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Sandip Chakraborty

Research Interests

- Wireless Networks and Mobile Computing
 - High Speed Wireless Networks
 - Network Management and Performance Optimization
 - Quality of Service (QoS), Quality of Experience (QoE)
 - Performance Modeling and Analysis, Network calculus
 - Heterogeneous Wireless Networks, Vertical Handover, Network Convergence
- Distributed Computing

Academic Background

- **Doctor of Philosophy - Computer Science and Engineering** July 2011 – May, 2014
Indian Institute of Technology Guwahati
Thesis Title: Capacity Enhancement, QoS and Rate Adaptation in IEEE 802.11s: A Performance Improvement Perspective
(Thesis submitted: 29th August, 2013, Thesis Defense: 11th May, 2014)
- **Master of Technology - Computer Science and Engineering** July 2009 – July 2011
Indian Institute of Technology Guwahati
CPI: 9.67/10
- **Bachelor of Engineering -Information Technology** August 2005 – June 2009
Faculty of Engineering and Technology, Jadavpur University
CGPA: 9.57/10; Aggregate Percentage: 89.62%
- **Higher Secondary Examinations (10+2) - Science Major** June 2003 – May 2005
Belghoria High School (West Bengal Council of Higher Secondary Examination)
Aggregate Percentage: 89%
- **Madyamik (Secondary) Examination** May 2003
Belghoria High School (West Bengal Board of Secondary Education)
Aggregate Percentage: 91.25%

Professional Experience

- **Assistant Professor** December, 2014 – Present
Department of Computer Science and Engineering
Indian Institute of Technology Kharagpur
- **Visiting Assistant Professor** July, 2014 – December, 2014
Department of Computer Science and Engineering
Indian Institute of Information Technology Guwahati
- **Project Fellow** June, 2014 – July, 2014
Department of Computer Science and Engineering
Indian Institute of Technology Guwahati
- **Research Fellow** September, 2013 – June, 2014
(under TCS Research Scholarship)
Department of Computer Science and Engineering
Indian Institute of Technology Guwahati

Fellowships:**Awards:****Grants:****Achievements**

- **Best Poster Award** in Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016, for the poster “Prediction of Quality Degradation for Mobile Video Streaming Apps: A Case Study using YouTube”
- **Best Paper Honorable Mention Award** in Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016, for the paper “ES2: Managing Link Level Parameters for Elevating Data Rate and Stability in High Throughput WLAN”
- **LRM Foundation Award** for attending IEEE INFOCOM 2016, for the paper “UrbanEye: An Outdoor Localization System for Public Transport”
- **Best Paper Award** in 16th International Conference on Distributed Computing and Networking (ICDCN 2015), held in Goa, India in January, 2015, for the paper “Controlling Unfairness due to Physical Layer Capture and Channel Bonding in 802.11n+s Wireless Mesh Networks”
- Recipient of **Innovative Student Project Award - Doctoral Level 2014**, from Indian National Academy of Engineering (INAE)
- Recipient of Technische Universität München (TUM) Postdoc Mobility Travel Grant (to participate in ‘TUM Research Opportunity Week’ from March 17-21, 2014)
- **Fellow of National Internet Exchange of India (NIXI)**, under NIXI Fellowship programme for one year (starting from April, 2014).
- **Best Paper Award** (in long papers section) at Seventh IEEE International Conference on Advanced Networks and Telecommunication Systems (IEEE ANTS 2013), held in Chennai, India in December, 2013, for the paper “Surpassing Flow Fairness in a Mesh Network: How to Ensure Equity among End Users?”
- Received partial travel grant from the Council of Scientific and Industrial Research (CSIR), Government of India, to present a paper at IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (IEEE PIMRC 2013), held at London, UK, in September 08-11, 2013
- Received partial travel grant from Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Government of India, to present a paper at IEEE International Conference on Communications (IEEE ICC), 2012, held at Ottawa, Canada in June, 2012
- **Second Best Paper Award** at IEEE 2nd International Conference on Parallel, Distributed and Grid Computing, 2012 (IEEE PDGC 2012), held at Solan, Uttarakhand, India in December, 2013, for the paper “Deterministic 1-2 Skip List in Distributed System”
- Received partial travel grant from Indian Association for Research in Computing Science for attending conference (ICC 2012) at Ottawa, Canada
- Recipient of **TCS Research Fellowship, 2011** (four years) from Tata Consultancy Services
- Recipient of **Best Graduate Student Award, 2010-2011** from Tata Consultancy Services (TCS).
- Recipient of **University Medal** for standing FIRST in order of merit at the Bachelor of Engineering (Information Technology) Final Examination, 2009 at Jadavpur University.
- Recipient of **TATA Consultancy Services Ltd. Gold Plated Silver Medal** for Best Performance in Software Project at Bachelor of Engineering (Final) Examination, 2009, awarded by Jadavpur University.
- Recipient of **Best Undergraduate Student Project of the Institute Award** by TATA Consultancy Services Limited.
- Recipient of **Arun Kumar Bandyopadhyay Memorial Bronze Medal** for securing the Second Highest aggregate of marks among all the courses of Bachelor of Engineering Examination, 2009, awarded by Jadavpur University.
- Recipient of **Meera Rani Mitra Memorial Award 2008**, from Alumni Association of NCE Bengal and Jadavpur University, for having secured the highest marks in the department in the 3rd year of University Examination, 2008.
- Recipient of **Indubhusan Putatunda and Shanti Sudha Putatunda Memorial Award-2007**, from Alumni Association of NCE Bengal and Jadavpur University, for having secured the highest marks in the department in the 2nd year of University Examination, 2007.

Technologies Developed/Used

- Designed and developed IITGMesh, an IEEE 802.11(b/g/n)+s Wireless Indoor Mesh Testbed at IIT Guwahati CSE Research Labs. The testbed consists of 11 mesh points (10 mesh access points, 1 portal point), connected wirelessly to form a multi-hop mesh architecture. The mesh points can operate upto 300 Mbps data rate, with IEEE 802.11n physical layer. The mesh portal point is connected to the institute backbone network through Gigabit Ethernet. The particulars of hardware/software used are as follows.
 - RT3352 Router-on-Chip 300 Mbps IEEE 802.11b/g/n complaint
 - Lanbowan ANT0627D8S-XP 2 × 2 directional MIMO antennas
 - Embedded MIPS24KEc (400 MHz) with 32K I-Cache and 16K D-Cache
 - 16/32-bit SDRAM DRAM up to 128 Mbytes
 - 5 Ports 10/100 SW and RGMII

- Mesh Network: IEEE 802.11s protocol stack: MPM (mesh peer management) + EDCA (channel access) + HWMP (mesh forwarding)
- Linux kernel 2.6.14 + open80211s (www.open80211s.org)
- Data generation, measurement and monitoring tools: Iperf, Seagull multi-protocol traffic generator, tcpdump, wireshark, netflow analyzer
- Network Simulators: Qualnet 5.0.1 (wireless library, advanced wireless library, cellular library), NS-3, NS-2

Invited Talks

- “Future Internet Architecture: Requirements and Feasibility”, Invited Tutorial, CINE 2015, KIIT Bhubaneswar, January 2015
- “Path Diversity and Its Effect over High Speed Wireless Mesh Backbone: Towards a New Routing Framework”, Invited Talk, Department of Informatics, Technical University Munich, Germany, March 2014
- “Scheduling and Forwarding in Directional Interface based Wireless Mesh Networks,”, Invited Talk, TCS Innovation Lab, Bangalore, January 2013

Professional Memberships

- Institute of Electronics and Electrical Engineers (IEEE)
- IEEE Communication Society
- Association for Computing Machinery (ACM)
- ACM SIGCOMM

Community Works

- **Journal Reviewer:** IEEE Transactions on Mobile Computing, IEEE Transactions on Vehicular Technology, Ad Hoc Networks (Elsevier), IEEE Transactions on Intelligent Transportation Systems, Journal of Parallel and Distributed Computing (Elsevier), Computer Communication (Elsevier), Journal of Supercomputing (Springer), Computer Networks (Elsevier), Performance Evaluation (Elsevier), IET Networks, Wireless Personal Communication (Springer)
- **Conference Reviewer:** IEEE INFOCOM 2016, IEEE ANTS 2015, COMSNETS 2016, IEEE ANTS 2014, IEEE ISWTA 2014, IEEE ICC 2013, IEEE ISWTA 2013, CSNT 2013, ICISS 2011, ICISS 2012
- **TPC Member:** IEEE ANTS 2015, COMSNETS 2016, IEEE ICC 2016, COMSNETS 2016, ICDCN 2016, IEEE ANTS 2015, IEEE ANTS 2014, COMSNETS 2015 - Social Networking Workshop
- **Conference Organizing Committee:** IEEE ANTS 2015
- Joint Organizing Secretary of the Twenty-sixth National Convention of Computer Engineers , Organized by Institute of Engineers, India (Assam State Center)

Sponsored Projects

- P1. **Title:** WiHi: High Speed Wireless Access with Network Resilience and Improved User Experience, **Sponsor:** SRIC, IIT Kharagpur (Under ISIRD), **Amount:** 27.35 Lakhs, **Duration:** 3 Years (2015-2018), **Role:** Principal Investigator
- P2. **Title:** RTOS Validation and Development Support (Consultancy Project), **Sponsor:** Hindustan Aeronautics Limited, MCSRDC Division, Vimanapura, Post Bangalore - 560017, **Amount:** 50.77 Lakhs, **Duration:** 01-08-2015 to 30-09-2015, **Role:** Co-Principal Investigator
- P3. **Title:** Post-disaster Situation Analysis and Resource Management using Delay-Tolerant Peer-to-Peer Wireless Networks (DISARM), **Sponsor:** ITRA-Media Lab Asia, DIT, **Amount:** 89.93 Lakhs, **Duration:** 3 Years (2013-2016), **Role:** Co-Principal Investigator
- P4. **Title:** Information Security Education and Awareness (ISEA) Project Phase-II, **Sponsor:** Department of Electronics & Information Technology, Ministry of Communications & Information Technology, **Amount:** 185.70 Lakhs, **Duration:** 16-11-2015 to 15-11-2020, **Role:** Co-Principal Investigator

Publication:

Book Chapters

- B1. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, Sushanta Karmakar, “*Sensory Data Gathering for Road-Traffic Monitoring: Energy Efficiency, Reliability and Fault-tolerance*”, Modeling and Processing for Next-Generation Big-Data Technologies, Editors: Fatos Xhafa (Universitat Politècnica de Catalunya) , Leonard Barolli (Fukuoka Institute of Technology (FIT)), Admir Barolli (University of Salerno), Petraq Papajorgji (Canadian Institute of Technology), Springer Series: Modeling and Optimization in Science and Technologies, Volume 4, 2015, Pages 89-112, Print ISBN: 978-3-319-09176-1, Online ISBN: 978-3-319-09177-8 (Springer)

**Publication:
Journals**

- J1. **Sandip Chakraborty**, “Analyzing Peer Specific Power Saving in IEEE 802.11s through Queuing Petri Nets: Some Insights and Future Research Directions”, *IEEE Transactions on Wireless Communications* (In Press)
- J2. **Sandip Chakraborty**, Subhrendu Chattopadhyay and Sukumar Nandi, “Alleviating Hidden and Exposed Nodes in High-Throughput Wireless Mesh Networks”, *IEEE Transactions on Wireless Communication* (In Press)
- J3. Abhijit Sarma, **Sandip Chakraborty** and Sukumar Nandi, “When do I Switch between WiFi and WiMAX? Deciding Handover Points in a Heterogeneous Network Maintaining QoS and QoE”, *IEEE Transactions on Vehicular Technology*, Volume 65, Issue 1, Jan 2016, Pages 348-357
- J4. **Sandip Chakraborty** and Sukumar Nandi, “Distributed Service Level Flow Control and Fairness in Wireless Mesh Networks”, *IEEE Transactions on Mobile Computing*, Volume 14, Issue 11, October 2015, Pages 2229-2243
- J5. **Sandip Chakraborty**, and Sukumar Nandi, “Data Rate, Path Length and Network Contention Trade-off in IEEE 802.11s Mesh Networks: A Dynamic Data Rate Selection Approach”, *Computer Networks*, Elsevier, Volume 91, November 2015, Pages 225-243
- J6. Pravati Swain, **Sandip Chakraborty**, Sukumar Nandi and Purandar Bhaduri, “Performance Modeling and Analysis of IEEE 802.11 IBSS PSM in Different Traffic Conditions”, *IEEE Transactions on Mobile Computing*, Volume 14, Issue 8, August 2015, Pages 1644-1658
- J7. **Sandip Chakraborty**, Sidharth Sharma and Sukumar Nandi, “MAC Layer Channel Access and Forwarding in a Directional Multi-Interface Mesh Network”, *IEEE Transactions on Mobile Computing*, Volume 14, Issue 3, February 2015, Pages 565-578
- J8. Ramesh Singh, **Sandip Chakraborty** and Sushanta Karmakar, “Concurrent Deterministic 1-2 Skip List in Distributed Message Passing Systems”, *International Journal of Parallel, Emergent and Distributed Systems*, Taylors and Francis, Volume 30, Issue 2, February 2015, Pages 135-174
- J9. Subhrangsu Mandal, **Sandip Chakraborty**, Sushanta Karmakar, “Distributed Deterministic 1-2 Skip List for Peer-to-Peer System”, *Journal of Peer-to-Peer Networking and Applications*, Springer, Volume 8, Issue 1, January 2015, Pages 63-86
- J10. Suchetana Chakraborty, **Sandip Chakraborty**, Sushanta Karmakar, Sukumar Nandi, “Dynamic Tree Switching for Distributed Message-Passing Applications”, *Journal of Network and System Management*, Springer, Volume 23, Issue 1, January 2015, Pages 1-40
- J11. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi and Sushanta Karmakar, “Reliability in Delay Sensitive Sensor Networks with Arbitrary Node Failures: Deployment and Topology Management”, *International Journal of Wireless Information Networks*, Springer, Volume 21, Issue 4, December 2014, Pages 262-279
- J12. Abhijit Sarma, **Sandip Chakraborty**, Sukumar Nandi, “Context Aware Handover Management: Sustaining QoS and QoE in a Public IEEE 802.11e Hotspot”, *IEEE Transactions on Network and Service Management*, Volume 11, Issue 4, December 2014, Pages 530-543
- J13. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi and Sushanta Karmakar, “AD-CROSS: Adaptive Data Collection from Road Surveilling Sensors”, *IEEE Transactions on Intelligent Transportation Systems*, Volume:15, Issue:5, October 2014, Pages 2049 - 2062
- J14. **Sandip Chakraborty**, Sukumar Nandi, “Selective Greedy Routing: Exploring the Path Diversity in Backbone Mesh Network”, *ACM/Springer Journal of Wireless Networks*, Volume:20, Issue:7, October 2014, Pages 1995-2017
- J15. **Sandip Chakraborty** and Sukumar Nandi, “Evaluating Transport Protocol Performance over a Wireless Mesh Backbone”, *Elsevier Performance Evaluation*, Volume:79, Special Issue: Performance 2014, September 2014, Pages 198-215
- J16. Abhijit Sarma, **Sandip Chakraborty**, Sukumar Nandi and Anchal Choubey, “Context Aware Inter-BSS Handoff in IEEE 802.11 Networks: Efficient Resource Utilization and Performance Improvement”, *Wireless Personal Communications*, Springer, Volume 77, Issue 4, August 2014, Pages 2587-2614
- J17. Aditya Yadav, Maushumi Barooah, **Sandip Chakraborty**, Sukumar Nandi, “Vertical Handover over Intermediate Switching Framework: Assuring Service Quality for Mobile Users”, *Wireless Personal Communications*, Springer, Volume 77, Issue 1, July 2014, Pages 507-527
- J18. Aditya Yadav, Maushumi Barooah, **Sandip Chakraborty**, Sukumar Nandi, Sanjay Ahuja, “Evaluation of the End-to-End TCP Performance for Vertical Handover using Intermediate Switching Network”, *International Journal of Communication Networks and Distributed System*, Inderscience Volume 12, Issue 3, April 2014, Page 327-351

- J19. Pravati Swain, **Sandip Chakraborty**, Sukumar Nandi, Purandar Bhaduri, “Performance Modeling and Evaluation of IEEE 802.11 IBSS Power Save Mode”, Ad Hoc Networks, Elsevier, Volume 13, Part B, February 2014, Pages 336-350
- J20. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, Sushanta Karmakar, “Convergecast Tree Management from Arbitrary Node Failure in Sensor Network”, Ad Hoc Networks, Elsevier, Volume 11, Issue 6, August 2013, Pages 1796-1819
- J21. **Sandip Chakraborty**, Sukumar Nandi, “IEEE 802.11s Mesh Backbone for Vehicular Communication: Fairness and Throughput”, IEEE Transactions on Vehicular Technology, Volume 62, Issue 5, June 2013, Pages 2193-2203
- J22. Maushumi Barooah, **Sandip Chakraborty**, Sukumar Nandi and Dhananjay U. Kotwal, “An Architectural Framework for Seamless Handoff between IEEE 802.11 and UMTS Network”, ACM/Springer Journal of Wireless Networks, Volume 19, Issue 4, March 2013, Pages 411-429
- J23. **Sandip Chakraborty**, Pravati Swain, Sukumar Nandi, “Proportional Fairness in MAC Layer Channel Access of IEEE 802.11s EDCA based Wireless Mesh Networks” Ad Hoc Networks, Elsevier, Volume 11, Issue 1, January 2013, Pages 570-584
- J24. Ishita Bhakta, **Sandip Chakraborty**, Barsha Mitra, Debarshi Kumar Sanyal, Samiran Chattopadhyay and Matangini Chattopadhyay “A DiffServ Architecture for QoS Aware Routing for Delay Sensitive and Best Effort Services in IEEE 802.16 Mesh Networks” , Volume 2011 (2011), Article ID 951310, Journal of Computer Networks and Communications, Hindwai Publishing Corporation

**Publications:
Conference
Proceedings**

- C1. **Sandip Chakraborty**, Dipti Dash, Debarshi Kumar Sanyal, Samiran Chattopadhyay and Matangini Chattopadhyay, “Poster: Game-Theoretic Wireless CSMA MAC Protocols: Measurements from an Indoor Testbed”, in proc. of the 35th Annual IEEE International Conference on Computer Communications (IEEE INFOCOM 2016) - Poster Paper, San Fransisco, CA, USA, April 10-15
- C2. Gurman Bhalla, Raja Karmakar, **Sandip Chakraborty**, and Samiran Chattopadhyay, “CrowdAP: Crowdsourcing Driven AP Coordination for Improving Energy Efficiency in Wireless Access Networks”, in proc. of the IEEE International Conference on Communications (IEEE ICC 2016) - Green Communications Systems and Networks, Kuala Lumpur, Malaysia, May 23-27, 2016
- C3. Rohit Verma, Aviral Shrivastava, Bivas Mitra, Sujoy Saha, Niloy Ganguly, Subrata Nandi and **Sandip Chakraborty**, “UrbanEye: An Outdoor Localization System for Public Transport”, in proc. of the 35th Annual IEEE International Conference on Computer Communications (IEEE INFOCOM 2016), San Fransisco, CA, USA, April 10-15, 2016
- C4. Satadal Sengupta, Harshit Gupta, Pradipta De, Bivas Mitra, and **Sandip Chakraborty**, “Poster: Understanding Data Traffic Behaviour for Smartphone Video and Audio Apps”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016
- C5. Dhruv Jain, Swapnil Agarwal, Satadal Sengupta, Pradipta De, Bivas Mitra, and **Sandip Chakraborty**, “Poster: Prediction of Quality Degradation for Mobile Video Streaming Apps: A Case Study using YouTube”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016
- C6. Chander Govindarajan, Satadal Sengupta, Pradipta De, Bivas Mitra, and **Sandip Chakraborty**, “Poster: Role of Network Control Packets in Smartphone Energy Drainage”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016
- C7. Subhrendu Chattopadhyay, **Sandip Chakraborty** and Sukumar Nandi, “Leveraging the Trade-off Between Spatial Reuse and Channel Contention in Wireless Mesh Networks”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016 (Invited Paper)
- C8. **Sandip Chakraborty** and Subhrendu Chattopadhyay, “ES2: Managing Link Level Parameters for Elevating Data Rate and Stability in High Throughput WLAN”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016
- C9. Partha Sarathi Paul, Bishakh Chandra Ghosh, Kingshuk De, Sujoy Saha, Subrata Nandi, Subhanjan Saha, Indrajit Bhattacharya and **Sandip Chakraborty**, “On Design and Implementation of A Scalable And Reliable Sync System For Delay Tolerant Challenged Networks”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016

- C10. Raja Karmakar, Pravati Swain, Samiran Chattopadhyay, and **Sandip Chakraborty**, “Performance Modeling and Analysis of High Throughput Wireless Media Access with QoS in Noisy Channel for Different Traffic Conditions”, in proc. of the Eighth International Conference on Communication Systems and Networks (COMSNETS 2016), Bangalore, India, January 06-08, 2016
- C11. Raja Karmakar, Samiran Chattopadhyay, and **Sandip Chakraborty**, “Dynamic Link Adaptation for High Throughput Wireless Access Networks”, in proc. of the IEEE International Conference on Advanced Networks and Telecommunications Systems (IEEE ANTS 2015), Kolkata, India, December 15-18, 2015
- C12. Amrita Bose Paul, **Sandip Chakraborty**, Suddhasil De, Sukumar Nandi and Santosh Biswas, “Adaptive Path Selection for High Throughput Heterogeneous Wireless Mesh Networks”, in proc. of the IEEE International Conference on Advanced Networks and Telecommunications Systems (IEEE ANTS 2015), Kolkata, India, December 15-18, 2015
- C13. Partha Sarathi Paul, Bishakh Chandra Ghosh, Kingshuk De, Sujoy Saha, Subrata Nandi and **Sandip Chakraborty**, “Demo: pSync: A Peer-to-peer Sync Tool for Challenged Networks”, in proc. of the 10th ACM Mobicom Workshop on Challenged Networks (CHANTS 2015, ACM), Paris, France, September 11, 2015
- C14. **Sandip Chakraborty** and Sukumar Nandi, “Controlling Unfairness due to Physical Layer Capture and Channel Bonding in 802.11n+s Wireless Mesh Networks”, in proc. of the 16th International Conference on Distributed Computing and Networking (ICDCN 2015, ACM), Goa, India, January 4-7, 2015 (**Best Paper Award**)
- C15. **Sandip Chakraborty** and Sukumar nandi, “QoS Associated Path Selection in Wireless Mesh Networks”, in proc. of the Eighth IEEE International Conference on Advanced Networks and Telecommunication Systems (IEEE ANTS 2014), New Delhi, India, December 14-17, 2014
- C16. **Sandip Chakraborty** and Sukumar Nandi, “Evaluating Transport Protocol Performance over a Wireless Mesh Backbone”, in proc. of the 32st International Symposium on Computer Performance, Modeling, Measurement and Evaluation (IFIP WG7.3 Performance 2014, Special issue published in Elsevier Performance Evaluation journal), Turin, Italy, October 07 -09, 2014
- C17. **Sandip Chakraborty**, Suchetana Chakraborty, Sushanta Karmakar and Hridoy Dutta, “Hierarchical Topology Adaptation for Distributed Convergecast Applications”, in proc. of the 29th ACM Symposium on Applied Computing - Dependable and Adaptive Distributed Systems Track (ACM SAC - DADS), Gyeongju, Korea, March 24 - 28, 2014
- C18. **Sandip Chakraborty**, Sukumar Nandi, “Evaluating the Effect of Path Diversity over QoS and QoE in a High Speed Indoor Mesh Backbone”, in proc. of the Sixth International Conference on Communication Systems and Networks (COMSNETS 2014, IEEE/ACM), Bangalore, India, January 07-09, 2014
- C19. **Sandip Chakraborty**, Subhrendu Chattopadhyay, Suchetana Chakraborty, Sukumar Nandi, “Defending Concealedness in IEEE 802.11n”, in proc. of the Sixth International Conference on Communication Systems and Networks (COMSNETS 2014, IEEE/ACM), Bangalore, India, January 07-09, 2014
- C20. **Sandip Chakraborty**, Sukumar Nandi, Subhrendu Chattopadhyay, “Surpassing Flow Fairness in a Mesh Network: How to Ensure Equity among End Users?”, in proc. of the Seventh IEEE International Conference on Advanced Networks and Telecommunication Systems (IEEE ANTS 2013), Chennai, India, December 15-18, 2013 (**Best Paper Award**)
- C21. **Sandip Chakraborty**, Suchetana Chakraborty, Sukumar Nandi, “Beyond Conventional Routing Protocols: Opportunistic Path Selection for IEEE 802.11s Mesh Networks” in proc. of the 24th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (IEEE PIMRC 2013), London, UK, September 08-11, 2013
- C22. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, Sushanta Karmakar, “RelBAS: Reliable Data Gathering from Border Area Sensors” in proc. of the 18th IEEE Computer Society International Symposium on Computers and Communications (IEEE ISCC 2013), Split, Croatia, July 7-10, 2013
- C23. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, Sushanta Karmakar, “Exploring Gradient in Sensor Deployment Pattern for Data Gathering with Sleep based Energy Saving”, in proc. of the IEEE 9th International Wireless Communication and Mobile Computing Conference (IEEE IWCMC 2013), Sardinia, Italy, July 1-5, 2013
- C24. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, Sushanta Karmakar, “Energy-efficient Data Gathering for Road-side Sensor Networks ensuring Reliability and Fault-tolerance”, in proc. of the 27th IEEE International Conference on Advanced Information Networking and Applications (IEEE AINA-2013), Barcelona, Spain, March 25-28, 2013

- C25. Vikas Kumar, **Sandip Chakraborty**, Ferdous A Barbhuiya, Sukumar Nandi, “Detection of Stealth Man-In-The-Middle Attack in Wireless LAN”, in proc. of the 2nd IEEE International Conference on Parallel, Distributed and Grid Computing (IEEE PDGC 2012), 06-08 December 2012, India
- C26. Subhrangsu Mandal, **Sandip Chakraborty**, Sushanta Karmakar, “Deterministic 1-2 Skip List in Distributed System”, in proc. of the 2nd IEEE International Conference on Parallel, Distributed and Grid Computing (IEEE PDGC 2012), 06-08 December 2012, India (**Second Best Paper Award**)
- C27. **Sandip Chakraborty**, Sukumar Nandi, “Achieving Fairness for Multi-Class Traffic in Directional Multi-Interface IEEE 802.11s MCCA”, in proc. of the 18th IEEE International Conference on Networks (IEEE ICON 2012), 12-14 December 2012, Singapore
- C28. **Sandip Chakraborty**, Sukumar Nandi, “A HiperLAN/2 based MAC Protocol for Efficient Vehicle-to-Infrastructure Communication using Directional Wireless Mesh Backbone”, in proc. of the 11th IEEE International Conference on Ubiquitous Computing and Communications (IEEE IUCC 2012), 25-27 June 2012, Liverpool, UK
- C29. **Sandip Chakraborty**, Sidharth Sharma and Sukumar Nandi, “Performance Optimization in Single Channel Directional Multi-Interface IEEE 802.11s EDCA using Beam Prioritization” , in proc. of the IEEE International Conference on Communications (IEEE ICC 2012), June 10-15, 2012, Ottawa, Canada
- C30. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi and Sushanta Karmakar, “A Novel Crash-Tolerant Data Gathering in Wireless Sensor Networks”, in proc. of the 13th IEEE/IFIP Network Operations and Management Symposium (IEEE/IFIP NOMS 2012), April 16-20, 2012
- C31. Pravati Swain, **Sandip Chakraborty**, Sukumar Nandi, and Purandar Bhaduri, “Performance Analysis of IEEE 802.11 IBSS Power Save Mode using Discrete-Time Markov chain”, in proc. of the 27th ACM Symposium On Applied Computing (ACM SAC 2012), Italy, March 2012
- C32. **Sandip Chakraborty** and Sukumar Nandi, “MAC Layer Fairness in IEEE 802.11 DCF Based Wireless Mesh Network”, in proc. of the International Conference on Computing, Networking and Communications (IEEE ICNC 2012), February 2012, Maui, Hawaii, USA
- C33. Maushumi Barooah, Sanjay Ahuja, **Sandip Chakraborty**, Sukumar Nandi “TCP Performance for WLAN-GPRS Handover in an Intermediate Switching Network based Framework”, in proc. of the 5th IEEE International Conference on Advanced Networks and Telecommunication Systems (IEEE ANTS 2011), Bangalore, India, December 18-21, 2011
- C34. Prithu Banerjee, Mahasweta Mitra, Ferdous A. Barbhuiya, **Sandip Chakraborty** and Sukumar Nandi, “An Efficient Decentralized Rekeying Scheme to Secure Hierarchical Geographic Multicast Routing in Wireless Sensor Networks”, in proc. of the Seventh International Conference on Information Systems Security (ICISS 2011, Springer LNCS Volume 7093/2011, 294-308), Kolkata, India, December 15-19, 2011
- C35. **Sandip Chakraborty** and Sukumar Nandi, “Achieving MAC Layer Fairness in Wireless Mesh Backbone based Vehicular Network”, in proc. of the 2nd International Conference on Computer and Communication Technology (ICCC 2011), Allahabad, India, September 15-17, 2011,
- C36. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, and Sushanta Karmakar, “A Reliable and Total Order Tree Based Broadcast in Wireless Sensor Network” , in proc. of the 2nd International Conference on Computer and Communication Technology (ICCC 2011), Allahabad, India, September 15-17, 2011
- C37. Suchetana Chakraborty, **Sandip Chakraborty**, Sukumar Nandi, and Sushanta Karmakar, “A Tree-Based Local Repairing Approach for Increasing Lifetime of Query Driven WSN”, in proc. of the 2011 International Symposium on Pervasive Systems, Algorithms, and Networks (IEEE I-SPAN 2011) Dalian, China, August 24-26, 2011
- C38. Pravati Swain, **Sandip Chakraborty**, Sukumar Nandi, and Purandar Bhaduri, “Throughput Analysis of the IEEE 802.11 Power Save Mode in Single Hop Ad hoc Networks”, in proc. of the 2011 International Conference on Wireless Networks (ICWN’11), Las Vegas, USA, July 18-21, 2011
- C39. **Sandip Chakraborty**, Soumyadip Majumder, Ferdous A. Barbhuiya and Sukumar Nandi, “A Scalable Rekeying Scheme for Secure Multicast in IEEE 802.16 Network”, in proc. of First International Conference on Computer Science and Information Technology, (COSIT 2011), Bangalore, India, January 02-04, 2011.

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