

Sudipta Saha

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Present affiliation

At present I am an Assistant Professor in the *School of Electrical Sciences*, in the discipline of *Computer Science & Engineering*, at *Indian Institute of Technology Bhubaneswar*.

Research interest

My primary research interest is in large scale decentralized systems. Specifically, my current works are focused on the following areas -

- Developing efficient and secure services for real world decentralized systems, mainly, *Wireless Sensor Networks*, *Internet-of-Things*, and cyber-physical systems, mainly, *Power Generation Plant*.
- Understanding the dynamics of complex systems through mathematical modeling and computer simulation based techniques. The primary aim is to gain insights that can help to design better system.

Education

PhD in Computer Science & Engineering

Indian Institute of Technology Kharagpur
Kharagpur - 721302, West Bengal, India
Advisor - Dr. Niloy Ganguly
Thesis title - *Dynamics of information dissemination:
a structural and functional study*

Jul, 2010 - May, 2014

M Tech in Computer Science & Engineering

Indian Institute of Technology Kharagpur
Kharagpur - 721302, West Bengal, India
Advisor - Dr. Jayanta Mukhopadhyay
Thesis title - *Protein secondary structure prediction using
improved fuzzy min-max neural network*
Cumulative GPA 9.43 in a scale of 10, ranked 4th

Jul, 2006 - Jul, 2008

BE in Computer Science & Technology

Bengal Engineering College (D.U.)
(At present known as Indian Institute of
Engineering Science and Technology)
Shibpur, Howrah - 711103, West Bengal, India
First Class with 71.4% of marks

Aug, 1998 - Aug, 2002

Higher Secondary (10+2)

West Bengal Council of
Higher Secondary Education (WBCHSE)
First Division with 83.3% of marks

Aug, 1996 - Aug, 1998

Secondary (10)

West Bengal Board of
Secondary Education (WBBSE)
First Division with 86.4% of marks

Aug, 1996

Professional experience	<p><i>Assistant Professor</i> in the School of Electrical Sciences, in the discipline of <i>Computer Science & Engineering</i>, at <i>Indian Institute of Technology Bhubaneswar</i>, India.</p>	Feb, 2017 - Continuing
	<p><i>Postdoctoral Research Fellow</i> in the pillar of Information Systems Technology and Design (ISTD) pillar, at <i>Singapore University of Technology and Design (SUTD)</i>, Singapore.</p>	Nov, 2016 - Jan, 2017
	<p><i>Postdoctoral Research Fellow</i>, in the department of Computer Science, <i>School of Computing, National University of Singapore</i>. Worked in the project titled <i>National Cyber-security R&D Laboratory</i>, sponsored by National Research Foundation (NRF), Singapore.</p>	Feb, 2016 - Oct, 2016
	<p><i>Postdoctoral Research Fellow</i>, in the department of Computer Science, <i>School of Computing, National University of Singapore</i>. Worked in the project titled <i>Reliable Information Delivery in Heterogeneous Sensor Networks</i>, sponsored by <i>Agency for Science, Technology and Research (A*STAR)</i>, Singapore.</p>	Jan, 2015 - Feb, 2016
	<p><i>Research Associate</i>, in the department of Computer Science, <i>School of Computing, National University of Singapore</i>. Worked in the project titled <i>Reliable Information Delivery in Heterogeneous Sensor Networks</i>, sponsored by <i>Agency for Science, Technology and Research (A*STAR)</i>, Singapore.</p>	Jun, 2014 - Jan, 2015
	<p><i>Senior Project Officer</i> in several research projects sponsored by Department of Science and Technology (DST) and Department of Information Technology (DIT), <i>Government of India</i> as well as few international private organizations, at IIT Kharagpur.</p>	Mar, 2010 - Nov, 2013
	<p><i>Software Engineer</i> in <i>PowerSys Technologies Pvt. Ltd</i> (http://www.powersys-tech.com). Led a team consisting of six members to design and develop a Graphical User Interface (GUI) for a large electrical power system simulation software called <i>Power Network Simulator (PNS)</i>. The user-friendly GUI of this software provides an interface to design schematic diagram of large power system network and also allows to communicate with the back-end simulation engines to experiment with the designed network.</p>	Sep, 2008 - Feb, 2010
	<p><i>Associate Member of Technical Staff</i> in <i>Magma Design Automation Pvt. Ltd</i>. Worked as a member of a team to develop a large scale VLSI testing and simulation software.</p>	Jun, 2008 - Aug, 2008
	<p><i>Teaching Assistant</i> in <i>Computing Lab</i> (for MTech first year), <i>Programming and Data Structure Lab</i> (for BTech first year), in several semesters, during MTech and PhD tenures in the department of Computer Science & Engineering, IIT Kharagpur.</p>	2007 - 2012
	<p><i>Lecturer</i>, in the department of Computer Science & Engineering in <i>Birbhum Institute of Engineering & Technology (BIET)</i>, (Affiliated to <i>West Bengal University of Technology</i>), Suri, Birbhum, West Bengal – 731101, India.</p>	Mar, 2003 - Jul, 2006

Publications

PhD Thesis

- Dynamics of information dissemination: a structural and functional study. **Sudipta Saha**, Doctoral Thesis, Indian Institute of Technology Kharagpur.

Journals

1. *Coverage maximization under resource constraints using proliferating random walks.* **Sudipta Saha**, Niloy Ganguly, and Abhijit Guria. *Pramana – Journal of Physics*, 84(2), 273–284, 2015.
2. *Epidemic spreading through direct and indirect interactions.* Niloy Ganguly, Tyll Krueger, Animesh Mukherjee, and **Sudipta Saha***. *Physical Review E*, 90(3):032808, 2014. (*Corresponding author of the paper)
3. *Intergroup networks as random threshold graphs.* **Sudipta Saha**, Niloy Ganguly, Animesh Mukherjee, and Tyll Krueger. *Physical Review E*, 89(4):042812, 2014.
4. *Understanding evolution of inter-group relationships using bipartite networks.* Saptarshi Ghosh, **Sudipta Saha**, Ajitesh Srivastava, Tyll Krueger, Niloy Ganguly, and Animesh Mukherjee. *IEEE Journal on Selected Areas in Communications*, 31(9):584-594, 2013.
5. *Coverage maximization under resource constraints using a nonuniform proliferating random walk.* **Sudipta Saha** and Niloy Ganguly. *Physical Review E*, 87(2):022807, 2013.
6. *Effect of attachment strategies on bipartite networks.* Niloy Ganguly, **Sudipta Saha**, Abyayananda Maiti, Sanket Agarwal, Fernando Peruani, and Animesh Mukherjee. *The European Physical Journal B*, 86(6):1-8, 2013.

Conference and workshop

1. *Efficient many-to-many data sharing using synchronous transmission and TDMA.* **Sudipta Saha**, Olaf Landsiedel, and Mun Choon Chan. Accepted in the 13th annual IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), Jun 5 - 7, 2017, Ottawa, Ontario, Canada.
2. *Design and application of a many-to-one communication protocol.* **Sudipta Saha** and Mun Choon Chan. Accepted in the 36th Annual IEEE International Conference on Computer Communications (INFOCOM), May 1 - 4, 2017, Atlanta, GA. (Acceptance ratio: 292/1395 = 20.93%).
3. *PSync: Visible Light-Based Time Synchronization for Internet of Things (IoT).* Xiangfa Guo, Mobashir Mohammad, **Sudipta Saha***, Mun Choon Chan, Seth Gilbert, and Derek Leong. In *Proceedings of the 35th Annual IEEE International Conference on Computer Communications (INFOCOM)*, April 10-14, 2016, San Francisco, CA, USA. (Acceptance ratio: 300/1644 = 18%)
*Received the **best-in-session-presentation award** in the technical session of IoT.
4. *Information dissemination dynamics in delay tolerant network: A bipartite network approach.* **Sudipta Saha**, Niloy Ganguly, and Animesh Mukherjee. In *Proceedings of, the Third ACM International Workshop on Mobile Opportunistic Networks, MobiOpp'12*, pages 21–28, 2012. ACM.
5. *Understanding information dissemination dynamics in delay tolerant networks using theory of bipartite networks.* **Sudipta Saha***, Niloy Ganguly, and Animesh Mukherjee. In *Proceedings of, COMSNETS PhD Forum, 2012*, Bangalore, India. *Received the **best presentation award** in the forum.

Software developed

- Designed and developed the graphical user interface (GUI) for a large electrical power network simulation software – **Power Network Simulator (PNS)** (http://www.powersys-tech.com/data/power_network_simulator.html). The software was developed using java 2d, java swing (for the front end GUI) and 'C' (for the back end services).

Honors and awards

- Received **travel grant** from the department of Computer Science, School of Computing, National University of Singapore to attend **IEEE INFOCOM 2016**, at San Francisco, California, USA.
- Received the **Best-in-Session-Presentation award** in the technical session of IoT at **IEEE INFOCOM 2016**, at San Francisco, California, USA.
- PhD thesis got nominated from the department of Computer Science and Engineering, IIT Kharagpur, for the **ACM India best doctoral dissertation award**, 2015.
- PhD thesis got nominated from the department of Computer Science and Engineering, IIT Kharagpur for the **IBM best thesis award**, 2015.
- Got selected for **DAAD scholarship** for pursuing research in Germany in 2013.
- Was invited for a **research visit** for a period of one and half months at the department of **IMC, ZIH, TU Dresden, Germany** in 2012.
- Was invited to attend the 8th Tata Consultancy Services (TCS) Technical Architects' Global Conference (TACTiCS) 2012, Hotel Taj Palace, New Delhi, in 2012.
- Received the **best presentation award** in the IEEE COMSNETS PhD Forum 2012, at Bangalore, India.
- Received **student travel grant** to attend IEEE COMSNETS 2012 at Bangalore, India.
- Received **student travel grant** to attend ACM SIGCOMM 2010, at New Delhi, India.
- Received **TCS research scholarship** since July, 2010 to May, 2014, for pursuing PhD at Indian Institute of Technology Kharagpur, India.
- Ranked 4th **in MTech**, in the department of Computer Science & Engineering, Indian Institute of Technology Kharagpur, India, in 2008.
- Received **scholarship** from **Ministry of Human Resource Development (MHRD), Govt. of India**, from July, 2006 to May, 2008, for pursuing MTech at Indian Institute of Technology Kharagpur, India.
- Got honored by **All Bengal Teachers' Association (ABTA)** for scoring highest marks in the Higher Secondary examination (10+2), 1998, in Mahammad Bazar block, Birbhum, West Bengal – 731127, India.
- Received **Merit Certificate**, under **National Scholarship Scheme** for scoring high marks in Secondary Examination (10), 1996.

Selected talks

- On “PSync: Visible Light-Based Time Synchronization for Internet of Things (IoT)”, at Hyatt Regency, San Francisco, California, USA, in IEEE INFOCOM, 12th April, 2016. Received the **Best-in-Session-Presentation award** in the technical session of IoT.
- On “Coverage maximization in unstructured networks”, at department of Computer Science, National University of Singapore, 8th June, 2014.
- On “Alpha-BiNs and random threshold graphs”, at IMC-ZIH, Technical University Dresden, Germany, 12th December, 2012.
- On “Coverage maximization in unstructured networks”, at IMC-ZIH, Technical University Dresden, Germany, 23rd November, 2012.
- On “Modeling information dissemination in delay tolerant networks using bipartite networks”, at the 8th TCS Technical Architects’ Global Conference (TACTiCS) 2012, Hotel Taj Palace, New Delhi, 4th May, 2012.
- On “Understanding information dissemination dynamics in delay tolerant networks using theory of bipartite networks”, in the PhD forum of COMSNETS 2012, Hotel Chancery Pavillion, Residency Road, Bangalore, India, 5th January, 2012. Received the **best PhD forum presentation award**.

References

- **Prof Mun Choon Chan**
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- **Prof Avinash Kumar Sinha**

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