Ad-Hoc and Sensor Networks, Jadavpur University, Kolkata, India
6. Six months course on Hardware & Networking from *"Computer Foundation", Jadavpur, Kolkata, India, 2004.*

Pedagogical Qualification

1. Completed Postgraduate Certificate in Higher Education (PGCHE) programme on teaching and supporting learning by following UK Professional Standards Framework (UKPSF), 2020
2. Completed Postgraduate Certificate in Higher Education (PGCHE) programme on Curriculum Design and Assessment in Higher Education by following UK Professional Standards Framework (UKPSF), 2021

Achievements

1. Fellow of Higher Education Academy (FHEA), UK, 2021
2. Recognized as High-Level Talent by the Government of China, 2021
3. Received 'Spot Award' for teaching excellence and effective services to The University of Nottingham Ningbo China, 2021
4. Elevated to IEEE Senior Member, 2020
5. Received Best Researcher Award from VDGOOD Professional Association, India, 2020
6. Received 2020 IEEE Systems Journal (2020 I.F.: 4.463) Best Paper Award (this is one of the seven papers out of 793 papers [top 1%] that have received the award)
7. ERCIM Alain Bensoussan Fellowship from European Union to pursue postdoc at *Norwegian University of Science and Technology*, Norway, 2017.
8. SERB Overseas Postdoctoral Fellowship from Dept. of Science and Tech., Govt. of India to pursue postdoc at *TU Delft*, Netherlands, 2017 (declined).
9. ERCIM Alain Bensoussan Fellowship from European Union to pursue postdoc at *RISE SICS*, Sweden, 2018 (declined).
10. Erasmus Mundus Postdoctoral Fellowship from European Commission to pursue postdoc at *Northumbria University*, Newcastle upon Tyne, United Kingdom, 2016 (declined).
11. Full financial institute travel grant for attending *IEEE ICC 2015*, London, United Kingdom.
12. Travel grant for attending *XRCI Open 2015*, Bangalore, India.
13. Travel grant for attending *The Fourth IDRBT Doctoral Colloquium*, Hyderabad, India, 2014.

Teaching Experience (Total: 7 Yrs+)

1. **University of Nottingham UK (China campus), 199 Taikang East Road, Ningbo 315100, China**
   Assistant Professor (Full time), School of Computer Science
   4th Match 2019 - Present

2. **Institute of Engineers (Kharagpur Local Center), Kharagpur, West Bengal, India 721302**
   Visiting Lecturer (Part time)**,** AMIE Course
   15th October 2011 - 30th November 2013 (2 Yrs)

3. **Birbhum Institute of Engineering & Technology, Birbhum, West Bengal, India 731101**
   Lecturer (Full time)**,** Department of Information Technology
   9th April 2006 - 31st July 2008 (2 Yrs 3 M)

4. **Siliguri Institute of Technology, Sukna, Darjeeling, West Bengal, India 734009**
   Lecturer (Full time)**,** Department of Computer Science and Engineering
   25th July 2005 - 8th April 2006 (9 M)

5. **IT Center, North Bengal University, Darjeeling, West Bengal, India 734013**
   Visiting Lecturer (Part time)**,** Bachelor of Computer Application
   1st August 2005 - 8th April 2006 (9 M)

Research Experience (Total: 5 Yrs)

1. **UNNC-NFTZ Blockchain Laboratory, Ningbo 315100, China**
   Visiting Scientist (Part time)
   18th December 2019 – Present

2. **Norwegian University of Science and Technology (NTNU), 6009 Ålesund, Norway**
   Research Fellow (Full time) **[through ERCIM Fellowship],** Department of ICT and Natural Sciences
   01st February 2018 – 31st January 2019 (1 Yr)

3. **National University of Singapore (NUS), Singapore 119077**
   Post-Doctoral Research Fellow (Full time), Department of Electrical and Computer Engineering
   16th November 2016 – 31st January 2018 (1 Yr 2 M)

4. **Nanyang Technological University (NTU), Singapore 639798**
   Post-Doctoral Research Fellow (Full time), Energy Research Institute
   16th November 2015 – 15th November 2016 (1 Yr)

5. **IIT Kharagpur, Kharagpur, West Bengal, India 721302**
   Researcher (Part time), Department of Electronics and Electrical Communication Engineering

11th April 2014 - 28th August 2014 (4 M)

6. **IIT Kharagpur, Kharagpur, West Bengal, India 721302**
   Senior Project Assistant (Full time), Department of Computer Science and Engineering
   14th October 2011 - 31st March 2013 (1 Yr 6 M)

Industrial Experience (Total: 1 Yr 4 M)

1. **IBM, Newtown, Rajarhat, Kolkata, India 700156**
   Associate System Engineer (Full time)**,** Software Development
   17th June 2010 - 13th October 2011 (1 Yr 4 M)

Research Visit

1. MiMove Team, Inria Paris, France, 16-20 July 2018

Courses Taught

- Operating Systems - 1.5 Years (3 Semester)
- Data Communication and Networking - 1 Year (2 Semesters)
- Object Oriented Programming using Java – 1 Year (2 Semesters)
- Introduction to Computing - 2 Years (4 Semesters)
- Mobile Device Programming – 1.5 Year (3 Semesters)

List of Publications

Google Scholar ResearchGate

❖ **Refereed Journals:**

1. **P. Kar**, R. Chen, and Y. Qian. "An Efficient Producer Mobility Management Technique for Real-time Communication in NDN-based Remote Health Monitoring Systems", *Smart Health (Elsevier)*, August 2022, DoI: 10.1016/j.smhl.2022.100309.

2. **P. Kar**, K. Chen, J. Shi, "DMACN: A Dynamic Multi-Attribute Caching Mechanism for NDN-Based Remote Health Monitoring System", *IEEE Transactions on Computers*, August 2022, DoI: 10.1109/TC.2022.3197955

3. **P. Kar**, A. Kumar, A. Shareef, K. T. Harn, and S. K. Panda, "An Intelligent Lighting Control System for Individual Visual Comfort and Energy Savings in Buildings", *Journal of Reliable Intelligent Environments (Springer)*, August 2022, DoI: 10.1007/s40860-022-00189-y.

4. D. Li and **P. Kar**, "*B-Spot*: Blockchain and Steganography based Robust and Secure Photo Transmission Mechanism", *Journal of Mobile Multimedia*, vol. 18, no. 6, pp. 1677–1708, July 2022.

5. **P. Kar**, Z. Xue, S. P. Ardakani, and C. F. Kwong, Are Fake Images Bothering You on Social Network? Let's Detect Them Using Recurrent Neural Network, *IEEE Transactions on Computational Social Systems*, March 2022, DoI: 10.1109/TCSS.2022.3159709

6. S. P. Ardakani, C. F. Kwong, **P. Kar**, Q. Liu, and L. LI, "CNN: a Cluster-based Named Data Routing for Vehicular Networks", *IEEE Access***,** vol. 9, pp. 159036-159047, November 2021.

7. Q. Liu, CF Kwong, W. Sun, S. Zhou, L. Li, and **P Kar**, "Reinforcement Learning-Based Joint Self-Optimisation Method for the Fuzzy Logic Handover Algorithm in 5G HetNets", *Neural Computing and Applications (Springer)*, November 2021, DoI: 10.1007/s00521-021-06673-5

8. P. Zhao, **P. Kar**, and S. P. Ardakani, "ANTON: Activity Recognition Based Smart Home Control System", *SN Computer Science (Springer)***,** vol. 2, no. 428, pp. 1-12, August 2021, DoI: 10.1007/s42979-021-00824-0

9. L. Li, C. F. Kwong, Q. Liu, **P. Kar**, and S. P. Ardakani, "A Novel Cooperative Cache Policy for Wireless Networks", *Wireless Communications and Mobile Computing***,** vol. 2021, Article ID 5568935, 18 pages, August 2021. DoI:10.1155/2021/5568935

10. S. Misra, S. Goswami, C. Taneja, and **P. Kar**, "Heterogeneous Polydentate Mobile Chelating Node to Detect Breach in Surveillance Sensor Network", *Security and Privacy (wiley)***,** vol. 4, no. 6, pp. e175:1-22, June 2021.

11. **P. Kar**, S. Misra, A. Mandal, H. Wang, "SOS: NDN Based Service-Oriented Game-Theoretic Efficient Security Scheme for IoT Networks", *IEEE Transactions on Network and Service Management***,** vol. 18, no. 3, pp. 3197-3208, Sept. 2021.

12. **P. Kar** and H. Wang "EZPlugIn: Plug-n-Play Framework for a Heterogeneous IoT Infrastructure for Smart Home," *IEEE Internet of Things Magazine***,** vol. 4, no. 3, pp. 104-108, September 2021.

13. **P. Kar** and S. Misra "On the Effects of Transfaulty Sensor Nodes in Stationary Wireless Sensor Network Systems," *IEEE Sensors Journal*, vol. 19, no. 13, pp. 5022 – 5029, March 2019

14. **P. Kar**, A. Shareef, A. Kumar, T. H. Koh, B. K. Mallikarjuna, and S. K. Panda, "ReViCEE: A Recommendation based approach for personalized control Visual Comfort & Energy Efficiency in buildings", *Building and Environment (Elsevier)*, vol. 152, pp. 135 – 144, April 2019

15. **P. Kar**, S. Misra, and M. S. Obaidat, "RILoD: Reduction of Information Loss in a WSN System in the Presence of Dumb Nodes," *IEEE Systems Journal*, vol. 13, no. 1, pp. 336 – 344, January 2018. (**Received 2020 IEEE Systems Journal Best Paper Award**).

16. **P. Kar**, A. Roy, S. Misra, and M. S. Obaidat, "On the Effects of Communication Range Shrinkage of Sensor Nodes in Mobile Wireless Sensor Networks Due to Adverse Environmental Conditions," *IEEE Systems Journal*, vol. 12, no. 3, pp. 2048-2055, September 2018.

17. A. Kumar, **P. Kar**, R. Warrier, A. Kajale, and S. K. Panda, "Implementation of Smart LED Lighting and Efficient Data Management System for Smart Buildings," *Energy Procedia (Elsevier)*, vol. 143, pp. 173-178, December 2017.

18. A. Roy, S. Misra, **P. Kar**, and A. Mondal, "Topology Control for Self-Adaptation in Wireless Sensor Networks with Temporary Connection Impairment," *ACM Transactions on Autonomous and Adaptive Systems*, vol. 11, no. 4, pp. 1-34, February 2017.

19. **P. Kar** and S. Misra, "Reliable and Efficient Data Acquisition in Wireless Sensor Network in the Presence of Transfaulty Nodes," *IEEE Transactions on Network and Service Management*, vol. 13, no. 1, pp. 99-112, January 2016.

20. **P. Kar**, A. Roy, and S. Misra, "Connectivity Re-establishment in Self-organizing Sensor Networks with Dumb Nodes," *ACM Transactions on Autonomous and Adaptive Systems*, vol. 10, no. 4, pp. 1-30, February 2016.

21. A. Roy, **P. Kar**, S. Misra, and M. S. Obaidat, "D3: Distributed Approach for the Detection of Dumb Nodes in Wireless Sensor Networks," *International Journal of Communication Systems (Wiley)*, vol. 30, no. 1, pp. e2913, January 2015

22. **P. Kar** and S. Misra, "Detouring Dynamic Routing Holes in Stationary Wireless Sensor Networks in the Presence of Temporarily Misbehaving Nodes," *International Journal of Communication Systems (Wiley)*, vol. 30, no. 4, pp. e3009, June 2015

23. S. Misra, **P. Kar**, A. Roy, and M. S. Obaidat, "Existence of Dumb Nodes in Stationary Wireless Sensor Network," *Journal of Systems and Software (Elsevier)*, vol. 91, pp. 135–146, May 2014.

❖ **International Conferences / Workshops**

1. Z. Wang, Y. Guo, T. Xia, B. Ye, and **P. Kar**, "Detection of COVID-19 Through Thermal and Voice SensingUsing Smartphone", *22nd IEEE/ACIS International Conferenceon Computer and Information Science (ICIS)*, Zhuhai, China, June 26-28, 2022 (Accepted on 10th May 2022).

2. L. Hu, Y. Huang, and **P. Kar**, "An Integrated Single Device Framework for Combined Face Recognition and Covid-19 Detection Using Thermal Infrared Imagery", *22nd IEEE/ACIS International Conferenceon Computer and Information Science (ICIS)*, Zhuhai, China, June 26-28, 2022 (Accepted on 10th May 2022).

3. S. Datta, M. Roy, **P. Kar**, "Application of IoT in Smart Epidemic Management in context of Covid-19", i*n proceedings of the 22nd IEEE International Conference on High Performance Switching and Routing (HPSR)*, pp. 1-6, Paris, France, June 2021.

4. J. Shi, W. Sheng, **P. Kar**, M. Roy, S. Datta, "A Novel Framework for Predicting the Spread of COVID-19 by Contact Tracing through Smartphone", *in proceedings of the 17th IEEE International Wireless Communications and Mobile Computing Conference (IWCMC)*, pp. 570-575, Harbin, China, June 2021.

5. R. Chen, Y. Zhang, Y. Fei, and **P. Kar**, "WLEACH-CK: Weighted K-Means Based LEACH-C Algorithm for Cluster Head Selection", *in proceedings of the 17th IEEE International Conference on the Design of Reliable Communication Networks (DRCN)*, pp. 1-6, Milan, Italy, April 2021.

6. **P. Kar**, Y. Dong, Y. Li, X. Ma, X. Ding, Y. Wang, "NDN Based Plug-n-Play and Secure Remote Health Monitoring System", *in proceedings of the IEEE International Conference on Communication (ICC)*, pp. 1-6, Montreal, Canada, June 2021.

7. Z. Song and **P. Kar**, "Name-Signature Look Up System: A Security Enhancement to Named Data Networking", *in proceedings of the 19th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom)*, pp. 1444-1448, Guangzhou, China, Dec 2020.

8. S. Wu, Y. Yuan, and **P. Kar**, "Lightweight Verification and Fine-grained Access Control in Named Data Networking Based on Schnorr Signature and Hash Functions", i*n proceedings of the 20th IEEE International Conference on Communication Technology (ICCT)*, pp. 1561-1566, Nanning, China, Oct 2020.

9. A. Kumar, A. Shareef, K. T. Harn, **P. Kar**, and S. K. Panda, "A Complete Hardware Setup for Smart Lighting System", *in Proceedings of the IEEE International Conference on Sustainable Energy Technologies and Systems (ICSETS)*, pp. 297-300, Bhubaneswar, India, Feb 2019

10. **P. Kar**, S. Misra, A. Mandal, and H. Wang, "SecureIoT: Hop-Count Based Service-Oriented Efficient Security Solution for IoT", *in Proceedings of the ACM International Workshop on Future Industrial Communication Networks (FICN) in conjunction with ACM MobiCom 2018*, pp. 15-20, New Delhi, India, Nov 2018.

11. **P. Kar** and B. Dappuri "Site Survey and Radio Frequency Planning for the Deployment of Next Generation WLANs", *in Proceedings of the IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET)*, pp. 1-4, Chennai, India, 2018.

12. **P. Kar**, S. Das, and A. Kumar "PreCoRe: Predictive Connectivity Reestablishment in Wireless Sensor Network in the Presence of Dumb Nodes," *in Proceedings of the IEEE Region 10 Conference (TENCON)*, pp. 403-408, Penang, Malaysia, November 2017.

13. A. Kumar, A. Kajale, **P. Kar**, R. Warier, A. Shareef, S. K. Panda, "Location-aware Smart Lighting System for Individual Visual Comfort in Buildings," *in Proceedings of the 6th IEEE Global Conference on Consumer Electronics (GCCE)*, pp. 1-2, Nagoya, Japan, October 2017.

14. A. Kumar, A. Kajale, **P. Kar**, R. Warrier, and S. K. Panda, "Implementation and Integration of a Smart App in a Smart Building for Personal Visual Comfort," *in Proceedings of the 12th IEEE International Conference on Power Electronics and Drive Systems (PEDS)*, pp. 1161-1166, Honolulu, Hawaii, USA, December 2017.

15. S. Das, **P. Kar**, and S. Barman, "Analysis Of IEEE 802.11 WLAN Frame Aggregation Under Different Network Conditions," *in Proceedings of the IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET)*, pp. 1240-1245, Chennai, India, March 2017.

16. **P. Kar**, S. Barman, and S. Das, "ISCP: Inter State changing problem in Wireless Sensor Network with dumb nodes," *in Proceedings of the International Conference on Computing and Communication Systems (I3CS)*, Shillong, India, November 2016, DoI:10.1007/978-981-10-6890-4_2.

17. S. Das, **P. Kar**, and D. K. Jana, "SDH: Self detection and Healing mechanism for dumb nodes in Wireless Sensor Network", *in Proceedings of the IEEE Region 10 Conference (TENCON)*, pp. 2792-2795, Singapore, November 2016.

18. **P. Kar**, R. S. Reddy, P. Gupta, J. Dauwels, and A. Ukil, "FLoGPN: A Reputation Based Scheme for Fault Localization in Gas Pipeline Network," *in Proceedings of the 42nd Annual Conference of IEEE Industrial Electronics Society (IECON)*, pp. 4651-4656, Florence, Italy, October, 2016 (**Received best presentation award**).

19. **P. Kar**, A. Roy, S. Misra, and M. S. Obaidat, "Energy-Efficient Connectivity Re-establishment in WSN in the Presence of Dumb Nodes," *in Proceedings of the IEEE ICC 2015 — 4th IEEE International Workshop on Smart Communication Protocols and Algorithms (SCPA)*, pp. 1485 – 1490, London, UK, June 2015.

20. A. Roy, **P. Kar**, and S. Misra, "Detection of Dumb Nodes in a Stationary Wireless Sensor Network," *in Proceedings of the 11th IEEE India Conference (INDICON)*, pp. 1–6, Pune, Maharashtra, India, December, 2014.

21. M. Roy, **P. Kar**, and N. Mukherjee, "A Jini Based Implementation for Best Leader Node Selection in MANETs," *in Proceedings of the International Conference on Computer Networks & Communications (NetCom)*, pp. 15-22, Chennai, India, December 2012.

22. M. Roy, **P. Kar**, and N. Mukherjee, "An Enhanced Service Framework in MANETs for Application in Emergency Services," *in Proceedings of the IEEE International Conference on Intelligent Network and Computing (ICINC)*, no.1, pp.191-198, Kuala Lumpur, Malaysia, November 2010.

23. M. Roy, **P. Kar**, and N. Mukherjee, "Determining JINI Leasing Time Limits Using the Random Waypoint Mobility Model in Mobile Ad Hoc Networks," *in Proceedings of the 10th IEEE International Conference on Networking and Information Technology (ICNIT)*, pp. 64-69, Manila, Philippines, June 2010.

❖ Edited Books

1. M. Roy, **P. Kar**, and S. Dutta, "Interoperability in IoT for Smart Systems", CRC Press, Taylor & Francis Group, December 2020, ISBN: 9780367519865 [Link]
2. G. G. Md. Nawaz Ali, Md. N. A. Rahim, and **P. Kar**, "Vehicular Ad-Hoc Networks: Applications and Technology", Nova science publishers, September 2020, ISBN: 978-1-53618-038-1 [Link]

❖ Book Chapters

1. **P. Kar**, "Optimal Hole Coverage in the Presence of Dumb Node in Wireless Sensor Networks", in *Vehicular Ad-Hoc Networks: Applications and Technology*, Nova science publishers, September 2020
2. **P. Kar** and A. Das, "Artificial Neural Networks and Learning Techniques", in P. Samui (Eds.), *Advanced Computational Techniques for Simulation-Based Engineering, IGI Global, USA*, DOI: 10.4018/978-1-4666-9479-8.ch009, March 2016.

❖ Magazine Articles

1. **P. Kar**, A. Roy, and S. Goswami, "Undersea Colony: In search of Another Planet to Live In", *PCQuest*, November 2013. [Link]
2. A. Roy, **P. Kar**, and S. Goswami, "Popular Applications of Wireless Sensor Networks", *PCQuest*, December 2012. [Link]
3. A. Roy and **P. Kar**, "Simulate a Network Using NS-2", *PCQuest*, August 2012. [Link]
4. **P. Kar** and S. Goswami, "Simulate a Network Using NS-3", *PCQuest*, April 2012. [Link]

❖ Doctoral Colloquiums

1. S. Misra, **P. Kar**, A. Roy, and Mohammad S. Obaidat, "Existence of Dumb Nodes in Stationary Wireless Sensor Network," *XRCI Open 2015 Doctoral Colloquium*, Bangalore, India, January 22–23, 2015.
2. **P. Kar** and S. Misra, "Effects of Dumb Nodes in Stationary Distributed Wireless Sensor Networks", *The Fourth IDRBT Doctoral Colloquium*, IDRBT, Hyderabad, December 11–12, 2014.

Patents

1. A. Kumar, A. Shareef, **P. Kar**, B. K. Mallikarjuna, T. H. Koh, and S. K. Panda, "An Intelligent Lighting System for Smart Buildings Using Multi-Agent-Enabled Wireless Sensor-Actuator Network", Singapore patent filed on 1st June 2018 (Ref: 10201804681P)

2. S. Misra, S. Goswami, **P. Kar**, and A. Roy, "PKI Enabled Time Stamped Digital Signing System Involving Certification Authority Issued Digital Certificate Cryptographic Token With Real-Time Revocation Verification", Indian patent filed on 14th January 2016 (Ref: 201631001328).

3. S. Misra, A. Roy, **P. Kar**, and S. Goswami, "An Adverse Environmental Effect Resistant Seamless Wireless Sensor Network System", Indian patent filed on 16th April 2015 (Ref: 425/KOL/2015).

4. S. Misra, **P. Kar**, A. Roy, and S. Goswami, "An Advanced Wireless Sensor Network System and Method for Accurate Information Gathering form a Radiation Affected Area", Indian patent filed on 5th January, 2015 (Ref: 6/KOL/2015).

Research Grants

1. **Project title:** Research on credit risk assessment and decision support application based on Ningbo financial intelligence
   Sponsoring agency: Ningbo Science &Technology Bureau (Chinese government research agency)
   Investigators: Anthony Graham Bellotti(PI), Saeid P. Arkadani(CI), **Pushpendu Kar**(CI), Boon Giin Lee(CI), Heng Yu(CI), Hang Zhou(CI)
   Budget: ¥1,000,000
   Duration: 2022-2026

2. **Project title:** DOMINANT: Development of an Efficient Plug-n-Play and Real-Time Remote Health Monitoring System
   Sponsoring agency: Ningbo Science &Technology Bureau (Chinese government research agency)
   Investigators: Pushpendu Kar (PI), Sherif Welsen (CI)
   Budget: ¥200,000
   Duration: 2020-2022

3. **Project title:** Implementation of Named Data Networking Based Plug-n-Play and Secure Framework for Heterogeneous IoT Network
   Sponsoring agency: University of Nottingham Ningbo China
   Investigators: Pushpendu Kar (PI), Sherif Welsen (CI)
   Budget: ¥30,000
   Duration: 2019-2021

4. **Project title:** EZPlugIn: Universal Plug-n-Play Framework in a Heterogeneous IoT Infrastructure
   Sponsoring agency: European Union
   Investigators: Pushpendu Kar (PI), Hao Wang (PI)
   Budget: €46,000
   Duration: 2018-2019

Research Projects Involved In:

1. **Title:** Intelligent Information Management System in Smart Buildings Using Multi-Agent-Enabled Wireless Sensor-Actuator Network
   Sponsoring Agency: Building & Construction Authority, Singapore
   Description: In this project, we aim at innovations in the intelligent information system for building Operation and management. This is performed using novel technologies of Wireless Sensor Actuator Network (WSAN) and Multi-Agent Systems (MAS).
   Technology Used: MATLAB, JAVA, Python, Processing Code, PCB Design, Sensor Technology
   Institution: National University of Singapore (NUS), Singapore
   Role: System design, simulation, implementation, and deployment (Postdoctoral Research Fellow)

2. **Title:** Advanced Multi-Sensor Anomaly Monitoring and Analytics for Gas Pipeline
   Sponsoring Agency: Energy Management Authority, Singapore
   Description: In this project, my focus was to explore possible detection techniques for identifying,

Analyzing and then locating anomalies (such as leakage, water ingress, deformation, etc.) of underground natural gas pipeline, as well as perform advanced data analytics based predictive maintenance for the possible future failure-prone zones.
Technology Used: MATLAB, COMSOL, OpenFoam
Institution: Nanyang Technological University (NTU), Singapore.
Role: System design, simulation, implementation, and deployment (Postdoctoral Research Fellow)

3. **Title:** Checking Border Violation by Civilians Through Technological Solution: Phase I
Sponsoring Agency: Border Security Force (BSF), Govt. of India
Description: This project includes a survey of related works, proposes new solutions for automated Checking border violations, documentation, and writing proposal.
Technology Used: Wireless Sensor Network (WSN) and video camera
Institution: Indian Institute of Technology Kharagpur (IIT Kharagpur), West Bengal.
Role: Survey related works, propose solutions, documentation, and report writing. (Researcher)

4. **Title:** Towards Robust Efficient and Secure Data Acquisition in Underwater Sensor Networks (TRE)
Sponsoring Agency: Department of Information Technology(DIT), Govt. of India
Description: Design and implementation of network protocols toward the development of an Underwater acoustic network simulator
Technology Used: Network Simulator Version 3 (NS-3), MatLab
Institution: Indian Institute of Technology Kharagpur (IIT Kharagpur), West Bengal, India
Role: Simulator Development using NS-3 (Senior Project Assistant)

Other Projects Involved In:

1. **Title:** Walmart Purchase Order Transformation
Client Name: Walmart Americans.
Description: This project developed an online system to create and edit purchase agreements and Purchase orders for the suppliers by adding item information with supplier information and send it to the supplier.
Technology Used: Java, J2EE, JSF, and DB2.
Organization: IBM India Pvt. Ltd (Global Business Service)
Role: Design and development (Associate System Engineer)

2. **Title:** Event Management System
Description: Developed an online application for managing all the activities of an educational institute. This project has three major modules such as Administrator, Speaker and Participant.
Technology Used: JSP using Struts framework & DB2 database
Organization: IBM India Pvt. Ltd (Global Business Service)
Role: System design and development (Associate System Engineer)

3. **Title:** Data Tracking System (version-1.0)
Description: This project helps to computerize and integrate the flow of operation of the Crime Record Branch and Central Finger Print Branch in National Crime Records Bureau
Technology Used: VISUAL BASIC 6.0, MS-Access
Organization: National Crime Records Bureau (NCRB), Ministry of Home Affairs, New Delhi, India.
Role: System design, writing programs using Visual Basic 6.0 (Internship student)

Membership

1. Institute of Electrical and Electronics Engineers (IEEE), Senior Member, Id: 93025879
2. Association for Computing Machinery (ACM), Member, Id: 1355491
3. Institution of Engineering and Technology (IET), Member, Id: 1101015556
4. International Association of Computer Science and Information Technology (IACSIT), Lifetime Member, Id: 80339962

Activities

- **Research Laboratory Development**

1. ***Co-Developer***, Next Generation Internet of Things (NGIoE) Laboratory, Faculty of Science and Engineering, University of Nottingham Ningbo, China (Director: Dr. Chiew-Foong Kwong and Co-Director: Dr. David Chieng)

❖ **Editorial Activities**

1. ***Review Editor***, Frontiers in the Internet of Things - IoT Services and Applications, 2022 - Present
2. ***Review Editor***, Frontiers in Energy Efficiency - Energy Efficiency Applications, 2022 - Present
3. ***Academic Editor,*** Journal of Healthcare Engineering (Impact factor: 2.68)
4. ***Editor***, American Journal of Networks and Communications, 2022 – 2024.

❖ **Distinguish Talks:**

1. ***Keynote Speech***: "Name Signature Lookup System for Enhanced Security of NDN-based IoT Networks", International Faculty Development Program, Sharda University, Noida, India, 23rd June 2022.
2. ***Keynote Speech***: "Activity Recognition Based Intelligent Sensory System for Smart Home Control", International Conference on 3D Immersion, Interaction and Multi-sensory Experiences (ICDIIME2022), Madrid, Spain, 27-29 June 2022.
3. ***Keynote Speech***: "Activity Recognition Based Smart Home Control System", International Conference on Algorithms, Microchips and Network Applications (AMNA2022), Zhuhai, China, 18th February 2022.
4. ***Keynote Speech***: "Recommendation based approach for personalized control, Visual Comfort & Energy Efficiency in office buildings", International Conference on Computer Graphics, Artificial Intelligence and Data Processing (ICCAID2021), Harbin, China, 24th December 2021.
5. ***Keynote Speech***: "Named Data Networking Based Interoperable and Secure Framework for Heterogeneous IoT Networks", International Conference on Internet of Things and Machine Learning (IoTML2021), Dalian, China, 17th December 2021.
6. ***Keynote Speech***: "Security Enhancement to Named Data Networking", International Conference on Cyber Warfare, Security & Space Research (SpacSec'21), Jaipur, India, 10th December 2021.
7. ***Invited Talk*****:** "Personalized Visual Comfort and Energy Efficiency in Office Buildings", International Conference on Sustainability and Equity: Digital Society, Bhubaneswar, India, 24th November 2020.
8. ***Invited Talk*****:** "Personalized Visual Comfort and Energy Efficiency in Office Buildings", co-organized by IEEE Kharagpur Section and National Academy of Sciences India (NASI) Kharagpur Chapter, 16th July 2020.
9. ***Keynote Speech***: "Named Data Networking: towards data-centric, fast and secure new generation Internet technology", 5th International Conference on Advanced Computing and Intelligent Engineering (ICACIE20), Mauritius, 25th June 2020.
10. ***Keynote Speech***: "Named Data Networking: towards data-centric, fast and secure new generation Internet technology", 2nd International Conference on Information Technology and Electrical Engineering (ICITEE19), Changsha, Hunan, China, 6th December 2019.
11. ***Invited talk*****:** "Underwater Sensor Network Protocols at Various Layers", Faculty Development Program, Haldia Institute of Technology, Haldia, India, 4th August 2016.

❖ **Conference Chair:**

1. ***Publication Chair***: 2nd International Conference on Artificial Intelligence, Virtual Reality and Visualization (AIVRV 2022), 23 - 25 September 2022, Chongqing, China.
2. ***General Chair***: International Conference on Advanced Communications and Machine Intelligence (MICA 2022), 7-9 July 2022, Tamil Nadu, India.
3. ***General Chair***: International Conference on 3D Immersion, Interaction and Multi-sensory Experiences (ICDIIME 2022), 27-29 June 2022, Madrid, Spain.
4. ***International Advisory Chair*****:** 10th International Conference of Information and Communication Technology (ICICT2020), 24-25 April 2020, Wuhan, Hubei, China.

❖ **Conference Session Chair:**

1. 17th IEEE International Wireless Communications & Mobile Computing Conference (IWCMC2021), June 2021, Harbin, China.

2. International Conference on Sustainability and Equity: Digital Society, 24 November 2020, Bhubaneswar, India,
3. 20th IEEE International Conference on Communication Technology, October 2020, Nanning, China.
4. ACM International Workshop on Future Industrial Communication Networks (FICN) in conjunction with ACM MobiCom, November 2018, New Delhi, India.
5. IEEE Region 10 Conference (TENCON), November 2016, Singapore.

❖ **Conference International Advisory Committee Member:**

1. 3rd International Conference on Advanced Computing and Software Engineering (ICACSE-121), 19-20 February 2021, Sultanpur, Uttar Prades, India.
2. International Conference on Research and Applications in Artificial Intelligence (RAAI), 19-20 December 2020, Kolkata, India.
3. International Conference on Innovations in Computational Intelligence and Computer Vision (ICICV-2020), 17-19 January 2020, Jaipur, Rajasthan.
4. International Conference on Applied Mathematics and Computational Sciences (ICAMCS2019), October 17-19, 2019, Dehradun, India.
5. International Conference on Advanced Computing and Software Engineering (ICACSE19), February 2019, Sultanpur, U.P., India.

❖ **Conference Technical Program Committee Member:**

1. IEEE International Conference on Communication: SAC E-Health Track (ICC2022:SAC-EH) 28 May – 01 June 2022, Rome, Italy.
2. 6th World Conference on Computing and Communication Technologies (WCCCT), 6 – 8 January 2023, Chengdu, China
3. 12th International Conference on Communication and Network Security (ICCNS), 1-3 December 2022, Beijing, China
4. IEEE International Conference on Cybernetics and Computational Intelligence (CyberneticsCom), 16-18 June 2022, Malang, Indonesia.
5. IEEE Global Communication Conference: Communication & Information Systems Security (Globecom2022:CISS), 4 – 8 December, Rio De Janeiro, Brazil.
6. 23rd IEEE International Conference on High-Performance Switching and Routing (HPSR2022), 6-8 June 2022, Taicang, Jiangsu, China.
7. 14th IEEE International Conference on Internet of Things (iThings2021), 06-08 December 2021, Melbourne, Australia.
8. IEEE Global Communication Conference: Communication & Information Systems Security (Globecom2021:CISS) 7-11 December 2021, Madrid, Spain.
9. IEEE International Conference on Communication: SAC E-Health Track (ICC2022:SAC-EH) 16-20 May 2022, Seoul, South Korea.
10. 21st IEEE International Conference on Communication Technology (ICCT2021), 13-16 October 2021, Tianjin, China.
11. 10th IEEE International Conference on Communication, Networks, and Satellite (COMNETSAT2020), 17-18 July 2021, Purwokerto, Indonesia.
12. 6th EAI International Conference on Smart Grid and Innovative Frontiers in Telecommunications (Smart GIFT2021), 12-13 August 2021, Virtual conference.
13. IEEE International Conference on Cloud and Big Data Computing (CBDCom2021), 23-26 August 2021, Calgary, Canada
14. 9th IEEE International Conference on Communication, Networks, and Satellite (COMNETSAT2020), 17-18 December 2020, Batam, Indonesia.
15. International Conference on IoT and its Applications (ICIA2020), December 2020, Jamshedpur, India
16. 20th IEEE International Conference on Communication Technology (ICCT2020), 28-31 October 2020, Nanning, China.
17. 13th IEEE International Conference on Internet of Things (iThings2020), 02-06 November 2020, Rhodes Island, Greece.
18. IEEE International Conference on Communication: SAC E-Health Track (ICC2021 SAC-EH2021) and COVI-COM Workshop, 14-18 June 2021, Montreal, Canada.

19. IEEE Globecom 2020 Communication & Information Systems Security Symposium (Globecom-CISS2020), 7-11 December 2020, Taipei, Taiwan
20. IEEE International Conference on Cloud and Big Data Computing (CBDCom2020), 17-21 August 2020, Calgary, Canada
21. IEEE International Conference on Communication – Big Data Track (ICC - BD Track2020), Dublin, Ireland, 7-11 June 2020.
22. 11th IEEE International Symposium on UbiSafe Computing (UbiSafe2019), Atlanta, USA, 14-17 July 2019.
23. 6th International Symposium on Big Data Principles, Architectures, and Applications (BDAA19), Dublin, Ireland, 15–19 July 2019.
24. ACM International Workshop on Future Industrial Communication Networks (FICN) in conjunction with ACM MobiCom, New Delhi, India, November 2018
25. International Conference on Communication (ICC): SAC Symposium Smart Cities Track, Kansas City, MO, USA, 2018
26. IEEE International Smart Cities Conference (ISC2017), Wuxi, China, 14-17 September 2017
27. 86th IEEE Vehicular Technology Conference (VTC2017), Toronto, Canada, 2017
28. International Conference on Intelligent, Secure, and Dependable Systems in Distributed and Cloud Environments (ISDD2017), Canada, 2017
29. 20th International Conference of Network-Based Information System (NbiS2017), Canada, 2017.
30. International Conference on Advanced Computing and Intelligent Engineering (ICACIE2016), Bhubaneswar, Odisha, India, 2016.
31. 4th International Conference on Intelligent Human-Computer Interaction (IHCI2012), IIT Kharagpur, Kharagpur, India, 2012.

❖ **Short Term Couse Organization:**

1. ***Organizing team member*:** International Summer and Winter Term (ISWT) course at the Department of Computer Science and Engineering, IIT Kharagpur, June 2015.
2. ***Organizing team member*:** Short Term Course on Object-Oriented Programming and Data Structure using C++, Department of Computer Science and Engineering, IIT Kharagpur, 2nd - 20th June 2014

❖ **Administrative Duties:**

1. Act as FoSE Unit Contact Point for the School of Computer Science at the University of Nottingham Ningbo China, 2021-22
2. Member of Admission and International Relations committee at the University of Nottingham Ningbo China
3. Member of EC Committee in the School of Computer Science at the University of Nottingham Ningbo China
4. Held the post of Cashier at Vikram Sarabhai Residential Complex (VSRC) Hall, IIT Kharagpur from 2013 to 2014
5. Held the post of Block Representative at Vikram Sarabhai Residential Complex (VSRC) Hall, IIT Kharagpur from 2012 to 2013

❖ **PhD Thesis Examiner:**

1. Internal Examiner of the PhD thesis of Lincan Li, Department of Electrical and Electronic Engineering, University of Nottingham Ningbo China, Thesis title: Mobile Edge Cache Technique Under Radio Access Network For The Next Generation Of Communication Networks.

❖ **Paper Review:**

1. IEEE Transactions on Network and Service Management
2. IEEE Transactions on Vehicular Technology
3. IEEE Transactions on Parallel and Distributed Systems
4. IEEE Transactions on Mobile Computing
5. IEEE Transactions on Network Science and Engineering
6. IEEE Transactions on Sustainable Computing
7. IEEE Systems Journal
8. IEEE Sensors Journal

9. IEEE Internet of Things Journal
10. IEEE Network
11. IEEE Communication Magazine
12. IEEE Internet of Things Magazine
13. Building and Environment (*Elsevier*)
14. Computer Networks (*Elsevier*)
15. Smart Health (*Elsevier*)
16. IET Wireless Sensor Systems
17. Wireless Personal Communications *(Springer)*
18. Telecommunication Systems (*Springer*)
19. International Journal of Communication Systems (*Wiley*)
20. Security and Communication Networks (*Wiley*)
21. Journal of Ambient Intelligence and Smart Environments (IOS Press)
22. International Journal of Communication Networks and Distributed Systems (*InderScience*)
23. Photonic Network Communications
24. International Journal of Engineering Business Management
25. Journal of Mobile Multimedia (*River Publisher*)
26. IEEE Globecom, 2020
27. International Conference on Mining Intelligence and Knowledge Exploration (*MIKE*), 2013
28. IEEE Students' Technology Symposium (IEEE *TechSym*), 2014, 2016
29. IEEE International Conference on Communication (*ICC*), 2015, 2018, 2020
30. IEEE Vehicular Technology Conference (VTC) 2016
31. IEEE International Conference on Cyber-Physical and Social Computing (CPSCom), 2019

❖ **Book Review**

1. The seventh edition of "Database Systems: A Practical Approach to Design, Implementation, and Management" by Thomas Connolly and Carolyn Begg, Pearson Global Editions

Students

❖ **PhD Students:**

➢ **Pursuing**

1. Joshua Lai, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Interoperability in Wearable Sensor Networks
2. Wenzhuo Lyu, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Development of an Efficient Plug-n-Play and Real-Time Remote Health Monitoring System
3. Xin Lin, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Advanced Machine Learning For Single-Cell Transcriptome Analysis
4. Luning Yang, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Statistical Modeling of Single Cell Classification Using Single Cell RNA Expression.
5. Asma Saleh Mahdi AL-BABAKR, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Assessing the Effects of Quality of Sleep to Mental State
6. Sen Lin, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Classification Systems for Single Cell Transcriptome (SCT) data

❖ **Master Thesis Students:**

➢ **Pursuing**

1. Shuxin Feng, School of Computer Science, University of Nottingham, UK, Thesis Title: Intelligent Trafic Prediction During Adverse Environmental Conditions
2. Ayushman Sanyal, School of Computer Science, University of Nottingham, UK, Thesis Title: The Future of C-V2X technology in China: the technological progress, deployment, and challenges
3. Daiyaan Dharsey, School of Computer Science, University of Nottingham, UK, Thesis Title: Blockchain-Enabled and IoT-based Secure Healthcare Management System

➢ **Completed**

1. Harri Prasad, School of Computer Science, University of Nottingham, UK, Thesis Title: Blockchain-Based Secure And Trustworthy Data Communication Model For Internet Of Things, 2021

❖ **Bachelor Thesis Students:**

➢ **Completed**

1. Li-Kai WU, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Blockchain-based Fake Product Identification System, 2021-22
2. Longwen HU, School of Computer Science, University of Nottingham Ningbo China, Thesis title: Design of Blockchain-based Secure Health Status Monitoring System Using Decentralized Machine Learning Technology, 2021-22
3. Dongchi Li, School of Computer Science, University of Nottingham Ningbo China, Thesis Title: B-Spot: Blockchain and Steganography based Robust and Secure Photo Transmission Mechanism, 2020-21
4. Xiangning LIANG, School of Computer Science, University of Nottingham Ningbo China, Thesis Title: Robust and Secure File Transmission Through Video Streaming Using Steganography and Blockchain, 2020-21
5. Zhengrui Xue, School of Computer Science, University of Nottingham Ningbo China, Thesis Title:Identification of Fake Images on Social Media Platforms Using Big Data Analytics,2020-21
6. Zhongyi Wang, School of Computer Science, University of Nottingham Ningbo China, Thesis Title: Identifying Covid-19 Fake News Using Deep Learning, 2020-21
7. Zhenbang YAN, School of Computer Science, University of Nottingham Ningbo China, Thesis Title: GUI based Network Simulator, 2020-21
8. Zhao Peng, School of Computer Science, University of Nottingham Ningbo China, Thesis Title: Activity-based home appliance control system, 2019-20

❖ **Group Project Students**

➢ **Completed**

1. Yichi Zhang, Chengyue Pan, Baizhen Lin, Kunning Wang, and Tianshu Ye, Project title: Feedback Analysis Based Product Rating System
2. Xiaoman Ding, Xiaoning Ma, Yunzhe Dong, Minxiao Li, Yixuan Wang, Yixuan Li, Project title: Plug-n-Play Secure Remote Health Monitoring System, September 2019 - May 2020.
3. Haowen Zheng, Honghao Zeng, Tianqi Xia, Boyuan Ye, Yuhua Guo, Zeyu Wang, Project title: Epidemic disease control using the Internet of Things and Big Data analytics, September 2020 - May 2021.

❖ **Internship Students**

➢ **Completed**

1. Zhihang Zhu and Yiran Mang, Project title: Recommender System for Healthcare, March - June 2022
2. Tianyi Ma and Chenyu Yang, Project title: Research and Development of Trust-Centric and Attack-Centric Recommender Systems, March - June 2022
3. Xinyi Wang and Yifei Miao, Project title: Recommender System Applications, March - June 2022
4. Lin Chen, Weixue Sheng, Project title: An efficient technique for identification of cache pollution attack in NDN-based remote health monitoring system using rank comparison, February-August 2021
5. Jiayi Shi, Kewei Chen, Project title: DMACN - A Dynamic Multi-Attribute Caching Mechanism for NDN-Based Remote HealthMonitoring System, February-August 2021.
6. Rubin Chen, Yukai Qian, Project title: Efficient Technique for Real-time CommunicationBetween Doctor and Patients in a NDN basedRemote Health Monitoring System, February-August 2021.
7. Hanyu Su, Siqi Yang, Yuning SUN, Hongru ZHAO, Project title: Estimation of salary increment of employees in an organization by living cost analysis using BigData, June-August 2021

8. Leyang Hu, Yichen Huang, Project title: An Integrated Framework for a Single Device to Combine Face Recognition and Covid-19 DetectionUsing Thermal Infrared Imagery, June-August 2021
9. Yihan Zhang, Xiyu Du, Peiyu Wang, Project title: *βFSCM*: An Enhanced Food Supply Chain Management System Using Hybrid Blockchain, June-August 2021
10. Ruibin Chen, Yachen Zhang, Yichen Fei, Project title: *WLEACH-CK*: Weighted K-Means Based LEACH-C Algorithm for Cluster Head Selection, June-August 2020
11. Jiayi Shi, Weixue Sheng, Project title: A Novel Framework for Predicting the Spread of COVID-19 by Contact Tracing through Smartphone, June-August 2020.
12. Zhicheng Song, Project title: Name-Signature Lookup System: A Security Enhancement to Named Data Networking, June-August 2020
13. Shanglun Wu, Yujie Yuan, Project title: Lightweight Verification and Fine-grained Access Control in Named Data Networking Based on Schnorr Signature and Hash Functions, June-August 2020.
14. Donglin Jiang, Zhihui Zhang, Project title: Efficient Cache Replacement for High Availability of Data Content from Content Store in An NDN Node Based on LSTM and Knowledge Distillation, June-August 2020.
15. Yunuo Zhao, Hao Jiang, Project title: Optimizing Open Shortest Path First Routing Calculation for NDN Using Johnson Algorithm, June-August 2020.

Collaborations

1. Prof. Hao Wang, Associate Professor, Department of Computer Science, Norwegian University of Science and Technology, Norway
2. Dr. Arun Kumar, Assistant Professor, Department of Computer Science and Engineering, National Institute of Technology Rourkela, Odisha, India.
3. Dr. G. G. Md. Nawaz Ali, Assistant Professor, Department of Computer Science and Information Systems, Bradley University, IL, USA.
4. Dr. Monideepa Roy, Associate Professor, School of Computer Engineering, Kalinga Institute of Industrial Technology, Odisha, India
5. Mr. Minyi Li, Project Leader, Deqing Ispatial Ltd. co, China

Countries Visited

England, Singapore, Malaysia, Indonesia, Philippines, Norway, Czech Republic, Austria, Switzerland, Italy, Netherlands, Belgium, France, Spain, China

Personal Details

Date of Birth: 14th March, 1983.
Sex: Male.
Marital Status: Married
Nationality: Indian.
Languages Known: Bengali (Mother tongue), English (Proficient) & Hindi (Proficient).
Hobbies: Reading storybooks, watching films.

End