

## **ONGOING PROJECTS**

**Title of the project:** Post-Disaster Situation Analysis and Resource Management using Delay-Tolerant Peer-to-Peer Wireless Networks (DiSARM)

**Principal Investigator:** Sipra Das Bit

**Amount Value:** 58.66 lakh

**Project Duration:** 3 years extended to 5 years (ongoing)

**Funding Agency:** Digital India Corporation (formerly Media Lab Asia)  
ITRA Ministry of Communications and Information Technology, GOI

**Major collaborators:** IIT Kgp, IIM, Calcutta

## **Recent Selected Publications**

### **Journal**

- S. Basu, S. Roy, S. Bandyopadhyay and S. DasBit, 'A Utility Driven Post Disaster Emergency Resource Allocation System using DTN', IEEE Transactions on Systems, Man, and Cybernetics: Systems (accepted), 2018.
- A. Roy, T. Acharya and S. DasBit, 'Fairness in Message Delivery in Delay Tolerant Networks', Wireless Networks, Springer (accepted), 2018.
- S. Bhattacharjee, S. Roy and S. DasBit, 'DPDRM: A Decentralized Post-Disaster Resource Management Scheme using Energy Efficient Smart Phone Based DTN', Journal of Network and Computer Applications, Elsevier Science, vol 111, 2018.
- S. Basu, A. Biswas, S. Roy and S. DasBit, 'Wise-PRoPHET: A Watchdog Supervised PRoPHET for Reliable Dissemination of Post Disaster Situational Information over Smartphone based DTN', Journal of Network and Computer Applications, Elsevier Science, vol 109, pp 11-23, 2018.
- S. Basu, S. Roy and S. DasBit, 'A Post Disaster Demand Forecasting System using Principal Component Regression Analysis and Case-Based Reasoning

over Smartphone based DTN', IEEE Transactions on Engineering Management, (accepted), 2018.

- A. Roy, T. Acharya and S. DasBit, 'Quality of service in delay tolerant networks: A survey', Journal Computer Communications, Elsevier Science, vol 130, pp 121-133, Jan, 2018.
- T. Pal and S. DasBit, 'A low-overhead adaptive image compression technique for energy-constrained WMSN', Journal of Computer and Electrical Engineering, Elsevier Science (article in press), 2017.
- Rajib Banerjee and Sipra DasBit 'An energy efficient image compression scheme for wireless multimedia sensor network using curve fitting technique', Wireless Networks, Springer(accepted), 2017.
- A. Roy, S. Bose, T. Acharya and S. DasBit, 'Social-based energy-aware multicasting in delay tolerant networks ', Journal of Network and Computer Applications, Elsevier Science, vol 87, pp 169-184, March 2017.
- Tanusree Chatterjee, Sushmita Ruj and Sipra DasBit, 'Security Issues in Named Data Networks', IEEE Computer, vol 51 (1), pp 66-75, January 2018.
- Arpan Sen, Tanusree Chatterjee and Sipra DasBit, 'LoWaNA: Low-overhead Watermark Based Node Authentication in WSN', Wireless Networks, Springer, vol 22, issue 7, pp 2453-2467, October 2016.
- Rajib Banerjee, Shibashis Chatterjee and Sipra DasBit, 'An Energy Saving Audio Compression Scheme for WMSN using Spatio-temporal Partial DWT', Journal of Computer and Electrical Engineering, Elsevier Science, vol 48, pp 389-404, 2015.
- Subir Halder and Sipra DasBit, 'Design of an Archimedes' Spiral based Node Deployment Scheme Targeting Enhancement of Network Lifetime in Wireless Sensor Networks', Journal of Network and Computer Applications, Elsevier Science, vol 47, pp 147-167, January, 2015.
- Amrita Ghosal and Sipra DasBit, 'A Lightweight Security Scheme for Query Processing in Clustered Wireless Sensor Networks', Journal of Computer and Electrical Engineering, Elsevier Science, vol 41, pp 240-255, January 2015.
- Subir Halder and Sipra DasBit, 'Design of a Probability Density Function targeting Energy-Efficient Node Deployment in Wireless Sensor Networks', IEEE Transactions on Network and Service Management, Vol 11, No. 2, pp 204-219, 2014.

- Subir Halder and Sipra DasBit, 'Enhancement of Wireless Sensor Network Lifetime by Deploying Heterogeneous Nodes', Journal of Network and Computer Applications, Elsevier Science, Vol 38, pp 106-124, 2014.
- Amrita Ghosal, Sipra Das Bit, 'A Jamming Attack Defending Data Forwarding Scheme Based on Channel Surfing in Wireless Sensor Networks', Journal of Security and Communication Networks, Wiley, 6(11), pp 1367-1388, 2013.
- A. Ghosal, S. Halder and S. DasBit, ' A Dynamic TDMA Based Scheme for Securing Query Processing in WSN', Wireless Networks, Springer, Vol 18, No. 2, pp 165-184, 2012.
- S. Halder, A. Ghosal and S. DasBit, ' A Pre-determined Node Deployment Strategy to Prolong Network Lifetime in Wireless Sensor Network', Journal Computer Communications, Elsevier Science, Vol 34, Issue 11, pp 1294-1306, 2011.

### Refereed Conference Proceedings

- N. Das, S. Basu and S. DasBit, ' *Hm2Sc: Human Movement Model for Post Disaster Scenario in Smart City*', Workshop C-NetSys at ACM MobiCom (to appear) 2018.
- J. Sengupta, S. Ruj and S. DasBit, ' *An Efficient and Secure Directed Diffusion in Industrial Wireless Sensor Networks*', Workshop FICN at ACM MobiCom (to appear) 2018.
- N. Das and S. DasBit, ' *ProDiP: PDF based dropbox deployment for improved performance of DTN placed for emergency situation handling in a Smart city*', IEEE ANTS, 2017.
- T. Pal and S. DasBit, ' *A low overhead video compression technique for energy-starved wireless multimedia sensor network*', IEEE ANTS (to appear), 2017.
- S. Bhattacharjee, R. Chatterjee, T. Pal and S. DasBit, ' *Implementing Multicasting and Broadcasting of Multimedia Data in ONE Simulator*', SIMUTOOLS, September, 2017.
- A. Roy, T. Acharya and S. DasBit, ' *Social-Based Congestion-Aware Multicast in Delay Tolerant Networks*', Workshop DIPW at ACM MobiHoc, July, 2017.

- S. Bhattacharjee, S. Roy, S. Ghosh and S. DasBit, '*Exploring the Impact of Connectivity on Dissemination of Post Disaster Situational Data over DTN*', ICDCN, January, 2017.
- Rajib Banerjee, P.Roy, K. Layek and Sipra DasBit, '*An Energy Efficient Video Compression using Differential Inter Frame Partial Discrete Wavelet Transform for WMSN*', IEEE INDICON, December, 2016.
- S. Bhattacharjee, S. Kanta, S. Modi, M. Paul and Sipra DasBit, '*Disaster Messenger: An Android based Infrastructure Less Application for Post Disaster Information Exchange*', IEEE ANTS, November, 2016.
- A. Das, N. Mallik, S. Bandyopadhyay, S. DasBit '*Interactive Information Crowdsourcing for Disaster Management Using SMS and Twitter: A Research Prototype*', Workshop CASPer at IEEE PerCom, 2016.
- S. Bhattacharjee, S. Basu, S. Roy, S. DasBit, '*Best-effort Delivery of Emergency Messages in Post-disaster Scenario with Content-based Filtering and Priority-enhanced PROPHET over DTN*', IEEE COMSNET, January, 2016.
- S. Basu, S.Roy, S. DasBit, S. Bandyopadhyay, '*A Human Mobility Based Knowledge Sharing Approach for Post Disaster Need Assessment using DTN*', ICDCN, Singapore, January 2016.
- T. Pal and S.DasBit, '*A new CFA based image compression technique for energy-starved wireless multimedia sensor network*', IEEE INDICON, pp 1-6, Dec, 2015 (**Best Paper** in a session Award).
- R.Banerjee and S. DasBit, '*Low-Overhead Image Compression in WMSN for Post Disaster Situation Analysis*', IEEE ANTS, pp 155-160, December, 2015.
- A. Roy Chowdhury and S. DasBit, '*LMAC: A Lightweight Message Authentication Code for Wireless Sensor Network*', IEEE GLOBECOM, IEEE Xplore, San Diego, USA, December 2015.
- A. Roy, T. Acharya and S. DasBit, '*Energy-Aware Social-Based Multicast in Delay-Tolerant Networks*', Workshop at IEEE VTC, pp 1-6, 2015.
- A. Roy Chowdhury, T. Chatterjee, S. DasBit, '*LOCHA: A Light-Weight One-way Cryptographic Hash Algorithm for Wireless Sensor Network*', ANT-2014, Procedia Computer Science vol. 32 pp 497-504, 2014.

- R. Banerjee, M. Mobashir, S. DasBit, '*Partial DCT-based Energy Efficient Compression Algorithm for Wireless Multimedia Sensor Network*' IEEE CONECCT, IEEE Xplore 1569825875, pp 1-6, 2014.
- A. Ghosal, Aadirupa Saha, S. DasBit '*Energy Saving Replay Attack Prevention in Clustered Wireless Sensor Networks*', Pacific Asia Workshop on Intelligence and Security Informatics, LNCS, vol 8039, pp 82-96, 2013.
- A. Ghosal, S. Sur, and S. DasBit, ' *$\mu$ Sec: A Security Protocol for Unicast Communication in Wireless Sensor Networks*', Int. Workshop on Autonomous and Spontaneous Security (SETOP) held in conjunction with European Symposium on Research in Computer Security (ESORICS), LNCS, Springer-Verlag, vol 7731, pp 258-273, Sept 2012.
- S. Halder, S. DasBit, '*A Lifetime Enhancing Node Deployment Strategy using Heterogeneous Nodes in WSNs for Coal Mine Monitoring*', ACM MSWiM, pp 117-124, Oct 2012.
- A. Dan, S. Halder, S. DasBit, '*Localization with Enhanced Location Accuracy using RSSI in WSN*', IEEE ANTS 2011, IEEE Explore.
- S. Halder, A. Ghosal, A. Saha and S. DasBit, '*Energy-Balancing and Lifetime Enhancement of Wireless Sensor Network with Archimedes Spiral*', Proc. 8th Int'l Conf. on Ubiquitous Intelligence and Computing (UIC), LNCS, Springer-Verlag, vol. 6905, pp. 420-434, September 2011.
- S. Halder, A. Ghosal, A. Chaudhury and S. DasBit, '*A Probability Density Function for Energy-Balanced Lifetime-Enhancing Node Deployment in WSN*', Proc. 11th Int'l Conf. Computational Science and its Application (ICCSA), LNCS, Springer-Verlag, vol. 6018, pp. 472-487, June 2011.
- A. Ghosal, S. Halder, Md. Mobashir, R.K. Saraogi, and S. DasBit, '*A Jamming Defending Data-Forwarding Scheme for Delay Sensitive Applications in WSN*', Proceedings Wireless Vitae'11 IEEE Xplore, pp 1-5, February 2011 (**Best Paper Award**).
- A. Ghosal, S. Halder, S. Sur, A. Dan and S. DasBit, '*Ensuring Basic Security and Preventing Replay Attack in a Query Processing Application Domain in WSN*', LNCS, Springer-Verlag, vol 6018, pp 321-335, March 2010.
- S. Halder, A. Ghosal, S. Sur, A. Dan and S. DasBit, '*A Lifetime Enhancing*

*Node Deployment Strategy in WSN*, LNCS, Springer-Verlag, vol 5899, pp 296-308, Dec 2009.